Ministry of Agriculture and Rural Development (MARD)
Government of the Socialist Republic of Vietnam

The Preparatory Survey for the Project of Sustainable Forest Management in the Northwest Sub-region in the Socialist Republic of Vietnam

Final Report

Volume II: Annexes (2/2)

November 2016

Japan International Cooperation Agency (JICA)

NIPPON KOEI CO., LTD.
KRI INTERNATIONAL CO., LTD.
JAPAN FOREST TECHNOLOGY ASSOCIATION

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16-056

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Annex F: Procedures and Estimated Costs for Support for Livelihood Improvement

F.1 Cost Estimates of the Component by Province

The component is comprised of the following five parts: i) Selection of livelihood development model; ii) Marketing survey; iii) Development of model site and technical training at the site; iv) Assistance in management and use of payments made to the village working group; and v) Inter district/province cross field visits. They are further broken down into several activities. **Tables F-1 to F-10** attached to this Annex give the detailed costs of the component by province. The summary of the cost estimates are shown below.

Summary of the Cost Breakdown of the Component

(unit: million VND)

Provinces	i)Marketing Survey	ii)Selection of Priority Activities	iii)Development of Model Site & Technical Training	iv)Financial Management training	v)Cross Field Visit	Total
Dien Bien	-	255.728	4,421.928	641.696	155.056	5,474.408
Lai Chau	-	703.252	12,160.302	1,764.664	155.056	14,783.274
Son La	-	351.626	6,080.151	882.332	155.056	7,469.165
Hoa Binh	-	735.218	12,713.043	1,844.876	155.056	15,448.193
Total	829.31	2,045.824	35,375.424	5,133.568	620.224	43,175.040

Source: JICA Preparatory Survey Team (2016)

The quantity of each activity was estimated mainly on the basis of the number of districts, communes and PF/SUFMBs to be involved. Meanwhile, most of the unit costs of the activities of the component were estimated based on the existing government technical and cost norms of similar activities. The cost of selection of priority activities, technical training on livelihood development techniques, and cross field visits were estimated based on the following relevant government regulations:

- MARD Decision No. 918/QD-BNN-TC issued on 5 May 2014;
- MoF Decision No. 219/2009/TT-BTC on 19 November 2009;
- MARD Decision No. 183/2010/TTLT-BTC-BNN issued on 15 November 2010;
- MoF Decision No. 139/2010/TT-BTC issued on 21 September 2010;
- MARD Decision No. 2096/QD-BNN-TC issued in 2011; and
- MARD Decision No.4227/QD-BNN-KHCN issued on 31 December, 2007

The unit cost whose cost norms are not defined by GoV were estimated based on price quotations obtained by the preparatory survey team or the actual payments made by the JICA2 Project. The cost for introduction and development of model plots was represented by the average of development costs of the major livelihood options, namely: i) medicinal plant (Ba kich) plantation model; ii) marketing & post harvest model (utilization of drying yard); iii) bee keeping model; and iv) fodder grass model.

The cost of the marketing survey was estimated on the basis of the price quotations prepared by potential contractors (local institutions) based on the terms of reference (TOR) drafted by the preparatory survey team for the same survey. The draft TOR of the survey is shown in

Appendix F-1 attached to this Annex. The total unit costs of the respective activities are shown in **Table F-1.**

F.2 Annual Cost and Disbursement of the Component

The annual cost of the component for each province was estimated based on the annual work quantities and unit costs of the activities as shown in **Table F-2** attached to this Annex. The annual work quantities of the activities were calculated on the basis of the implementation schedule. **Table F-3** shows the annual cost disbursements of the component by province.

Tables

Table F-1: Estimated cost of Livelihood Development Support Component by province

Items	Unit	Unit cost (VND 000)	Reference	Dien Bien		Lai Chau		Son La		Hoa Binh		TOTAL	
				Q'ty	Amount (VND 000)	Q'ty	Amount (VND 000)	Q'ty	Amount (VND 000)	Q'ty	Amount (VND 000)	Q'ty	Amount (VND 000)
No. of commune				8		22		11		23		64	
No. of PFMB/site				4		4		4		4		16	
1. Marketing Survey	set	912,241	Table F-10	0	***0***	0	***0***	0	***0***	0	***0***	1	***912,241***
2. Selection of Priority Livelihood Improvement Options					***4,551,552***		***12,516,768***		***6,258,384***		***13,085,712***		***36,412,416***
2.1 Selection of Priority Options	times	15,763	Table F-4	8	126,104	22	346,786	11	173,393	23	362,549	64	1,008,832
2.2 Survey on the potential model site	times	16,203	Table F-5	8	129,624	22	356,466	11	178,233	23	372,669	64	1,036,992
3. Development of model site and technical training at the model sites					***4,421,928***		***12,160,302***		***6,080,151***		***12,713,043***		***35,375,424***
3.1 Working group set up and action plan preparation	times	23,397	Table F-6	8	187,176	22	514,734	11	257,367	23	538,131	64	1,497,408
3.2 Development of model site and technical training on the selected option 1	times	176,448	Table F-7	8	1,411,584	22	3,881,856	11	1,940,928	23	4,058,304	64	11,292,672
3.3 Development of model site and technical training on the selected option 2	times	176,448	Table F-7	8	1,411,584	22	3,881,856	11	1,940,928	23	4,058,304	64	11,292,672
3.4 Development of model site and technical training on the selected option 3	times	176,448	Table F-7	8	1,411,584	22	3,881,856	11	1,940,928	23	4,058,304	64	11,292,672
4. Assistance in mangement and use of payments made to the village working groups					***641,696***		***1,764,664***		***882,332***		***1,844,876***		***5,133,568***
4.1 Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups	times	15,763	Table F-8 1)	8	126,104	22	346,786	11	173,393	23	362,549	64	1,008,832
4.2 Workshops/discussions on the Use of Saving Funds of the Village Working Groups	times	15,763	Table F-8 1)	8	126,104	22	346,786	11	173,393	23	362,549	64	1,008,832
4.3 Training on Financial Management	times	24,343	Table F-8 2)	8	194,744	22	535,546	11	267,773	23	559,889	64	1,557,952
4.4 Assistance in the preparation of business plans on potential income generating activities	times	24,343	Table F-8 2)	8	194,744	22	535,546	11	267,773	23	559,889	64	1,557,952
5. Inter district/province Cross Field Visit	times	38,764	Table F-9	4	***155,056***	4	***155,056***	4	***155,056***	4	***155,056***	16	***620,224***
TOTAL					**5,218,680**		**14,080,022**		**7,117,539**		**14,712,975**		**42,041,457**

Table F-2 Estimation of Annual Cost of the Livelihood Development Support Component

(1) Dien Bien Province

No. of commune:8 / No. of PFMB/site:4	Unit/Unit cost (1000VND)	Reference table	Total	2019				2020				2021				2022				2023				2024			
				I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
				3rd Year				4th Year				5th Year				6th Year				7th Year				8th Year			
1. Selection of Priority Livelihood Improvement Options																											
1.1 Selection of Priority Options	times		8					4				4															
1.2 Survey on the potential model site	times		8							4				4													
2. Development of model site and technical training at the model sites																											
2.1 Working group set up and action plan preparation	times		8								4				4												
2.2 Development of model site and technical training on the selected option 1	times		8									4				4											
2.3 Development of model site and technical training on the selected option 2	times		8										4				4										
2.4 Development of model site and technical training on the selected option 3	times		8											4				4									
3. Assistance in mangement and use of payments made to the village working groups																											
3.1 Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups	times		8				2		2		2		2														
3.2 Workshops/discussions on the Use of Saving Funds of the Village Working Groups	times		8												4				4								
3.3 Training on Financial Management	times		8													4				4							
3.4 Assistance in the preparation of business plans on potential income generating activities	times		8														4				4						
4. Inter district/province Cross Field Visit	times		4												1			1			1			1			
1. Selection of Priority Livelihood Improvement Options																											
1.1 Selection of Priority Options	15,763	Table F-4	126,104					63				63															
1.2 Survey on the potential model site	16,203	Table F-5	129,624							65				65													
2. Development of model site and technical training at the model sites																											
2.1 Working group set up and action plan preparation	23,397	Table F-6	187,176								94				94												
2.2 Development of model site and technical training on the selected option 1	176,448	Table F-7	1,411,584									706				706											
2.3 Development of model site and technical training on the selected option 2	176,448	Table F-7	1,411,584										706				706										
2.4 Development of model site and technical training on the selected option 3	176,448	Table F-7	1,411,584											706				##									
3. Assistance in mangement and use of payments made to the village working groups																											
3.1 Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups	15,763	Table F-8 1)	126,104				32		32		32		32														
3.2 Workshops/discussions on the Use of Saving Funds of the Village Working Groups	15,763	Table F-8 1)	126,104												63				63								
3.3 Training on Financial Management	24,343	Table F-8 2)	194,744													97				97							
3.4 Assistance in the preparation of business plans on potential income generating activities	24,343	Table F-8 2)	194,744														97				97						
4. Inter district/province Cross Field Visit	38,764	Table F-9	155,056												39			39			39			39			

Table F-2 Estimation of Annual Cost of the Livelihood Development Support Component
(2) Lai Chau Province

No. of commune:22 / No. of PFMB/site:4	Unit/Unit cost	Reference table	Total	2019				2020				2021				2022				2023				2024			
				I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
				3rd Year				4th Year				5th Year				6th Year				7th Year				8th Year			
1. Selection of Priority Livelihood Improvement Options																											
1.1 Selection of Priority Options	times		22					11				11															
1.2 Survey on the potential model site	times		22							11				11													
2. Development of model site and technical training at the model sites																											
2.1 Working group set up and action plan preparation	times		22								11				11												
2.2 Development of model site and technical training on the selected option 1	times		22									11				11											
2.3 Development of model site and technical training on the selected option 2	times		22										11				11										
2.4 Development of model site and technical training on the selected option 3	times		22											11				11									
3. Assistance in mangement and use of payments made to the village working groups																											
3.1 Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups	times		22				6		6		5		5														
3.2 Workshops/discussions on the Use of Saving Funds of the Village Working Groups	times		22												11				11								
3.3 Training on Financial Management	times		22													11				11							
3.4 Assistance in the preparation of business plans on potential income generating activities	times		22														11				11						
4. Inter district/province Cross Field Visit	times		4												1			1			1			1			
1. Selection of Priority Livelihood Improvement Options																											
1.1 Selection of Priority Options	15,763	Table F-4	346,786					##				173															
1.2 Survey on the potential model site	16,203	Table F-5	356,466							##				178													
2. Development of model site and technical training at the model sites																											
2.1 Working group set up and action plan preparation	23,397	Table F-6	514,734								257				257												
2.2 Development of model site and technical training on the selected option 1	176,448	Table F-7	3,881,856									###				###											
2.3 Development of model site and technical training on the selected option 2	176,448	Table F-7	3,881,856										###				###										
2.4 Development of model site and technical training on the selected option 3	176,448	Table F-7	3,881,856											###				###									
3. Assistance in mangement and use of payments made to the village working groups																											
3.1 Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups	15,763	Table F-8 1	346,786				95		95		79		79														
3.2 Workshops/discussions on the Use of Saving Funds of the Village Working Groups	15,763	Table F-8 1	346,786												173				173								
3.3 Training on Financial Management	24,343	Table F-8 2	535,546													268				268							
3.4 Assistance in the preparation of business plans on potential income generating activities	24,343	Table F-8 2	535,546														268				268						
4. Inter district/province Cross Field Visit	38,764	Table F-9	155,056												39			39			39			39			

Table F-2 Estimation of Annual Cost of the Livelihood Development Support Component
(3)Son La Province

No. of commune:11 / No. of PFMB/site:4	Unit/Unit cost	Reference table	Total	2019				2020				2021				2022				2023				2024			
				I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
				3rd Year				4th Year				5th Year				6th Year				7th Year				8th Year			
1. Selection of Priority Livelihood Improvement Options																											
1.1 Selection of Priority Options	times		11						6				5														
1.2 Survey on the potential model site	times		11								6				5												
2. Development of model site and technical training at the model sites																											
2.1 Working group set up and action plan preparation	times		11									6				5											
2.2 Development of model site and technical training on the selected option 1	times		11										6				5										
2.3 Development of model site and technical training on the selected option 2	times		11											6				5									
2.4 Development of model site and technical training on the selected option 3	times		11												6				5								
3. Assistance in mangement and use of payments made to the village working groups																											
3.1 Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups	times		11				3		3		3		2														
3.2 Workshops/discussions on the Use of Saving Funds of the Village Working Groups	times		11												6				5								
3.3 Training on Financial Management	times		11													6				5							
3.4 Assistance in the preparation of business plans on potential income generating activities	times		11														6				5						
4. Inter district/province Cross Field Visit	times		4												1			1			1			1			
1. Selection of Priority Livelihood Improvement Options																											
1.1 Selection of Priority Options	15,763	Table F-4	173,393						95				79														
1.2 Survey on the potential model site	16,203	Table F-5	178,233								97				81												
2. Development of model site and technical training at the model sites																											
2.1 Working group set up and action plan preparation	23,397	Table F-6	257,367									140				117											
2.2 Development of model site and technical training on the selected option 1	176,448	Table F-7	1,940,928										###				882										
2.3 Development of model site and technical training on the selected option 2	176,448	Table F-7	1,940,928											###				882									
2.4 Development of model site and technical training on the selected option 3	176,448	Table F-7	1,940,928												###				882								
3. Assistance in mangement and use of payments made to the village working groups																											
3.1 Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups	15,763	Table F-8 1	173,393				47		47		47		32														
3.2 Workshops/discussions on the Use of Saving Funds of the Village Working Groups	15,763	Table F-8 1	173,393												95				79								
3.3 Training on Financial Management	24,343	Table F-8 2	267,773													146				122							
3.4 Assistance in the preparation of business plans on potential income generating activities	24,343	Table F-8 2	267,773														146				122						
4. Inter district/province Cross Field Visit	38,764	Table F-9	155,056												39			39			39			39			

Table F-2 Estimation of Annual Cost of the Livelihood Development Support Component
(4) Hoa Binh Province

No. of commune:23 / No. of PFMB/site:4	Unit/Unit cost	Reference table	Total	2019				2020				2021				2022				2023				2024			
				I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
				3rd Year				4th Year				5th Year				6th Year				7th Year				8th Year			
1. Selection of Priority Livelihood Improvement Options																											
1.1 Selection of Priority Options	times		23						12				11														
1.2 Survey on the potential model site	times		23								12				11												
2. Development of model site and technical training at the model sites																											
2.1 Working group set up and action plan preparation	times		23									12				11											
2.2 Development of model site and technical training on the selected option 1	times		23										12				11										
2.3 Development of model site and technical training on the selected option 2	times		23											12				11									
2.4 Development of model site and technical training on the selected option 3	times		23												12				11								
3. Assistance in mangement and use of payments made to the village working groups																											
3.1 Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups	times		23				6		6		6		5														
3.2 Workshops/discussions on the Use of Saving Funds of the Village Working Groups	times		23												12				11								
3.3 Training on Financial Management	times		23													12				11							
3.4 Assistance in the preparation of business plans on potential income generating activities	times		23														12				11						
4. Inter district/province Cross Field Visit	times		4												1			1			1			1			
1. Selection of Priority Livelihood Improvement Options																											
1.1 Selection of Priority Options	15,763	Table F-4	362,549						##				173														
1.2 Survey on the potential model site	16,203	Table F-5	372,669								194				178												
2. Development of model site and technical training at the model sites																											
2.1 Working group set up and action plan preparation	23,397	Table F-6	538,131									281				257											
2.2 Development of model site and technical training on the selected option 1	176,448	Table F-7	4,058,304										###				###										
2.3 Development of model site and technical training on the selected option 2	176,448	Table F-7	4,058,304											###				###									
2.4 Development of model site and technical training on the selected option 3	176,448	Table F-7	4,058,304												###				###								
3. Assistance in mangement and use of payments made to the village working groups																											
3.1 Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups	15,763	Table F-8 1)	362,549				95		95		95		79														
3.2 Workshops/discussions on the Use of Saving Funds of the Village Working Groups	15,763	Table F-8 1)	362,549												189				173								
3.3 Training on Financial Management	24,343	Table F-8 2)	559,889													292				268							
3.4 Assistance in the preparation of business plans on potential income generating activities	24,343	Table F-8 2)	559,889														292				268						
4. Inter district/province Cross Field Visit	38,764	Table F-9	155,056												39			39			39			39			

Table F-3: Estimated Annual Cost of the Livelihood Development Support Component by Province

Project components	Unit	Project cost (mill. VND)			3rd (2019/2020)		4th (2020/2021)		5th (2021/2022)		6th (2022/2023)		7th (2023/2024)		8th (2024/2025)	
		Total	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC	LC	FC
Total Annual Cost		**44093**	**44093**													
1. Marketing Survey	mil.VND	912	912		912											
2. Selection of Priority Livelihood Improvement Options	mil.VND	2044	2044		0		1054		990		0		0		0	
3. Development of model site and technical training at the model sites	mil.VND	35376	35376		0		351		18241		16784		0		0	
4. Assistance in mangement and use of payments made to the village working groups	mil.VND	5137	5137		269		522		742		2094		1510		0	
5. Inter district/province Cross Field Visit	mil.VND	624	624		0		0		156		156		156		156	
Dien Bien		**5478**	**5478**													
1. Selection of Priority Livelihood Improvement Options	mil.VND	256	256		0		128		128		0		0		0	
2. Development of model site and technical training at the model sites	mil.VND	4424	4424		0		94		2212		2118		0		0	
3. Assistance in mangement and use of payments made to the village working groups	mil.VND	642	642		32		64		95		257		194		0	
4. Inter district/province Cross Field Visit	mil.VND	156	156		0		0		39		39		39		39	
Lai Chau		**14784**	**14784**													
1. Selection of Priority Livelihood Improvement Options	mil.VND	702	702		0		351		351		0		0		0	
2. Development of model site and technical training at the model sites	mil.VND	12160	12160		0		257		6080		5823		0		0	
3. Assistance in mangement and use of payments made to the village working groups	mil.VND	1766	1766		95		174		252		709		536		0	
4. Inter district/province Cross Field Visit	mil.VND	156	156		0		0		39		39		39		39	
Son La		**7471**	**7471**													
1. Selection of Priority Livelihood Improvement Options	mil.VND	352	352		0		192		160		0		0		0	
2. Development of model site and technical training at the model sites	mil.VND	6080	6080		0		0		3317		2763		0		0	
3. Assistance in mangement and use of payments made to the village working groups	mil.VND	883	883		47		94		127		371		244		0	
4. Inter district/province Cross Field Visit	mil.VND	156	156		0		0		39		39		39		39	
Hoa Binh		**15448**	**15448**													
1. Selection of Priority Livelihood Improvement Options	mil.VND	734	734		0		383		351		0		0		0	
2. Development of model site and technical training at the model sites	mil.VND	12712	12712		0		0		6632		6080		0		0	
3. Assistance in mangement and use of payments made to the village working groups	mil.VND	1846	1846		95		190		268		757		536		0	
4. Inter district/province Cross Field Visit	mil.VND	156	156		0		0		39		39		39		39	

TableF-4 Cost Breakdown of Selection of Priority Livelihood Improvement Options

1.1 Basis for Estimation:

Cost Norm:	Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD 219/2009/TT-BTC: Spending norms for ODA projects 183/2010/TTLT-BTC-BNN:Guidance on rules for fund use for agricultural extension activities 139/2010/TT-BTC: Use of fund for training for the civil servants
Participants:	70 participants with PPMU/FMB/district officers/commune representative, village
Venue:	Target commune center
Type:	workshop
Duration:	1day

1.2 Cost Breakdown

Items	Unit cost (1) (VND)	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1x2x3) (VND)
1. Lecturer/Facilitator							***2,200,000***
1.1 Facilitator	1,000,000	/day (2 sessions)	1	/day	1	person	1,000,000
1.2 Assistant facilitator	600,000	/day (2 sessions)	1	/day	2	person	1,200,000
2. Material							***4,900,000***
2.1 Stationary, photocopy	50,000	/person	70	sets	1	set	3,500,000
2.2 Refreshments	20,000	/person/day	70	persons	1	day	1,400,000
3. Allowance for facilitator	60,000	/person/day	1	/day	3	person	***180,000***
4. Transportation for facilitator	1,800,000	/day	1	unit	1	day	***1,800,000***
5. Allowance & transportation of partic							***5,250,000***
5.1 Meal allowance	25,000	/person	1	day	70	persons	1,750,000
5.2 Transportation	2,500	/km	20	km	70	persons	3,500,000
6. Sub-total (1+2+3+4+5)							***14,330,000***
7. Management fee **(10%)**							***1,433,000***
Total (6+7)							**15,763,000**

TableF-5 Cost Breakdown of Survey of the Potential Model Sites

1.1 Basis for Estimation:

Cost Norm: Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD
219/2009/TT-BTC: Spending norms for ODA projects
183/2010/TTLT-BTC-BNN:Guidance on rules for fund use for agricultural extension activities
139/2010/TT-BTC: Use of fund for training for the civil servants

Participants: 90 participants (30 participants from each potential model site x 3 sites)
Venue: Potential model site (3 sites per commune)
Type: Site visit and survey
Duration: 3 days (1 day/site, 3 days per commune)

1.2 Cost Breakdown

Items	Unit cost (1) (VND)	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1x2x3) (VND)
1. Lecturer/Facilitator							***4,800,000***
1.1 Facilitator	1,000,000	/day (2 sessions)	3	day	1	person	3,000,000
1.2 Assistant facilitator	600,000	/day (2 sessions)	3	day	1	person	1,800,000
2. Material							***6,420,000***
2.1 Stationary, photocopy	50,000	/person	30	persons	3	sets	4,500,000
2.2 Refreshments	20,000	/person/day	32	persons	3	day	1,920,000
3. Allowance for facilitator	60,000	/person/day	2	persons	3	day	***360,000***
4. Transportation for facilitator	2,500	/km	120	km	3	day	***900,000***
5. Allowance & transportation of participants							***2,250,000***
5.1 Meal allowance	25,000	/person	30	persons	3	day	2,250,000
6. Sub-total (1+2+3+4+5)							***14,730,000***
7. Management fee **(10%)**							***1,473,000***
Total (6+7)							**16,203,000**

TableF-6 Working Group Set Up and Action Plan Preparation

1.1 Basis for Estimation:

Cost Norm:	Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD 219/2009/TT-BTC: Spending norms for ODA projects 183/2010/TTLT-BTC-BNN:Guidance on rules for fund use for agricultural extension activities 139/2010/TT-BTC: Use of fund for training for the civil servants
Participants:	90 participants (30 participants from each potential model site x 3 sites)
Venue:	Potential model site (3 sites per commune)
Type:	Site visit and survey
Duration:	3 days (1 day/site, 3 days per commune)

1.2 Cost Breakdown

Items	Unit cost (1) (VND)	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1x2x3) (VND)
1. Lecturer/Facilitator							***6,600,000***
1.1 Facilitator	1,000,000	/day (2 sessions)	3	day	1	person	3,000,000
1.2 Assistant facilitator	600,000	/day (2 sessions)	3	day	2	person	3,600,000
2. Material							***6,480,000***
2.1 Stationary, photocopy	50,000	/person	30	persons	3	sets	4,500,000
2.2 Refreshments	20,000	/person/day	33	persons	3	day	1,980,000
3. Allowance for facilitator	60,000	/person/day	3	persons	3	day	***540,000***
4. Transportation for facilitator	1,800,000	/day	1	Unit	3	day	***5,400,000***
5. Allowance & transportation of participants							***2,250,000***
5.1 Meal allowance	25,000	/person	30	persons	3	day	2,250,000
6. Sub-total (1+2+3+4+5)							***21,270,000***
7. Management fee **(10%)**							***2,127,000***
Total (6+7)							**23,397,000**

Table F-7(1) Cost Breakdown of Demonstration Models for Livelihood Development

7-1. Training on Medicinal Plant Plantation Model (Market Oriented Production & Marketing)

1) Basic Assumption

Cost Norm: Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD
219/2009/TT-BTC: Spending norms for ODA projects
183/2010/TTLT-BTC-BNN:Guidance on rules for fund use for agricultural extension activities
139/2010/TT-BTC: Use of fund for training for the civil servants
Decision No.4227/QĐ-BNN-KHCN dated 31 Dec, 2007 by the Minister of MARD
Session II, Decision No. 2096/QĐ-BNN-TC dated 30 August, 2012 by the Minister of MARD

Operation period: 36months
Location: Target commune/village
Size of the model: 5 ha/model site
Number of participants: 30 farmers/model site
Tree variety: Incentive Ba Kích (Morinda officinalis How) cultivation under forest model

Number of participants for the training
1st year
- Training 30 participants/time x 2 times, 2 days/time
- Study tour 30 persons/time x 1day･time
2nd year 30 participants/time x 1 times, 2 days/time
3rd year 30 participants/time x 1 times, 2 days/time

2) Cost Breakdown

Items	Unit cost VND (1)	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1,000 VND) (1x2x3)
1. Seedling, equipments and materials							***41,000,000***
1.1 Seedling							***11,000,000***
- New plantation	2,000	/tree	1,000	trees/ha	5	ha	10,000,000
- Replacement (10%)	2,000	/tree	100	trees	5	ha	1,000,000
1.2 NPK fertilizer							***30,000,000***
- First year	10,000	/kg	200	kg	5	ha	10,000,000
- Second year	10,000	/kg	200	kg	5	ha	10,000,000
- Third year	10,000	/kg	200	kg	5	ha	10,000,000
2.First year							***27,970,000***
2.1 Technical training							***11,900,000***
- Trainer	1,000,000	/day (2 sessions)	2	day	1	person	2,000,000
- Assistant trainer	600,000	/day (2 sessions)	2	day	1	person	1,200,000
- Allowance for the trainers	60,000	/day	2	days	2	person	240,000
- Transportation of trainers	1,800,000	/day	1	Unit	2	days	3,600,000
- Accommodation (for 1st session)	250,000	/day	1	night	2	person	500,000
- Tea break	20,000	Unit	2	time	34	persons	1,360,000
- Meal allowance for participants	25,000	Unit	2	time	30	persons	1,500,000
- Stationeries for participants (incl. copies)	50,000	set	1	time	30	persons	1,500,000
2.2 Study tour			1	time			***10,740,000***
- Participant allowance	100,000	/day (2 sessions)	1	time	30	person	3,000,000
- Car rent (mini-bus)	6,000,000	/day	1	day	1	Car	6,000,000
- Tour guide fee	300,000	/session	2	Session	1	person	600,000
- Tour guide allowance	200,000	/day	1	day	1	person	200,000
- Tea break	20,000	/person	1	time	32	person	640,000
- Others	300,000	/person	1	day	1	person	300,000
2.3 Review workshop							***5,330,000***
- Assistant trainer	600,000	/day (2 sessions)	1	day	1	person	600,000
- Allowance for the trainer	60,000	/day	1	days	1	person	60,000

Table F-7(1) Cost Breakdown of Demonstration Models for Livelihood Development

7-1. Training on Medicinal Plant Plantation Model (Market Oriented Production & Marketing)

1) Basic Assumption

Cost Norm: Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD
219/2009/TT-BTC: Spending norms for ODA projects
183/2010/TTLT-BTC-BNN:Guidance on rules for fund use for agricultural extension activities
139/2010/TT-BTC: Use of fund for training for the civil servants
Decision No.4227/QĐ-BNN-KHCN dated 31 Dec, 2007 by the Minister of MARD
Session II, Decision No. 2096/QĐ-BNN-TC dated 30 August, 2012 by the Minister of MARD

Operation period: 36months
Location: Target commune/village
Size of the model: 5 ha/model site
Number of participants: 30 farmers/model site
Tree variety: Incentive Ba Kích (Morinda officinalis How) cultivation under forest model

Number of participants for the training
1st year
- Training 30 participants/time x 2 times, 2 days/time
- Study tour 30 persons/time x 1day･time
2nd year 30 participants/time x 1 times, 2 days/time
3rd year 30 participants/time x 1 times, 2 days/time

2) Cost Breakdown

Items	Unit cost VND (1)	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1,000 VND) (1x2x3)
- Transportation of trainers	1,800,000	/day	1	Unit	1	day	1,800,000
- Tea break	20,000	Unit	1	time	31	persons	620,000
- Meal allowance for participants	25,000	Unit	1	time	30	persons	750,000
- Stationeries for participants (incl. copies)	50,000	set	1	time	30	persons	1,500,000
3. Second year monitoring							***11,500,000***
- Trainer	800,000	/day (2 sessions)	2	day	1	person	1,600,000
- Assistant trainer	600,000	/day (2 sessions)	2	day	1	person	1,200,000
- Allowance for the trainers	60,000	/day	2	days	2	person	240,000
- Transportation of trainers	1,800,000	/day	1	Unit	2	days	3,600,000
- Accommodation (for 1st session)	250,000	/day	1	night	2	person	500,000
- Tea break	20,000	Unit	2	time	34	persons	1,360,000
- Meal allowance for participants	25,000	Unit	2	time	30	persons	1,500,000
- Stationeries for participants (incl. copies)	50,000	set	1	time	30	persons	1,500,000
4. Third year monitoring/wrap up							***9,700,000***
- Trainer	800,000	/day (2 sessions)	2	day	1	person	1,600,000
- Assistant trainer	600,000	/day (2 sessions)	2	day	1	person	1,200,000
- Allowance for the trainers	60,000	/day	2	days	2	person	240,000
- Transportation of trainers	1,800,000	/day	1	Unit	1	day	1,800,000
- Accommodation (for 1st session)	250,000	/day	1	night	2	person	500,000
- Tea break	20,000	Unit	2	time	34	persons	1,360,000
- Meal allowance for participants	25,000	Unit	2	time	30	persons	1,500,000
- Stationeries for participants (incl. copies)	50,000	set	1	time	30	persons	1,500,000
5. Subtotal (1+2+3+4)							***90,170,000***
6. Overhead free (10%)							***9,017,000***
Total cost for one model (5+6)							**99,187,000**

TableF-7(2) Cost Breakdown of Demonstration Models for Livelihood Development

7-2. Training on Post Harvest Model (Introduction of Drying Yard for Crop)

1) Basic Assumption

Cost Norm: Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD
219/2009/TT-BTC: Spending norms for ODA projects
183/2010/TTLT-BTC-BNN:Guidance on rules for fund use for agricultural extension activities
139/2010/TT-BTC: Use of fund for training for the civil servants
Session II, Decision No. 2096/QĐ-BNN-TC dated 30 August, 2012 by the Minister of MARD
Decision No.4227/QĐ-BNN-KHCN dated 31 Dec, 2007 by the Minister of MARD

Location: Target commune/village
Size of the demo plot: 60 m2/site (4 x 15m)
Number of participants: 30 farmers/model site
Number of participants for the training
Training on Marketing 30 participants/time x 2 times, 1 day/time
Project-end summation: 30 participants/time x 1 time
Study tour 30 persons/time x 1day･time

2) Cost Breakdown

Items	Unit cost VND (1)	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1,000 VND) (1x2x3)
1. Materials for demo plot (drying yard)							***4,000,000***
1.1 Concrete and sand							2,000,000
1.3 Transportation of materials	2,000,000	day	1	day	1	time	2,000,000
2. Training 2 times (Introduction & Wrap up)							***12,820,000***
2.1 Trainer	1,000,000	/day (2 sessions)	2	day	1	person	2,000,000
2.2 Assistant	600,000	/day (2 sessions)	2	day	1	person	1,200,000
2.3 Allowance for the trainer and assista	60,000	/day	2	days	2	person	240,000
2.4 Transportation of trainers	1,800,000	/day	1	Unit	2	day	3,600,000
2.5 Tea break	20,000	Unit	2	time	32	persons	1,280,000
2.6 Meal allowance for participants	25,000	Unit	2	time	30	persons	1,500,000
2.7 Stationeries for participants (incl. co	50,000	set	2	time	30	persons	3,000,000
3. Study Tour							***10,740,000***
3.1 Participant allowance	100,000	/time	1	time	30	person	3,000,000
3.2 Car rent (mini-bus)	6,000,000	/day	1	day	1	Car	6,000,000
3.3 Tour guide fee	300,000	/session	2	Session	1	person	600,000
3.4 Tour guide allowance	200,000	/day	1	day	1	person	200,000
3.5 Tea break	20,000	/person	1	time	32	person	640,000
3.6 Others	300,000	/person	1	day	1	person	300,000
4. Training 2 & 3 (Value adding production, Field work)							***13,660,000***
4.1 Trainer	800,000	/day (2 sessions)	2	day	1	person	1,600,000
4.2 Assistant	600,000	/day (2 sessions)	2	day	2	person	2,400,000
4.3 Allowance for the trainer and assista	60,000	/day	2	days	3	person	360,000
4.4 Transportation of trainers	1,800,000	/day	1	Unit	2	day	3,600,000
4.5 Tea break	20,000	Unit	2	time	30	persons	1,200,000
4.6 Meal allowance for participants	25,000	Unit	2	time	30	persons	1,500,000
4.7 Stationeries for participants (incl. co	50,000	set	2	time	30	persons	3,000,000
5. Subtotal (1+2+3+4)							***41,220,000***
6. Overhead free (10%)							***4,122,000***
Total cost for one model (5+6)							**45,342,000**

Table F-7(3) Cost Breakdown of Demonstration Models for Livelihood Development

7-3. Training on Honey Bee Keeping Model

1) Basic Assumption

Cost Norm: Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD
219/2009/TT-BTC: Spending norms for ODA projects
183/2010/TTLT-BTC-BNN:Guidance on rules for fund use for agricultural extension activities
139/2010/TT-BTC: Use of fund for training for the civil servants
Session II, Decision No. 2096/QĐ-BNN-TC dated 30 August, 2012 by the Minister of MARD
Decision No.4227/QĐ-BNN-KHCN dated 31 Dec, 2007 by the Minister of MARD

Operation period: 12 months
Location: Target commune/village
Size of the model: 120 hives
Number of participants: 40 families (3 hives/family)
Cost/technical norm: Annex 8: Decision No.54/QĐ/BNN-KHCN dated 9 January, 2014 by Minister of MARD

2) Requirements

Breeding quality: Native bee
Requirement for bee-keeping: having at least 3 sphere barrels, queen-bee: up to 6 month age, free, food enough for 3 weeks
Scale/household: Maximum 20 hives
Number of participants, time and field trip
Number: 40 participants x 3 times x 1 day/time
Field trip for diffusion: 40 persons x 1 time x 1 day/time

3) Cost Breakdown

Items	Unit cost (1) VND	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1x2x3)
1. Breeding, equipments and materials							***172,800,000***
1.1 Breeding	1,400,000	/hive	1	plot	120	hives	168,000,000
1.2 Sugar (feed)	16,000	/kg	1	plot	300	kg	4,800,000
2. Training 1 (incl. demo plot preparation, raising technique)							***12,160,000***
2.1 Trainer (from HN)	1,000,000	/day (2 sessions)	1	day	1	person	1,000,000
2.2 Assistant trainer	600,000	/day (2 sessions)	1	day	1	person	600,000
2.3 Lecture note preparation	100,000	/pages·session	10	pages	1	sets	1,000,000
2.4 Allowance for the trainer	60,000	/day	1	days	2	person	120,000
2.5 Transportation fee of trainer (N	2,800,000	/time	1	times	1	times	2,800,000
2.6 Transportation in fields	1,800,000	/day	1	Unit	1	day	1,800,000
2.7 Accommodation	250,000	/day	2	days	2	person	1,000,000
2.8 Stationeries for participants (incl. copies)	50,000	/set	1	set/time	40	sets	2,000,000
2.9 Refreshments	20,000	/person/day	1	time	42	persons	840,000
2.10 Meal allowance	25,000	/person/day	1	time	40	persons	1,000,000
3. Training 2 (Study tour to the good practice)							***11,400,000***
3.1 Assistant trainer	600,000	/day (2 sessions)	1	day	1	person	600,000
3.1 Participant allowance	100,000	/time	1	time	40	person	4,000,000
3.2 Car rent	6,000,000	/day	1	day	1	Car	6,000,000
3.3 Tour guide fee	300,000	/session	1	Session	1	person	300,000

Table F-7(3) Cost Breakdown of Demonstration Models for Livelihood Development

7-3. Training on Honey Bee Keeping Model

1) Basic Assumption

Cost Norm:	Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD 219/2009/TT-BTC: Spending norms for ODA projects 183/2010/TTLT-BTC-BNN:Guidance on rules for fund use for agricultural extension activities 139/2010/TT-BTC: Use of fund for training for the civil servants Session II, Decision No. 2096/QĐ-BNN-TC dated 30 August, 2012 by the Minister of MARD Decision No.4227/QĐ-BNN-KHCN dated 31 Dec, 2007 by the Minister of MARD
Operation period:	12 months
Location:	Target commune/village
Size of the model:	120 hives
Number of participants:	40 families (3 hives/family)
Cost/technical norm	Annex 8: Decision No.54/QĐ/BNN-KHCN dated 9 January, 2014 by Minister of MARD

2) Requirements

Breeding quality:	Native bee
Requirement for bee-keeping:	having at least 3 sphere barrels, queen-bee: up to 6 month age, free, food enough for 3 weeks
Scale/household:	Maximum 20 hives
Number of participants, time and field trip	
Number	40 participants x 3 times x 1 day/time
Field trip for diffusion	40 persons x 1 time x 1 day/time

3) Cost Breakdown

Items	Unit cost (1) VND	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1x2x3)
3.4 Tour guide allowance	200,000	/day	1	day	1	person	200,000
3.5 Others (appreciation to the host	300,000	/person	1	day	1	person	300,000
4. Training 3 (harvest of honey)							***3,960,000***
4.1 Trainer (provincial)	800,000	/day (2 sessions)	1	day	1	person	800,000
4.2 Assistant trainer	600,000	/day (2 sessions)	1	day	1	person	600,000
4.3 Allowance for the trainers	60,000	/day	1	days	2	person	120,000
4.4 Transportation in fields	2,500	/km	120	km	2	persons	600,000
4.5 Refreshments	20,000	/person/day	1	time	42	persons	840,000
4.6 Meal allowance	25,000	/person/day	1	time	40	persons	1,000,000
5. Wrap up session (with quality control lecture)							***9,880,000***
5.1 Trainer (from HN)	1,000,000	/day (2 sessions)	1	day	1	person	1,000,000
5.2 Assistant trainer	600,000	/day (2 sessions)	1	day	2	person	1,200,000
5.3 Allowance for the trainers	60,000	/day	4	days	3	person	720,000
5.4 Transportation fee of trainer(NH)	2,800,000	/time	1	times	1	times	2,800,000
5.5 Transportation in fields	1,800,000	/day	1	Unit	1	day	1,800,000
5.6 Accommodation	250,000	/day	2	days	1	person	500,000
5.7 Refreshments	20,000	/person/day	1	time	43	persons	860,000
5.8 Meal allowance	25,000	/person/day	1	time	40	persons	1,000,000
6. 2nd year follow up training							***3,960,000***
6.1 Trainer (provincial)	800,000	/day (2 sessions)	1	day	1	person	800,000

Table F-7(3) Cost Breakdown of Demonstration Models for Livelihood Development

7-3. Training on Honey Bee Keeping Model

1) Basic Assumption

Cost Norm:	Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD 219/2009/TT-BTC: Spending norms for ODA projects 183/2010/TTLT-BTC-BNN:Guidance on rules for fund use for agricultural extension activities 139/2010/TT-BTC: Use of fund for training for the civil servants Session II, Decision No. 2096/QĐ-BNN-TC dated 30 August, 2012 by the Minister of MARD Decision No.4227/QĐ-BNN-KHCN dated 31 Dec, 2007 by the Minister of MARD
Operation period:	12 months
Location:	Target commune/village
Size of the model:	120 hives
Number of participants:	40 families (3 hives/family)
Cost/technical norm	Annex 8: Decision No.54/QĐ/BNN-KHCN dated 9 January, 2014 by Minister of MARD

2) Requirements

Breeding quality:	Native bee
Requirement for bee-keeping:	having at least 3 sphere barrels, queen-bee: up to 6 month age, free, food enough for 3 weeks
Scale/household:	Maximum 20 hives
Number of participants, time and field trip	
Number	40 participants x 3 times x 1 day/time
Field trip for diffusion	40 persons x 1 time x 1 day/time

3) Cost Breakdown

Items	Unit cost (1) VND	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1x2x3)
6.2 Assistant trainer	600,000	/day (2 sessions)	1	day	1	person	600,000
6.3 Allowance for the trainers	60,000	/day	1	days	2	person	120,000
6.4 Transportation in fields	2,500	/km	120	km	2	persons	600,000
6.5 Refreshments	20,000	/person/day	1	time	42	persons	840,000
6.6 Meal allowance	25,000	/person/day	1	time	40	persons	1,000,000
7. Subtotal (1+2+3+4+5+6)							***214,160,000***
8. Overhead fee (10%)							***21,416,000***
Total cost for one model (=7+8)							**235,576,000**

4) Projected production

Honey productivity:	≥ 12kg/hive/year
Honey quality:	None antibiotic residues in honey bee
Queen-bee and hive multiplying potential:	≥ 2 times/original hive/year

Training for bee-keeping techniques and hive management

TableF-7(4) Cost Breakdown of Demonstration Models for Livelihood Development

7-4. Training on Fodder Grass Planting Model

1.1 Basic Assumption

Cost Norm: Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD
219/2009/TT-BTC: Spending norms for ODA projects
183/2010/TTLT-BTC-BNN:Guidance on rules for fund use for agricultural extension activities
139/2010/TT-BTC: Use of fund for training for the civil servants
Session II, Decision No. 2096/QĐ-BNN-TC dated 30 August, 2012 by the Minister of MARD
Decision No.4227/QĐ-BNN-KHCN dated 31 Dec, 2007 by the Minister of MARD

Operation period: 5 months
Location: Target village
Size of the model: 5 ha
Number of demonstration pl 1plot per target commune * maximum 1ha/HH
Number of participants: 30 farmers/plot

1.2 Requirements

Vegetable quality: VA06
Scale/household:
Number of participants, time and field trip
Number 30 participants x 1 time x 1 day/time
Field trip 30 persons x 2 times x 1 day/time
Project-end summa 30 persons x time x 1 day/time

1.3. Cost Breakdown

Items	Unit cost VND (1)	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1,000 VND) (1x2x3)
1. Seedling, equipments and materia							***224,100,000***
1.1 Seedling	5500	/kg	7,500	kg	5	ha	206,250,000
1.2 Ure	9500	/kg	60	kg	5	ha	2,850,000
1.3 Super photpho	5000	/kg	120	kg	5	ha	3,000,000
1.4 Kali Clorua	10000	/kg	90	kg	5	ha	4,500,000
1.5 Oganic fertilizer	500	/kg	3,000	kg	5	ha	7,500,000
2. Demo Demo plot implementation							***12,420,000***
2.1 Trainer	800,000	/day (2 sessions)	2	day	1	person	1,600,000
2.2 Assistant	600,000	/day (2 sessions)	2	day	1	person	1,200,000
2.3 Allowance for the trainer and ass	60,000	/day	2	days	2	person	240,000
2.4 Transporataion of trainers	1,800,000	/day	1	Unit	2	day	3,600,000
2.5 Tea break	20,000	Unit	2	time	32	persons	1,280,000
2.6 Meal allowance for participants	25,000	Unit	2	time	30	persons	1,500,000
2.7 Stationaries for participants (incl. copies)	50,000	set	2	time	30	persons	3,000,000
3. Study tour			1	time			***10,740,000***
- Participant allowance	100,000	/day (2 sessions)	1	time	30	person	3,000,000
- Car rent	6,000,000	/day	1	day	1	Car	6,000,000
- Tour guide fee	300,000	/session	2	Sesion	1	person	600,000
- Tour guide allowance	200,000	/day	1	day	1	person	200,000
- Tea break	20,000	/person	1	time	32	person	640,000
- Others	300,000	/person	1	day	1	person	300,000
4. Wrap up seminar							***12,820,000***
4.1 Trainer	1,000,000	/day (2 sessions)	2	day	1	person	2,000,000
4.2 Assistant	600,000	/day (2 sessions)	2	day	1	person	1,200,000
4.3 Allowance for the trainer and ass	60,000	/day	2	days	2	person	240,000
4.4 Transporataion of trainers	1,800,000	/day	1	Unit	2	day	3,600,000
4.5 Tea break	20,000	Unit	2	time	32	persons	1,280,000
4.6 Meal allowance for participants	25,000	Unit	2	time	30	persons	1,500,000
4.7 Stationaries for participants (incl. copies)	50,000	set	2	time	30	persons	3,000,000
5. Subtotal (1+2+3+4)							***260,080,000***
6. Overhead free (10%)							***26,008,000***
Total cost for one model (5+6)							**286,088,000**

TableF-7 (5) Cost Breakdown of Demonstration Models for Livelihood Development

Table F-7(5) Average of the Major Models

Total estimated costs for:

Item	Total (VND)
Medicinal plant (Ba kich) model	99,187,000
Post harvest (drying yard) training	84,942,000
Bee keeping model	235,576,000
Fodder grass model	286,088,000
Average	176,448,250

TableF-8(1) Cost Breakdown of WSs for Financial Management and Use of Payments(1)

1.1 Basis for Estimation:

Cost Norm:	Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD 139/2010/TT-BTC: Use of fund for training for the civil servants
Participants:	70 participants with PPMU/FMB/district officers/commune representative, village representatives (particularly accountant)
Venue:	Target commune center
Type:	workshop
Duration:	1day/session
Purpose:	Session1: Guidance on the mode of payments from PFMBs/SUFMBs to the village working group Session2: Workshops/discussions on the Use of Saving funds of the Village Working Groups

1.2 Cost Breakdown

Items	Unit cost (1) (VND)	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1x2x3) (VND)
1. Lecturer/Trainer							***2,200,000***
1.1 PFMB staff/Main trainer	1,000,000	/day (2 sessions)	1	day	1	person	1,000,000
1.2 Assistant	600,000	/day (2 sessions)	1	day	2	person	1,200,000
2. Material							***4,900,000***
2.1 Stationary, photocopy	50,000	/person	70	persons	1	set	3,500,000
2.2 Refreshments	20,000	/person/day	70	persons	1	day	1,400,000
3. Allowance for trainers	60,000	/person/day	3	persons	1	day	***180,000***
4. Transportation for trainers	1,800,000	/day	1	Unit	1	day	***1,800,000***
5. Allowance & transportation of particip							***5,250,000***
5.1 Meal allowance	25,000	/person	70	persons	1	day	1,750,000
5.2 Transportation	2,500	/km	20	km	70	persons	3,500,000
6. Sub-total (1+2+3+4+5)							***14,330,000***
7. Management fee **(10%)**							***1,433,000***
Total (6+7)							**15,763,000**

TableF-8(2) Cost Breakdown of WSs for Financial Management and Use of Payments (2)

1.1 Basis for Estimation:

Cost Norm:	Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD 139/2010/TT-BTC: Use of fund for training for the civil servants
Participants:	70 participants with PPMU/FMB/district officers/commune representative, village representatives (particularly accountant)
Venue:	Target commune center
Type:	workshop
Duration:	1day/session
Purpose:	Session3: Training on Financial Management Session4: Assistance in the preparation of business plans on potential income generating activities

1.2 Cost Breakdown

Items	Unit cost (1) (VND)	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1x2x3) (VND)
1. Lecturer/Facilitator							***2,200,000***
1.1 Trainer (from HN)	1,000,000	/day (2 sessions)	1	day	1	person	1,000,000
1.2 Assistant trainer	600,000	/day (2 sessions)	1	day	2	person	1,200,000
2. Material							***4,900,000***
2.1 Stationary, photocopy	50,000	/person	70	persons	1	set	3,500,000
2.2 Refreshments	20,000	/person/day	70	persons	1	day	1,400,000
3. Allowance for facilitator	60,000	/person/day	3	persons	1	day	***180,000***
4. Accommodation for facilitator	250,000	/person/day	1	persons	2	day	***500,000***
5. Transportation for facilitator							***4,600,000***
5.1 Transportation of facilitator (from H	2,800,000	/time	1	times	1	day	2,800,000
5.2 Transportation in field	1,800,000	/day	1	unit	1	day	1,800,000
6. Allowance & transportation of particip							***5,250,000***
6.1 Meal allowance	25,000	/person	70	persons	1	day	1,750,000
6.2 Transportation	2,500	/km	20	km	70	persons	3,500,000
7. Sub-total (1+2+3+4+5+6)							***17,630,000***
8. Management fee **(10%)**							***1,763,000***
Total (7+8)							**19,393,000**

Table F-9 Cost Breakdown of Inter-District/Province Cross Visit

1.1 Basic Assumption

Cost Norm: AnnexB Decision No.918/QĐ-BNN-TC dated 5 May, 2014 by the Minister of MARD

139/2010/TT-BTC: Use of fund for training for the civil servants
Decission No.4227/QĐ-BNN-KHCN dated 31 Dec, 2007 by the Minister of MARD
Secsion II, Decision No. 2096/QĐ-BNN-TC dated 30 August, 2012 by the Minister of MARD

Location: Good Practice site of the livelihood development activities under the Project area
Participants: 30 livelihod improvement working group members
Type: Inter-provincial /inter project sites
Duration: 1 night 2 days, (1 time/site x 16 sites in total)

3.2. Cost Breakdown

Items	Unit cost VND (1)	Unit1	Q'ty (2)	Unit2	Q'ty (3)	Unit3	Total cost (1,000 VND) (1x2x3)
1. Facilitator							***3,140,000***
1.1 Assistant facilitator	600,000	/day (2 sessions)	2	days	2	person	2,400,000
1.2 Allowance for the trainer and assista	60,000	/day	2	days	2	person	240,000
1.3 Accomodation	250,000	/day	1	night	2	person	500,000
2. Transportation (16 sheets/bus)	4,500,000	/day	2	cars	2	days	***18,000,000***
3. Direct cost							***14,100,000***
- Stationary	50,000	/set	1	set	30	person	1,500,000
- Participant allowance	100,000	/day	2	days	30	person	6,000,000
- Participant accomodation	200,000	/night	1	night	30	person	6,000,000
- Tour guide fee	300,000	/time	1	time	2	person	600,000
4. Subtotal (1+2+3)							***35,240,000***
5. Overhead free (10%)							***3,524,000***
Total cost for one model (1-5)							**38,764,000**

Table F-10 Cost breakdown of marketing survey

#	Activity	Unit	Amount	Unit cost (1000 VND)	Total amount (1000 VND)	Note
1	**Preparation (design survey and questionnaires, contact province, logistic…)**				**40,500**	
	Team leader	Man month	0.5	31,000	15,500	Level 4, Issue 8, Circular 219/2009/TT-BTC
	Team members (2 person)	Man month	1	25,000	25,000	Level 3, Issue 8, Circular 219/2009/TT-BTC
2	**Field trip (data collection at province and district levels, interview stakeholders in value chains…)**				**609,980**	
2.1	***Salary***				***318,000***	
	Team leader	Man month	3	31,000	93,000	Level 4, Issue 8, Circular 219/2009/TT-BTC
	Team members (3 person)	Man month	9	25,000	225,000	Level 3, Issue 8, Circular 219/2009/TT-BTC
2.2	***DSA (daily allowance assistance)***				***99,200***	
+	Team leader				24,800	
-	Accomodation (1 person x 62 days)	Man day	62	250	15,500	Circular No. 97/2010/TT-BTC dated 6 July, 2010 by the Minister of MOF
-	Daily allowance	Man day	62	150	9,300	Circular No. 192/2011/TT-BTC dated 26 December, 2011 by the Minister of MOF
+	Team members				74,400	
-	Accomodation (3 person x 62 days)	Man day	186	250	46,500	Circular No. 97/2010/TT-BTC dated 6 July, 2010 by the Minister of MOF
-	Daily allowance (3 person x 62 days)	Man day	186	150	27,900	Circular No. 192/2011/TT-BTC dated 26 December, 2011 by the Minister of MOF
2.3	***Travelling cost (4WD car)***				***140,500***	
+	Dien Bien	day	12	2,000	24,000	
+	Lai Chau	day	12	2,000	24,000	
+	Hoa Binh	day	13	2,000	26,000	
+	Son La	day	13	2,000	26,000	
+	Hanoi	day	11	1,500	16,500	
+	Other provinces	day	12	2,000	24,000	
2.4	***Honorarium for local officials (province (3 persons x 4 province) and district (3 persons x 14 districts)***	***person***	***64***	***100***	***6,400***	Annex, Circular No.58/2011/TT-BTC dated 11 May, 2016 by the Minister of MOF
2.5	***Honorarium for value chain stakeholders***	***person***	***280***	***100***	***28,000***	Annex, Circular No.58/2011/TT-BTC dated 11 May, 2016 by the Minister of MOF
2.6	***Honorarium for local guides***	***person***	***62***	***200***	***12,400***	
2.7	***Photocopy of questionnaires***				***1,480***	
+	Questionnaires for local officials	copies	16	5	80	
+	Questionnaires for value chain stakeholders	copies	280	5	1,400	
2.8	***Satakeholder group discusion***				***16,400***	
+	Provincial level (4 workshops x 8 persons)	person	24	100	2,400	
+	District level (14 workshops x 10 persons)	person	140	100	14,000	
3	**Data analysis and report**				**117,400**	
3.1	***Data input (1 person)***	***Man month***	***1.0***	***5,400***	***5,400***	Level 1, Issue 8, Circular 219/2009/TT-BTC
3.2	***Data analysis***				***81,000***	
+	Team leader	Man month	1	31,000	31,000	Level 4, Issue 8, Circular 219/2009/TT-BTC
+	Team members (2 person)	Man month	2	25,000	50,000	Level 3, Issue 8, Circular 219/2009/TT-BTC
3.3	***Writing report (team leader)***	Man month	1	31,000	31,000	Level 4, Issue 8, Circular 219/2009/TT-BTC
4	**Sub total (1+2+3)**	**1.000 VND**			**767,880**	
5	**Management cost (8%)**	**1.000 VND**			**61,430**	
6	**Sub total (4+5)**	**1.000 VND**			**829,310**	
7	**VAT (10%)**	**1.000 VND**			**82,931**	
	Total budget (6+7)	**1.000 VND**			**912,241**	

Name of price quotation agency: **Rural Development Center (RUDEC), Institute of Policy and Strategy for Agriculture and Rural Development (IPSARD)**

41465.52

Address: No 16 Thuy Khue Street, Hanoi, Vietnam

Person in charge & position: Mr. Dang Duc Chien- Manager

Mobile: 0983124382

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Director of RUDEC

Dao Duc Huan

Appendix

Appendix F-1

Draft Terms of Reference for Market Research in the Target Provinces

1. Background

The sustainable Forest Development Project in the Northwest Sub-region is a project newly proposed by MARD with an aim to i) restore and improve watershed forests for both environment and economic purposes, ii) strengthen the capacity of local governments as well as forest owners of watershed forests for sustainable forest management, and iii) contribute to the reduction of GHG emission through reduction of deforestation and forest degradation. The project will be implemented mainly in protection forests and special use forests selected in four provinces in the Northwest sub-region, namely, Dien Bien, Lai Chau, Son La, and Hoa Binh.

The main components of the project will be: i) forest inventory and detailed planning, ii) information dissemination and extension, iii) improvement of watershed forests, v) development of silviculture infrastructure, vi) development of small scale rural infrastructure, vii) support for livelihood development and viii) monitoring and extension.

The market research is one of the activities to find out the potential agriculture and forest products from marketing point of view, and bring suggestions for defining livelihood improvement activities as well as designing forest development in each target province.

2. Objective of the Work

The main objectives of the market research are; i) to find out the current condition of marketing of agriculture and forest product in general in the target provinces, ii) to identify the major potential products from marketing point of view, iii) to understand their current market status and potentials, and iv) to make suggestions for promoting potential products and/or business models to be included in the project activities, which contribute to increase the income of local communities, and to the end, to help increasing motivation of local communities to protect and develop forest in sustainable manner.
Specifically, the market research aims:

- ◆ To understand the current condition of production and marketing of agriculture (including cash crop and processed product) and forest product (timber and non-timber forest product) in the target provinces, such as trend of agri/forest business in general, supply and demand balance data, concerning government policy, and so forth.
- ◆ To identify the major potential products from marketing point of view in each province,
- ◆ To conduct value chain analysis to identify the competitive advantages and market opportunities of the selected potential products (main value chain actors from raw material supply to inside/outside province market, major processing/trading companies/market, assessing the strengths and weakness of the different actors and process, etc.), specifying the feature of each province; and
- ◆ To make suggestions for promoting potential products and/or business models to be included in the project activities.

3. Scope of the Work

3.1 Major Activities

Major activities to be carried out in the market research are listed below.

- ◆ To collect and analyze the government policy/strategy/decision, relating to agriculture and forest product processing/marketing at nationwide in general and in target provinces, from secondary data;
- ◆ To interview to the relevant stakeholders at district and province levels to learn the trend of forest product marketing, available market, trade companies, processing companies (list of market/companies, processing/dealing/trading volume by product, market needs, and trend of supply & demand), identify the major products;
- ◆ To interview to the relevant stakeholders of the potential products in Hanoi and the other areas, having business link with the target provinces, to understand the trend of agriculture and forest product marketing;
- ◆ To conduct value chain analysis on the major potential products with all corrected data and information, and identify the competitive advantages & marketing potentials of the target area, and constrains ;
- ◆ To make suggestions for promoting potential products and/or business models to be included in the project activities, taking into consider the overall strategy inter-linking the potentials inside/outside of the target provinces.

3.2 Target Areas

The market research will be carried out basically at each target province; Dien Bien, Lai Chau, Son La and Hoa Binh provinces. As there are 14 districts (3 in Dien Bien, 3 in Lai Chau, 4 in Son La, and 4 in Hoa Binh) covering the target forest sites, in case if the detail information is not available at provincial level, and/or relevant stakeholder such as important processing companies locate at target districts and/or surrounding districts, the interviews must be conducted at district levels as well. In addition, the survey at Hanoi and the other areas with business link with the target provinces shall be conducted for grasping the general overview the same.

Province	Proposed Areas	Target District
Dien Bien	Dien Bien Protection Forest Muong Phang Nature Reserve	Dien Bien district
	Muong Cha Protection Forest	Muong Cha district
	Tuan Giao Protection Forest	Tuan Giao district
Lai Chau	Nam Na Protection Forest Nam Ma Protection Forest	Sin Ho district
	Tan Uyen Protection Forest	Tan Uyen district
	Than Uyen Protection Forest	Than Uyen district
Son La	Copia Nature Reserve Thuan Chau Protection Forest	Thuan Chau district
	Quynh Nhai Protection Forest	Quynh Nhai district
	Xuan Nha Nature Reserve	Van Ho district, Moc Chau district
Hoa Binh	Da River Protection Forest	Da Bac district, Mai Chau district, Tan Lac district, Cao Phong district
	Ngoc Son – Ngo Luong Nature Reserve	Tan Lac district
	Hang Kia – Pa Co Nature Reserve	Mai Chau district
	Phu Canh Nature Reserve	Da Bac district

4. Methodologies of the Work

4.1 Process of the Work

The following activities will be carried out;

- ◆ Collection of secondary data on production and trade (supply/demand) of agriculture (cash crop and proceeded product) and forest product (timber and NTFP) in general, as well as the government policy regarding agri/forest business;
- ◆ Interview to the relevant stakeholders at district and province levels to learn the trend of major agriculture and forest product marketing in general, identify the potential products, major producers, major market, market price, trade flow, etc.;
- ◆ Interview to the relevant stakeholders in Hanoi and other provinces having agri/forest business link with the target provinces, to understand the current trend of forest product marketing;
- ◆ Identify the 3 major potential products (agriculture, wood and NTFP) in each province, to deepen the analysis;
- ◆ Conduct value chain analysis on the identified potential products, with all corrected data and information, and identify the competitive advantages and market opportunities of the target area, and constrains(main value chain actors from raw material supply to inside/outside province market, assessing the strengths and weakness of the different actors, specifying the feature of each province etc.) ;
- ◆ To make suggestions for promoting the potential products and/or business models to be included in the project activities, taking into consider the overall strategy inter-linking the potentials inside/outside of the target provinces.

4.2 Procedure for the Survey

The procedures for the survey are outlined below.

(1) Data collection at province and district level

The following data are expected to be collected from secondary data and interview to the relevant stakeholders at provincial and district levels such as DARD, Department of Industry and Trade, major agriculture product and wood/NTFP processing/trading companies, raw material suppliers, etc, at target province and district levels.

Theme	Major items
Policy	✧ Government policies/ decisions,/circular/SEDS etc. supporting agriculture product and wood & NTFP production / processing/ trading
Production and Trading data	✧ Major product and production data (agriculture product, wood and NTFP) in each province ✧ Trading volume of major product (provincial data and district data) in each province
Major market information	✧ Stakeholders of major agriculture product, wood and NTFP business (raw material suppliers, middle-person/traders, main market /companies information in Northwest sub-region and potential neighboring areas such as Hanoi and red-river delta area, etc., potential companies with interests of contract farming) ✧ Value chain of the major agri/forest/NTFP business in the target provinces ✧ Accessibility to market from target site ✧ Market price of major agriculture product, wood and NTFP products (farm price to sales price at each value chain) ✧ Trend of recent years

Theme	Major items
	✧ Potentials and issues
Others	✧ Experience in the past and on-going program/project relating to the promoting major agriculture, wood, and NTFP marketing, lessons learned (including government program, international program, credit program, etc.)

(2) Data collection at Hanoi and other concerning provinces

The following data are expected to be collected from secondary data and interview to the relevant stakeholders such as Ministry of Trade and Industry, MARD, and major agriculture product, wood & NTFP processing and/or trading companies at Hanoi and/or in the near-by provinces, having business link with the target provinces, in order to understand the current situation regarding forest product marketing.

Theme	Major items
Policy	✧ Government policies/ decisions,/circular/SEDS etc. supporting wood and NTFP production / processing/ trading
Production and Trading data (major agriculture product, wood, NTFP)	✧ Major product and production data (major product, major production area and site, production volume, etc.) ✧ Trading volume of major product (nationwide data, provincial data and district data)
General market information	✧ Major stakeholders of agriculture and wood and NTFP business (raw material suppliers, traders, main market /companies information in Northwest sub-region and potential neighboring areas such as Hanoi and red-river delta area, etc.) ✧ Market price of major agriculture product, wood and NTFP products (farm price to sales price at each value chain) ✧ Recent trend, Potentials and issues

(3) Value chain analysis

With analyzing the all the data and information collected in the course of the surveys described above, value chain of the selected potential agriculture product, wood and NTFP should be analyzed to identify competitive advantages, issues, and the potential points to examine appropriate and realistic marketing strategy.

(4) Suggestions for promoting major potential products

With referring to the value chain analysis result and other collected data and information, develop a survey report, consisted of the followings;

- Current condition of agriculture and forest product production and marketing in each province
- Value chain analysis result for each major product (overview, main actors, economic analysis, constrains, socio economic, and environmental concerns, etc.)
- Suggestions for value chain upgrading solutions of the potential product in each product
- Suggestion on promoting potential products and their marketing activities (including contract farming potential, by target site, etc.) under the project, with inter-connecting the provincial potentials.

5. Expected outputs and deliverables

- ◆ Survey report with the survey result, mentioned above
- ◆ Major market/processing and/or trading company data sheets
- ◆ Electric data of the all the outputs listed above

6. Timeline

The market research shall be carried out within 10 months after signing of the contract for the Work.

Annex G

Annex G Draft Terms of References (TORs) and Cost Estimates for Project Management

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Annex G: TORs and Cost Estimates for Project Management

G.1 Overall Picture of the Component

G.1.1 Objectives of the Component

The main objectives of the component are to estalibsh the institutional framework for implementation of the project, to enhance the capacity of relevant project stakeholders, to monitor the progress and performance of the project to keep it on the right truck, and to manage and operate the project activities as planned at both the central and provincial level.

G.1.2 Activities / Sub-components of the Component

The component is comprised of the following seven sub-components: i) Preparatory work ii) Information dissemination to relevant stakeholders iii) Production and publication of project documents iv) Study tour, v) Technical guidance of the stakeholders, vi) Review meetings, vii) Monitoring and evaluation of the project performance, viii) Forest monitoring, and ix) Project management and administration. The sub-components are further composed of the following activities.

Activities of the Component

Major Activities	Detailed Activities	Necessity of Investment Cost
1.Preparatory work	1.1 Establishment of the Project Management Boards	None (MBFPs' tasks)
	1.2 Development of Guidelines and Regulations for Implementation of the Project	None (MBFPs' tasks with project consultant)
	1.3 Development of a GIS-based Monitoring System	Ditto
	1.4 Reassessment of the Target Protection Forests and Special Use Forests	Ditto
	1.5 Procurement of Project Equipment	Necessary
	1.6 Development of Draft Terms of References for the Contractural Works	None (MBFPs' tasks with project consultant)
2. Information Dissemination to relevant stakeholders	2.1.1 Project Orientation to CPMBs/MARD	Necessary
	2.1.2 Project Orientation to PPMBs/DARDs	Ditto
	2.1.3 Project Orientation to DPCs/PFMBs/SUFMBs	Ditto
	2.1.4 Project Orientation to CPCs and Village Working Groups	Ditto
	2.2.1 Annual Planning Workshop at the Central Level (with CPMB)	Ditto
	2.2.2 Annual Planning Workshop at the Provincial Level (with PPMBs)	Ditto
	2.3.1 Orientation and Guidance on Annual Work Plan and Guidelines to Forest Owners (PFMBs/SUFMBs)	Ditto
	2.3.2 Orientation and Guidance on Annual Work Plan and Guidelines to DPCs, CPCs, and Village Working Groups	Ditto
	2.4.1 Orientation and Guidance on Benefit Sharing Mechanism to CPMBs/MARD	Ditto
	2.4.2 Orientation and Guidance on Benefit Sharing Mechanism to PPMBs/DARDs	Ditto
	2.4.3 Orientation and Guidance on Benefit Sharing Mechanism to DPCs/PFMBs/SUFMBs	Ditto
	2.4.4 Orientation and Guidance on Benefit Sharing Mechanism to CPCs and Village Working Groups	Ditto
	2.5.1 Orientation on JICA Environmental and Social Guidelines and ESMF Procedures	Ditto
	2.5.2 General Co-management and Participatory Forestry and REDD+ Training	Ditto
3. Production and Publication of Project Documents	3.1 Project Brief (Leaflets)	Ditto
	3.2 Project Newsletter	Ditto
	3.3 Awareness Raising Materials	Ditto
4. Study Tours	4.1 Study Tours to JICA 2 Sites for PPMBs and Forest Owners (PFMBs/SUFMBs)	Ditto
	4.2 Study Tours to SNRMP Sites for Forest Owners (PFMBs/SUFMBs) and	Ditto

Major Activities	Detailed Activities	Necessity of Investment Cost
	Village Working Groups	
	4.3 Overseas Study Tours for CPMB/MBFPs and PPMBs/DARDs	Ditto
5. Technical Guidance for the Stakeholders	5.1 Guidance on PLUP (including the use of GPS)	Necessary in case that the implementation is contracted out.
	5.2 Guidance on the use of GIS	Ditto
6. Review Meetings	6.1 Bi-annual Review Meetings at the Central Level	None (CPMB/PPMBs' regular tasks with project consultant)
	6.2 Bi-annula Review Meetings at the Provincial Level	Ditto
7. Monitoring and evaluation of the project performance	7.1 Regular Monitoring and Supervision	None (CPMB/PPMBs' regular tasks with project consultant)
	7.2 Initial Assessment, Monitoring, and Evaluation	None (MBFPs' tasks with project consultant)
	7.3 Mid-term Assessment, Monitoring, and Evaluation	Necessary
	7.4 Terminal Assessment, Monitoring, and Evaluation	Ditto
	7.5 Irregular Assessment (if necessary)	Ditto
8. Forest Monitoring	8.1 Annual Forest Monitoring	None (FROs/PFMBs/ SUFMBs' regular tasks)
	8.2 Validation of the Project Activities	None (CPMB/PPMBs' regular tasks with project consultant)
9. Project management and administration	9.1 Salary of staff of CPMB and PPMBs	Ditto
	9.2 Operation Expenses of CPMB and PPMBs	Ditto

Source: JICA Preparatory Survey Team (2016)

G.1.3 Outlines of the Activities

G.1.3.1 Preparatory Work

(1) Establishment of the Project Management Boards including Allocation or Employment of Project Staff

After the loan agreement is effective, MARD, as the governing body of the proposed project, will decide the organization structure of the project including the steering committees at the central and provincial levels and issue the decision on the establishment of the structure. In response to the decision, MBFPs and PPCs concerned will issue the decision on the formation of the Central Project Management Board (CPMB) and Provincial Project Management Boards (PPMBs) at the central and provincial levels, respectively.

The proposed compositions of the steering committees and project management boards at the respective levels are shown below. The members of the steering committees and the staff project management boards will be further deliberated and finalized in the beginning of the project.

Staff/Member Composition of Steering Committees and CPMB/PPMB

Organizations	Composition of the organization
Central Steering Committee (CSC)	- Chairperson: Vice Minister of MARD - Vice Chairperson: Head of ICD - Secretariat: MBFPs - Members: MBFPs, VNFOREST (Dept. of Forest Development, Dept. of Forest Protection, Dept. of Nature Conservation, Dept. of Science, Technologies & International Cooperation), MPI, MOF, and PPCs concerned
Central Project Management Board (CPMB)	- 1 Director - 1 Deputy Director - 1 Planning officer - 3 Accountants - 3 Technical staffs - 1 Administration staff - 2 Drivers
Provincial Steering Committee (PSC)	- Chairperson: Vice Chairman of PPC - Secretariat: DARD - Members: PPMB, DARD, DONRE, DPI, DOIT, DOST, DPCs, Provincial State Treasury, etc.
Provincial Project Management Board (PPMB)	- 1 Director - 1 Deputy Director - 1 Planning officer - 5 Accountants - 2 Technical staffs - 1 Administration staff - 1 Driver

Note: MPI: Ministry of Planning and Investment, MOF: Ministry of Finance, DPI: Department of Planning and Investment, DOIT: Department of Industry and Trade, DOST: Department of Science and Technologies, and DPCs: District People's Committees
Source: JICA Preparatory Survey Team(2016)

MBFPs and PPCs/DARDs will secure the staff of CPMB and PPMBs by either allocation of MBFPs and DARDs officers or new recruitment on a contractual basis. Job descriptions and terms of references (TOR) of the respective positions of CPMB and PPMBs, which specify qualifications, scope of responsibilities, and authorities given to the positions, will be developed before allocation of the staff, so that MBFPs and DARDs concerned could select applicants based on their qualifications and expertise as compared to those required for the vacant positions in compliance with the national laws/regulations as well as the agreement between GoV and JICA.

(2) Development of Guidelines and Regulations for Implementation of the Project

A set of project implementation guidelines/regulations will be prepared by CPMB in the beginning of the project. The implementation guidelines/regulations will stipulate principles, rules and regulations on project management, and procedures for implementation of the project in accordance with existing government regulations at the central and provincial levels. They cover a wide range of aspects on project management, such as administrative and financial management, accounting, project management, and monitoring and evaluation. The topics to be covered by the guidelines/regulations include, but not limited to, the following:

a. Project management
b. Monitoring and evaluation
c. Billing and fund management
d. Identification of the project areas and formation of community organization
e. Survey and detailed planning
f. Information dissemination and extension
g. Capacity development
h. Forest development and improvement

i. Silviculture infrastructure development
j. Small scale infrastructure development
k. Support for livelihood development
l. Forest fire control
m. Benefit sharing, collaborative management, and forest management planning

Having drafted the implementation guidelines/regulations, CPMB will submit and present the draft guidelines/regulations to the central and provincial steering committees for their reviews. The guidelines/regulations will be issued and notified by MARD as a ministerial circular after ratification of the central steering committee.

(3) Development of a Monitoring System

In addition to the implementation guidelines/regulations, a GIS-based monitoring system will be developed with monitoring forms and data collection and management systems at the central and provincial levels.

The GIS-based monitoring system will enable CPMB and PPMBs to manage monitoring data in a cost-effective manner and also to make necessary decisions for project operations in a timely manner.

Photo-like maps covering the project areas which will be developed in the project activity of "PLUP and formation of village working groups" will be used as base maps of the GIS-based monitoring system. Spatial data together with photos taken through the field activities, such as "demarcation of boundaries of the project areas," "field validation of forest development activities," and "forest monitoring," will be incorporated into the GIS-based system so that the progress of the project and status of the project areas could be easily confirmed and monitored.

The monitoring system should be synchronized with the activities of SNRMP, as the same project plans to introduce the Provincial Forest Management System (PFMS) with the provision of skill training in the target provinces and districts in the course of the said project. In particular, forest monitoring data collected by forest rangers in the target protection forest and nature serves can also be shared with the PFMS database at the provincial level. Eventually, the monitoring system of the project should be incorporated into or integrated to a PFMS database which will be the basis for measurement and reporting of provincial REDD+ activities.

The project consultant will assist CPMB in the development of the GIS-based monitoring system and provide necessary guidance and orientation to CPMB as well as PPMBs on the use and management of the GIS-based monitoring system in the second year (2018/2019) of the project.

(4) Reassessment of the Target Protection Forests and Special Use Forests

Although a total of 64 communes in 10 protection forests and six special use forests are selected as the project areas in the four provinces, PPMBs need to re-examine the necessity of the project in the selected project areas by interviewing the relevant stakeholders such as PFMBs and SUFMBs and DFROs concerned.

(5) Procurement of Project Equipment

In the first year (2017/2018) of the project, CPMB and PPMBs will purchase the following project equipment necessary for operations and management of the project at the respective levels.

Lists of Project Equipment to be procured at the Central and Provincial Levels

Project Equipment	CPMB	PPMBs
Desktop PC + software	6 units	4 units/PPMB
Laptop PC + software	2 units	1 unit/PPMB
Printer (A4/A3)	1 unit	1 unit/PPMB
Inkjet Printer (A4/A3)	1 unit	1 unit/PPMB
GIS software (MapInfo)	-	1 unit/PPMB
Photocopy Machine	1 unit	1 unit/PPMB
UPS (1000VA)	6 units	4 units/PPMB
A0 plotter	-	1 unit/PPMB
Digital handycam	1 unit	1 unit/PPMB
GPS	-	5 units/PPMB
Digital camera	2 units	2 units/PPMB
Binoculars	-	2 units/PPMB
Projector	1 unit	1 unit/PPMB

Source: JICA Preparatory Survey Team (2016)

(6) Development of Draft Terms of References for the Contractual Works

CPMB with technical assistance of the project consultant will prepare the templates of terms of references (TORs) for the activities which will be contracted out to external contractors (central or provincial public or private competent institutions/organizations), such as PLUP and formation of village working groups, socio-economic baseline survey, and marketing survey, so that CPMB or PPMBs could smoothly proceed to the procurement of contractors for the respective works.

G.1.3.2 Information Dissemination to Relevant Stakeholders

Information dissemination aims to enhance stakeholders' awareness of the project, especially the concepts, principles, regulations/guidelines, and work plans of the project, in the beginning of the project, so that key stakeholders, namely CPMB/MBFPs, PPMBs/DARDs, DPCs, CPCs, PFMBs/SUFMBs, and local communities, could have the same understanding of the project in the beginning of the project. Furthermore, specific focus should be put on the dissemination of the idea of benefit sharing and collaborative management between PFMBs / SUFMBs and local communities for sustainable protection and management of plantations and natural forests in the project areas in the post project period. To this end, the following workshops and meetings will be organized and held in the course of the project implementation.

(1) Orientation of the project for CPMB/MBFPs, PPMBs/DARDs, PFMBs/SUFMBs, DPCs, CPCs, and village working groups

Since the implementation and management of a yen-loan project will be new to the majority of the stakeholders involved in the proposed project, project orientation workshops will be organized and held to introduce the objectives, concepts, principles and major activities of the projects with regulations/guidelines on project implementation for the relevant stakeholders at the different levels, namely CPMB/MBFPs, relevant departments of MARD, PPMBs/DARDs, relevant provincial departments, PFMBs/SUFMBs, DPCs and CPCs concerned, and village

working groups formed. A one-day workshop will be held by MBFPs, CBMB, and PPMBs with assistance from the project consultant in the second year (2018/2019) of the project. The following table shows the outlines of the orientation workshops planned at the respective levels.

Project Orientation Workshops at the Respective Levels

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Project orientation workshops	CPMB, MBFPs, and the relevant departments of MARD (30 participants)	Outline of the project (objectives, concepts, principles, project components and activities, implementation schedule, and organizational structure) Regulations / guidelines / manuals for implementation of the project	Hanoi	1 day x 1 time	2nd year (2018/2019)	By administration (project consultant)
	PPMBs, DARD, and and the relevant departments of PPCs (30 participants)		Provincial capital	1 day x 1 time/ province		By administration (CPMB with project consultant)
	PFMBs/SUFMBs, DPCs (30 participants)		District center	1 day x 1 time/ district		By administration (PPMBs)
	CPCs, and Village working groups (60 participants)		Commune center	1 day x 1 time/ commune		By administration (PPMBs with PFMBs/SUFMBs)

Source: JICA Preparatory Survey Team (2016)

(2) Planning with CPMB and PPMBs

In order to help the project staff of CPMB and PPMBs get a clear picture of the project activities and work schedule of the project, another one-day workshop for discussions on the work plan of the project will be held at the respective levels. In the workshop, the participants from CPMB are expected to develop an overall work plan and an annual work and budget plan of the entire project, while those from PPMBs will develop the same of the project components at the provincial level. The outline of the workshops are summarized below.

Planning Workshops at the Central and Provincial Levels

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Planning workshops	CPMB (30 participants)	Discussion on an overall work plan of the project considering major activities, necessary input and arrangements, work schedule, etc. Discussion on an annual work and budget plan based on the overall work plan	Hanoi	1 day x 1 time	2nd year (2018/2019)	By administration (project consultant)
	PPMBs (30 participants)		Provincial capital	1 day x 1 time/ province		By administration (CPMB with project consultant)

Source: JICA Preparatory Survey Team (2016)

(3) Orientation and guidance on work plans to PFMBs/SUFMBs, DPCs, CPCs, and village working groups

The work plans developed by PPMBs should be further introduced to and discussed with field implementers and stakeholders at the district and commune levels to enable them to deepen their understandings of the project activities and their responsibilities. A one-day workshop will be organized and held each at the provincial and district levels to this end.

Orientation on Work Plans at the Provincial and District Levels

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Orientation and	PFMBs/SUFMBs (30	Introduction of the work plan of the components	Provincial capital	1 day/time×1 time/province	2nd year (2018/2	By administration (PPMBs)

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
guidance on project plans	participants/time)	related to the participants, such as improvement of watershed forest, support for livelihood development, and small scale rural infrastructure development			019)	
	DPCs and CPCs concerned, village working groups (60 participants/time)		District capital	1 day/time×1 time/district		By administration (PPMBs)

Source: JICA Preparatory Survey Team (2016)

(4) Orientation and guidance on benefit sharing mechanism and collaborative management system to CPMB/MBFPs, PPMBs/DARDs, PFMBs/SUFMBs, DPCs, CPCs, and village working groups

The benefit sharing mechanism is the crucial scheme for sustainable management of plantations and natural forests in the target protection forests and special use forests especially after the end of the project. CPMB with technical assistance from the project consultant will first review the existing case studies and trials on benefit sharing and collaborative management in protection forests and special use forests in the county, and draft the regulations/guidelines on the benefit sharing mechanism through field trial by the seventh year (2023/2024) of the project.

To further discuss the draft mechanism, orientation and consultation workshops on the benefit sharing mechanism will also be held at all levels to exchange opinions and ideas on the same topics with a wide range of stakeholders. The following table shows the outline of the orientation and consultation workshops on the benefit sharing mechanism.

Project Orientation Workshops at the Respective Levels

Title	Participants/time	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Orientation and consultation workshop on the benefit sharing mechanism	CPMB, MBFPs, and relevant departments of MARD (30 participants)	Objectives and concepts of the benefit sharing mechanism and collaborative management system, Rules on the benefit sharing, Rights and obligations of parties involved in benefit sharing / collaborative management, etc.	Hanoi	1 day x 1 time	7th year (2023/2024)	By administration (project consultant)
	PPMBs, DARDs, and relevant department of PPCs (30 participants)		Provincial capital	1 day x 1 time/ province		By administration (CPMB with project consultant)
	PFMBs/SUFMBs, and DPCs (60 participants)		District center	1 day x 1 time/ district		By administration (PPMBs)
	CPCs and village working groups (60 participants)		Commune center	1 day x 1 time/ commune		By administration (PPMBs with PFMBs/SUFMBs)

Source: JICA Preparatory Survey Team (2016)

(5) Orientation and guidance on the Environmental Safeguard and Management Framework (ESMF) Implementation and Monitoring for CPMB/MARD, PPMBs/DARD, PFMBs, and SUFMBs

In order to properly manage and monitor the environmental and social safeguard issues and their associated procedures, it is crucial to enhance the capacity of various agencies and stakeholders in the initial stage of the project. To this end, the following orientation and

guidance sessions should be arranged and provided to the relevant project officers, such as CPMB/MARD, PPMBs/DARDs, PFMBs, and SUFMBs concerned.

Orientation on ESMF Implementation and Monitoring for CPMB, PPMBs, and PFMBs/SUFMBs

Course	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Safeguard Implementation and Compliance	CPMB/MARD, PPMBs/DARDs, PFMBs & SUFMBs (15 participants)	■ Legal framework on environmental and social safeguards of Vietnam and JICA ■ UNFCCC REDD+ Safeguards ■ Environmental and social considerations and potential impacts ■ ESMF procedures	Provincial capital	3 days per time per province (once a year in the first 3 years)	from the 1st to 3rd year	By administration (CPMB with project consultant)
Co-management and Participatory Forestry and REDD+	PFMBs & SUFMBs (15 participants)	■ Community-based Natural Resource Management/ Participatory Forestry ■ REDD+ (including REDD+ Safeguards) ■ Sustainable livelihood and PRA skills ■ Free, Prior and Informed Consultation / Consent (FPIC) ■ Participatory Land / Resource Use Mapping ■ Land/Resource Conflict Management ■ Co-management ■ Gender issues	Provincial capital	2 days per time per province (once a year in the first 3 years)	from the 1st to 3rd year	By administration (CPMB with project consultant)

Source: JICA Preparatory Survey Team (2016)

The orientation sessions described above will be arranged and held in the first three years (from 2018/2019 to 2020/2021) by CPMB with technical assistance from the project consultant. Detailed concepts of the orientation sessions are further described in the Environmental and Social Management Framework (ESMF) shown in Annex I attached to Volume II of the Final Report.

G.1.3.3 Production and Publication of Project Documents

The main aims of production and publication of project documents are to enhance the public awareness of the project and to help relevant stakeholders understand the procedures and/or skills necessary for implementation of the project activities. Hence, different types of publication are to be developed to get messages across to a wide range of people. CPMB and PPMBs will develop the following materials with technical assistance from the project consultant and/or the contractors that have experiences in production of materials similar to the project documents planned.

Project Documents to be developed and produced

Materials	Type of materials	Responsible organization	Possible assisting organization	Targets	Timing
Project Brief (overall)	Print (leaflet)	CPMB	Project consultant	MARD, PPCs, Public	2nd year (2018/2019)
Project Brief (sub-project)	Print (leaflet)	PPMBs	Project consultant, contractors (PAEC)	DARD, DONRE, DOST, PFMBs, SUFMBs, DPCs, CPCs	Ditto
Annual newsletters (overall)	Print (leaflet)	CPMB	Project consultant	MARD, PPCs, Public	From 2nd year (2018/2019) to

Materials	Type of materials	Responsible organization	Possible assisting organization	Targets	Timing
					8th year (2024/2025)
Annual newsletters (sub-project)	Print (leaflet)	PPMBs	Project consultant, contractors (PAEC)	DARD, DONRE, DOST, DPCs, CPCs	Ditto
Awareness raising materials	Poster, Booklets, DVD/VCD	PPMBs	Project consultant, contractors (PAEC)	Local communities, households, youths	4th year (2020/2021)

Source: JICA Preparatory Survey Team (2016)

The materials targeting local communities should be developed with pictures, drawings, photos, and images so that they are visually understandable to general public, especially those who have less literacy. The project consultant will review and finalize the materials drafted by CPMB and PPMBs to ensure the effectiveness of the materials.

G.1.3.4 Study Tours

The study tours will be organized for the project staff of CPMB and PPMBs as well as key officers of MBFPs, VNFOREST, DARDs, and PPCs. The following study tours will be arranged for the different targets in the course of the project implementation.

Study Tours arranged and organized for CPMB, PPMBs, MBFPs, VNFOREST, DARDs, and PPCs

Study Tours	Targets	Responsible organization	Possible assisting organization	Objectives	Frequency and Timing
Study tours to target provinces of the JICA 2 project	PPMBs, DARDs, PFMBs, SUFMBs (20 participants/time)	CPMB	Project consultant	To have a clear image of the project To learn project management practices and useful lessons in project management	1 time in 2nd year (2018/2019) and 5th year (2021/2022)
Study tours to the pilot sites of SNRMP	PFMBs, SUFMBs, CPCs, and village working groups(20 participants/time)	PPMBs	Project consultant	To have an image of some of the project activities, especially those relating to livelihood development	1 time in 3rd year (2019/2020) and 4th year (2020/2012)
Overseas study tours	CPMB, MBFPs, VNFOREST, DARDs, PPCs(15 participants/time)	CPMB	Project consultant	To learn community participation in forest management, development and management of forest users' groups, and income generating activities	1 time in 4th year (2020/2021) and 6th year (2022/2023)

Source: JICA Preparatory Survey Team (2016)

As the majority of the project staff and key officers of DARDs and PPCs of the target provinces are not familiar with the concept of community-based forest management and collaborative forest and natural resource management, it is particularly important to give them opportunities to directly observe the existing cases of community-based forest management and learn experiences and lessons through exchanging opinions with communities who have participated in forest management in the field, so that they could have an idea on collaborative forest management applicable to the project areas.

G.1.3.5 Technical Guidance for the Stakeholders

In order to ensure the quality of the work, the following technical guidance will be given to PPMBs, PFMBs/SUFMBs, and/or other contractors.

- Guidance on PLUP (including the use of GPS)
- Guidance on the use of GIS

For each topic, a two-day workshop will be organized and held in the respective provinces. The following table shows the outline of the respective sessions.

Guidance on PLUP and Use of GIS

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Guidance on PLUP and GPS	PPMBs, PFMBs / SUFMBs, and contractors (30 persons/time)	Outline of PLUP, Procedures for PLUP, Expected outputs of PLUP, and Use of GPS	Provincial capital	2 days x 1 time/ province	2nd / 3rd years (2018/2019 & 2019/2020)	By administration or Contract out
Guidance on use of GIS	PFMBs / SUFMBs (20 participants / time)	Management of data of the perimeter survey using GIS	Provincial capital	2 days x 1 time/ province	3rd year (2019/2020)	By administration or Contract-out

Source: JICA Preparatory Survey Team (2016)

In addition to the formal guidance, PFMBs and SUFMBs will be given regular coaching and technical assistance on silviculture techniques by the project consultant so that PFMBs/SUFMBs could further provide technical assistance and guidance to the village working groups for establishment of quality plantations in a proper manner.

G.1.3.6 Review meetings

The project review meetings will be convened every six months at both the central and provincial levels. CPMB and the relevant departments of VNFOREST/MARD will be the main participants in the meeting at the central level, while PPMB, DARD, and PFMBs/SUFMBs and DPCs will periodically review the component projects at the provincial level. In the meeting, the participants will review, confirm and discuss the activities and accomplishments made in the last six months, any issues and concerns observed in the course of the project, lessons learned, and activities planned in the next six months. Such periodic reviews would help CPMB/MBFPs and PPMBs/DARDs monitor the progress of the project in a timely manner, and also give good opportunities for CPMB and PPMBs to solve any difficulties in the project operations. The outline of the review meetings are summarized below.

Review Meetings at the Central and Provincial Levels

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Review meeting at the central and provincial levels	CPMB, MBFPs, and the relevant departments of MARD (30 participants)	Review, confirmation, and discussions of the progress of the project (activities and accomplishments made), issues and concerns, lessons learned, and activities planned in the following six months	Hanoi	1 day/time×2 times/year from the end of 1st year to the middle of 10th year	1st year (2017/2018) to 10th year (2026/2027)	By administration (CPMB)
	PPMB, DARD, PFMBs/SUFMBs , DPCs (30 participants)		Provincial capital	ditto		By administration (PPMBs)

Source: JICA Preparatory Survey Team (2016)

G.1.3.7 Monitoring and Evaluation of the Project Performance

The main objectives of M&E are: i) to systematically manage the project implementation and project resources in an effective and efficient manner, ii) to assess the project impact adequately, and iii) to ensure the sustainability of the project effects. As the results of monitoring are relevant to project management, it should be basically carried out by the project implementer as a part of the project management activities in the course of the project. On the other hand, the evaluation should be carried out on a periodic or ad on basis by the third party as it is mainly aimed at the assessment of the project impact and sustainability.

In accordance with the latest government decree on management and use of ODA (Decision No. 16/2016/ND-CP dated March 16, 2016), the following M&E activities shall be carried out.

i) Regular monitoring and supervision
ii) Initial assessment, monitoring, and evaluation
iii) Mid-term assessment, monitoring, and evaluation
iv) Terminal assessment monitoring, and evaluation
v) Irregular assessment (if necessary)

More details of the respective activities are described in the following sub-sections.

(1) Regular monitoring and supervision

PPMBs of the target provinces will monitor and supervise the progress and performance of the component projects periodically and prepare the following monitoring reports for submissions to PPCs concerned and CPMB at the central level.

- Monthly progress report
- Quarterly progress report
- Yearly progress report
- Project completion report

The information and data covered by the monitoring reports will include, but not limited to, the following:

- Physical and financial accomplishments
- Progress of key monitoring indicators
- Progress and results of procurement
- Any negative environmental and social impacts caused by the project activities
- Any issues and concerns on project implementation
- Recommendations

Location data (GPS/GIS data) of physical accomplishments with photos taken in the field will be attached to the report so that the GIS-based monitoring system could be updated periodically.

(2) Initial evaluation

The initial evaluation is to be carried out immediately after the commencement of the project. The main aims of the initial evaluation are to review the actual situation of the target protection forests and special use forests as well as communes relevant to the areas, to assess

if the project design is still relevant, and to examine the consistency of the project concepts, approaches, and framework with the government policies and strategies. To this end, the following data and information will be collected and analyzed:

- Status of CPMB and PPMBs (current resources assigned and allocated to CPMB and PPMBs, and level of staff);
- Socio-economic situation of the target communes;
- Present land use / forest cover in the target protection forests and special use forests; and
- Any emerging issues, suggested solutions, and proposed changes.

The results of the initial evaluation will be used for updating/revising the overall implementation plan. The evaluation will be carried out by CPMB and PPMBs in the first year (2017/2018) of the project.

(3) Mid-term evaluation

The mid-term evaluation will be carried out in the middle of the project life, which is at the fifth year (2021/2022) of the project. The primary purpose of the mid-term evaluation is to verify if the project has been implemented on the right track to achieve its goals and objectives in an efficient and effective manner. In addition, the mid-term evaluation aims to determine any difficulties and issues in the implementation of the project and figure out possible solutions for improvement of the project design. The major activities to be carried out in the mid-term evaluation of the project are outlined below.

i) Confirmation and analysis of the progress of the project as compared to the plan
ii) Field validation of the accomplishments made under the component of improvement of watershed forests
iii) Evaluation of general social impact on the target communes
iv) Evaluation of economic impact on local households
v) Evaluation of the performance of the project
vi) Lessons learned though the project implementation
vii) Recommendations on project designs

Among the activities of the mid-term evaluation, draft specifications of the field works, namely field validation of the accomplishments, evaluation of general social impact on the target communes, and evaluation of economic impact on local households, are described in **Appendix G-1** attached to Volume II of the Final Report, and summarized below.

Draft Specifications of the Field Works of the Mid-term Evaluation

Work Items	Outline
Field validation	1. Targets of field validation of physical accomplishments (1) Afforestation: 2% of the planted areas will be targeted and the size of one sample plot is 400 m^2/plot. (2) ANR: 1% of the planted areas will be targeted and the size of one sample plot is 500 m^2/plot. 2. Survey times (1) Afforestation: i) year of planting, ii) number of trees planted and survival rate of trees planted in the selected plantations, iii) height of trees and diameter of tree trunk, iv) quality of planted trees, and v) growing stock of trees. (2) ANR: i) year of contract, ii) vegetation covers, iii) height of trees and diameter of tree trunk, and growing stock of trees.
Evaluation of general social impact	The following data and information will be collected from the target communes. - Number of the communes and households involved in the project - Number of the village working groups organized - Any changes in forest management practices/forest resource uses in the communes

Work Items	Outline
	- Number of beneficiaries involved in the livelihood development activities - Livelihood improvement activities introduced
Evaluation of economic impact on local households	A half of the beneficiary households involved in the project in two-fifth (40%) of the target communes will be sampled and the following data and information will be collected by an interview survey. - Cash income generated by the project - Income generating activities additionally introduced

Source: JICA Preparatory Survey Team (2016)

The mid-term evaluation including the field works mentioned above will be contracted out by CPMB to a contractor, either a public institution/university/private firm who is financially and technically capable to conduct the works.

(4) Terminal evaluation

The terminal evaluation will be carried out one year before the completion of the project. The purpose of the terminal evaluation are: i) to evaluate the design of the project, process of implementation, management performance, level of achievement of the project goals and objectives and efficiency in using the resources; ii) to evaluate the benefits of the project, possible impacts, and sustainability; and iii) to discuss the lessons learned and recommendations. Like in the case of the mid-term evaluation, the terminal evaluation will be outsourced to a contractor. Since the terminal evaluation will require in-depth surveys on physical accomplishments made by the project and socio-economic impacts made on households in the target communes in the four provinces, two types of surveys, namely i) forestry inventory survey and ii) socio-economic interview survey, will be carried out separately. The draft terms of references (TORs) of both surveys and socio-economic interview survey are presented in **Appendix G-2** attached to Volume II of the Final Report, and summarized below.

Draft Specifications of the Forest Inventory Survey

<table>
<tr><th>Work Items</th><th>Outline</th></tr>
<tr><td>Review of project design and framework</td><td>The following data and information will be collected and reviewed.
- Project designs and overall framework;
- Progress of the project activities that have been implemented in the four provinces as compared to the original plans;
- Implementation process of the project.</td></tr>
<tr><td>Analysis of satellite images</td><td>The latest land use and forest cover maps will be developed through the following steps:
- Purchase of the medium resolution satellite images covering the project areas;
- Analysis of the satellite images to clarify the present land use and forest cover the project areas;
- Development of latest land use and forest cover maps with GIS data on contour lines, roads, administrative boundaries, etc., by using GIS; and
- Revision and finalization of the latest land use and forest cover maps based on the results of ground truth surveys and forest inventory survey</td></tr>
<tr><td>Forest Inventory</td><td>The forest inventory will be carried out in accordance with the following guidelines.
<table>
<tr><th>Target</th><th colspan="2">Specifications of the survey</th></tr>
<tr><td>Areas for afforestation</td><td>Sampling rate:
Size of sampling plot:
Survey items:</td><td>0.5 % of the total areas developed as afforestation
400 m^2/plot (20mx20m)
Total area of the plantations developed, species planted, survival rate, density of seedlings planted, height and breast height diameter of trees planted, forest status, and estimated carbon stock.</td></tr>
<tr><td>Areas for ANR and protection</td><td>Sampling rate:
Size of sampling plot:
Survey items (ANR):

Survey items (protection):</td><td>5 plots each from the project areas in the target commune
500 m2/plot (25 mx20m)
Total area of areas rehabilitated, species planted, survival rate, density of seedlings planted, height and breast height diameter of trees planted, forest status, and estimated carbon stock increased
Total area of natural forests protected and forest status</td></tr>
</table></td></tr>
<tr><td>Evaluation of the efficiency of input and activities</td><td>The efficiency of the following project activities will be reviewed and assessed.
- Forest inventory, mapping, and detailed designing
- Forest development and improvement activities
- Silviculture infrastructure development</td></tr>
</table>

Work Items	Outline
	- Forest fire prevention
Sustainability of the project	The sustainability of the project will be assessed by analyzing the following points. - Technical and financial capacities of PFMBs and SUFMBs for management of forests within their jurisdiction - Technical and financial capacities of PFMBs and SUFMBs for operation and maintenance of silviculture infrastructure developed within their jurisdiction - Technical, financial, and organizational capacities of the village working groups that would make collaborative management agreements with PFMBs or SUFMBs for management and protection of the assigned forests in a proper manner.

Source: JICA Preparatory Survey Team (2016)

Draft Specifications of the Socio-Economic Baseline Survey

Work Items	Outline
Household interview survey	1. Target Sites: All the communes where the project areas are located 2. Sample size: 24 households each in the target communes (the same households that the baseline survey sampled.) 3. Survey items/topics: The following topics will be covered by the interview survey. - General background - Assets and facilities, and access to social services - Income and expenditures - Land tenure - Agricultural production - Forest use and management - Livestock and fisheries - Recommendations for sustainability of the project
Interview to commune and village leaders	1. Target Sites: All the communes where the project areas are located 2. Interviewees: Commune and village leaders of the target communes 3. Survey items/topics: The following topics will be covered by the interviews. - Demographic conditions (villages, population, households, and ethnicity) - Agricultural production (cropped areas, major crops, production, and number of livestock animas) - Forestry production (area of production forests, major forestry products (including non-timber forest products), and sources of non-timber forest products) - Fishery production and other sources of livelihoods - Access to rural finance or existence of village funds - Existing rural and social infrastructure (roads, irrigation systems, electricity, water supply systems, marketing, school, and health clinic, etc.) - Any ongoing projects on poverty alleviation ad commune development - Existing mass organizations - Existing activities and organizations for forest management - Development needs of the commune
Interview to women	1. Target Sites: All the communes where the project areas are located 2. Interviewees: Six women each in the target communes (the same women that the baseline survey sampled) 3. Survey items/topics: The following topics will be covered by the interviews. - Main roles played by women in forest use and management - Gender differences in access to and control over forest resources - Gender differences in decision making processes relating to forest management - Benefits that women have obtained from forest management and protection - Impacts caused by the project to women

Source: JICA Preparatory Survey Team (2016)

(5) Irregular evaluation

The irregular evaluation may be conducted if there are unpredictable difficulties, problems and impacts observed in the course of the project. It is aimed at analyzing the actual situations with emerging issues/difficulties and providing necessary solutions and recommendations for smooth project operations.

(6) Monitoring formats and information management

A simplified monitoring format shall be developed prior to the implementation of the component projects in the field. The formats should be easy to apply, but at the same time

should cover all the items to be monitored by PPMBs. For efficient management of the monitoring data and effective use of the data for decision making, the GIS-based monitoring system should be developed in the preparatory stage. All the data should be interlinked with geographical data so that the progress and results of the project could be visualized and data could be easily managed systematically.

G.1.3.8 Forest Monitoring

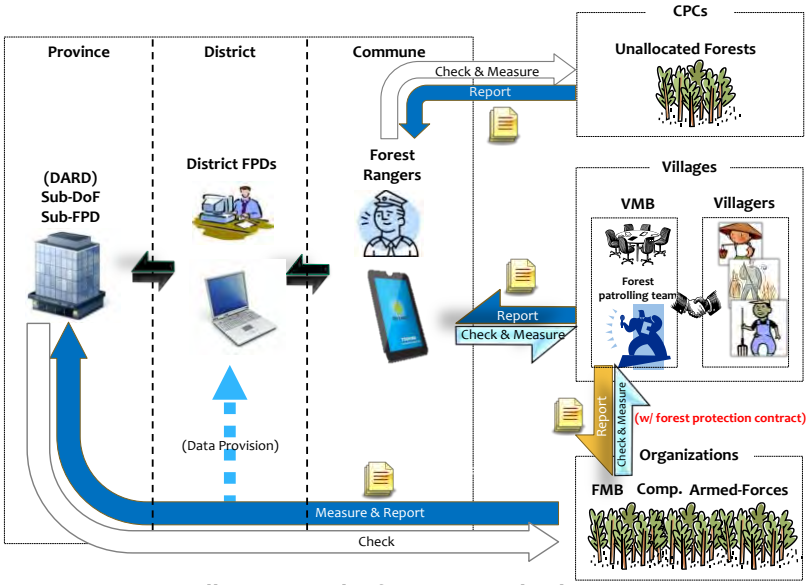
In the context of REDD+ all the forest activities listed below should be monitored.

a. Reduction of emissions from deforestation
b. Reduction of emissions from forest degradation
c. Carbon stock enhancement
d. Conservation of forests
e. Sustainable management of forests

The above-listed activities except (d) can be measured in the framework of the annual forest monitoring system, while item (d) can be monitored through field validation of the project activities to be carried out by PFMBs/SUFMBs in the course of the project implementation.

(1) Annual Forest Monitoring

Annual forest monitoring will be carried out as part of the regular tasks of provincial and district officers in the target provinces. The annual forest change monitoring, such as field monitoring, data compilation, and reporting, is one of the official mandates of forest rangers of PFMBs/SUFMBs/DFROs, District FPDs, and DARD, respectively. The past and on-going JICA-T/C projects, namely SUSFORM-NOW and SNRMP, have assisted and will assist DARDs and concerned District FPDs in the four provinces in the improvement of the forest monitoring systems with introduction of the GIS-based monitoring database and the field data collecting system using tablet-PC. The overall framework of the improved forest monitoring system is illustrated below.



Overall Framework of Forest Monitoring System

Source: JICA Sustainable Natural Resource Monitoring Project

By 2018/2019, all the four provinces are expected to develop the updated monitoring framework and equip forest rangers in the 15 districts in the provinces with tablet-PC and necessary skills for forest monitoring with assistance from SNRMP. It is, therefore, expected that forest changes in the target protection forests and special use forests will be monitored in accordance with the updated monitoring framework on the initiatives of PFMBs/SUFMBs and DFROs concerned.

(2) Validation of project activities

PFMBs and SUFMBs will carry out field validation of the forest development and improvement activities (i.e., afforestation, ANR, and protection of natural forests) carried out by the village working groups in the course of the project. The results of the field validation can also be used for monitoring of forest conservation and increase of forest areas.

Forest rangers of PFMBs/SUFMBs will measure the boundaries of the plantations developed or regenerated forests under ANR with GPS or tablet-PC. The location data and photos of the project areas will also be submitted to PPMBs, so that the digital data of the field validation can also be transferred to the provincial forest monitoring system database.

G.1.3.9 Project Management and Administration

CPMB and PPMBs established in the beginning of the project will be responsible for the project operations, management and administration for the entire project period. The staff specified in Section G.1.3.1 will engage in the management and administration tasks. The major activities to be carried out by CPMB and PPMBs are: i) preparation of necessary documents (e.g., regulations/guidelines, plans, progress reports, proposals, and intructions) for project implementation, ii) preparation and process of billing docments (including validation), iii) provision of guidance and orientation to the project stakeholders, iv) procurement of project equipment and contractors for the project activities, v) review, monitoring, and evaluation of the project activities, and vi) development and maintnance of project and forest resource databases.

Hence, MARD/MBFPs and PPCs/DARDs of the target provinces need to secure sufficient budget for their operation and management of the project in the entire project period for smooth implementation of the project.

G.2 Cost Estimates of the Activities of the Component

G.2.1 Unit Costs and Detailed Cost Estimates of the Activities

The detailed cost estimates of the respective activities are shown in **Tables G-1~G-18** attached to this Annex. Most of them were estimated based on the existing government technical and cost norms. Unit costs of the activities which the government technical and cost norms were not applicable to were estimated by using the prevailing market prices, experiences of the JICA2 Project, and price quotations prepared by local institutions. Among others, the unit costs of the mid-term evaluation and terminal evaluation were calculated on the basis of the price quotations prepared by local institutions based on the terms of references (TORs) drafted by the preparatory survey team. The draft TORs of the survey are shown in

Appendixes G-1～3 attached to this Annex. The reference documents/information used for cost estimation and total unit costs of the respective activities are shown below.

Estimates of the Unit Costs of the Activities

(Unit VND)

Activities	References / Basis of cost estimation	Unit cost
1. Preparatory work		
1.5 Procurement of Project Equipment	Discussion with MBFPs and DARDs, Prevailing market prices	CPMB 6,720,000 PPMB 7,500,000
2. Information Dissemination to relevant stakeholders		
2.1.1 Project Orientation to CPMBs/MARD	MOF Decision No. 219/2009/TT-BTC on 19 Nov. 2009, MOF Decision No. 139/2010/TT-BTC on 21 Sep. 2010, MARD Decision No. 2096/QD-BNN-TC in 2011, MOF Decision No.102/2012/TT-BTC on 21 Jun. 2012, MARD Decision No. 918/QD-BNN-TC on 5 May 2014, MARD Decision No. 183/2010/TTLT-BTC-BNN on 15 Nov. 2010, MOF Circular No. 139/2010/TT-BTC on 21 September 2010, MOF Circular No. 219/2009/TT-BTC on 19 November 2009	9,500,000
2.1.2 Project Orientation to PPMBs/DARDs	139/2010/TT-BTC, 219/2009/TT-BTC	8,000,000
2.1.3 Project Orientation to DPCs/PFMBs/SUFMBs	Ditto	12,500,000
2.1.4 Project Orientation to CPCs and Village Working Groups	Ditto	15,000,000
2.2.1 Annual Planning Workshop At the Central Level (with CPMB)	Ditto	9,500,000
2.2.2 Annual Planning Workshop At the Provincial Level (with PPMBs)	Ditto	8,000,000
2.3.1 Orientation and Guidance on Annual Work Plan and Guidelines to Forest Owners (PFMBs/SUFMBs)	Ditto	26,500,000
2.3.2 Orientation and Guidance on Annual Work Plan and Guidelines to DPCs, CPCs, and Village Working Groups	Ditto	24,300,000
2.4.1 Orientation and Guidance on Benefit Sharing Mechanism to CPMBs/MARD	Ditto	9,500,000
2.4.2 Orientation and Guidance on Benefit Sharing Mechanism to PPMBs/DARDs	Ditto	8,000,000
2.4.3 Orientation and Guidance on Benefit Sharing Mechanism to DPCs/PFMBs/SUFMBs	Ditto	24,300,000
2.4.4 Orientation and Guidance on Benefit Sharing Mechanism to CPCs and Village Working Groups	Ditto	15,000,000
2.5.1 Orientation on JICA Environmental and Social Guidelines and ESMF Procedures	Ditto	15,000,000
2.5.2 General Co-management and Participatory Forestry and REDD+ Training	Ditto	23,250,000
3. Production and Publication of Project Documents		
3.1 Project Brief (Leaflets)	Prevailing market prices	18,953,000
3.2 Project Newsletter	Ditto	20,229,000
3.3 Awareness Raising Materials	Ditto	48,511,320
4. Study Tours		
4.1 Study Tours to JICA 2 Sites for PPMBs and Forest Owners (PFMBs/SUFMBs)	MARD Decesion No.918/QD-BNN-TC on 5 May 2014, MOF Circular No.139/2010/TT-BTC on 21 September 2010, MOF Circular No.219/2009/TT-BTC on 19 November 2009	174,119,000
4.2 Study Tours to SNRMP Sites for Forest Owners (PFMBs/SUFMBs) and Village Working Groups	MARD Decesion No.918/QD-BNN-TC, MOF Circular No.	174,119,000

Activities	References / Basis of cost estimation	Unit cost
	139/2010/TT-BTC on 21 September 2010	
4.3 Overseas Study Tours for CPMB/MBFPs and PPMBs/DARDs	MOF Circular No. 102/2012/TT-BTC on 21 June 2012	1,334,244,384
5 Technical Guidance of the Stakeholders		
5.1 Guidance on PLUP and GPS	139/2010/TT-BTC, 219/2009/TT-BTC	35,750,000
5.2 Guidance on use of GIS	Ditto	29,150,000
6 Review Meetings		
6.1 Bi-annual Review Meetings at the Central Level	Ditto	9,500,000
6.2 Bi-annula Review Meetings at the Provincial Level	Ditto	8,000,000
7. Monitoring and Evaluation of the Project Performance		
7.3 Mid-term Assessment, Monitoring, and Evaluation	Quatation obtained based on the draft TOR	1,100,207
7.4 Terminal Assessment, Monitoring, and Evaluation (for assessment of physical accomplishments)	Ditto	4,627,907
7.4 Terminal Assessment, Monitoring, and Evaluation (for assessment of socio-econmic impacts)	Ditto	1,337,747
9. Project Management and Administration		
9.1 Saraly of the project staff of CPMB and PPMBs 9.2 Operation Expenses of CPMB and PPMBs	PM Decree No.204/2004/ND-CP on 14 December 2004 Allowances applied in JICA2	CPMB 2,621,000,000 PPMB 1,978,000,000

Source: JICA Preparatory Survey Team (2016)

G.3 Work Quantity and Total Cost of the Component

The work quantity of the activities were basically estimated on the basis of the number of districts, communes, and/or PFMBs/SUFMBs concerned. The volume of works and total estimated costs of the activities planned in the respective provinces as well as the whole project and summarized below.

Cost Estimates of the Activities of the Component

(unit: VND million in Cost)

Activities	CPMB		Dien Bien		Lai Chau		Son La		Hoa Binh		Overall	
	Q'ty	Cost	Q'ty	Cost	Q'ty	Cost	Q'ty	Cost	Q'ty	Cost	Q'ty	Cost
1. Preparatory work												
1.5 Procurement of Project Equipment (including replacement)	1	672	1	750	1	750	1	750	1	750	1	3,671
2. Information Dissemination to relevant stakeholders												
2.1.1 Project Orientation to CPMBs/MARD	1	10	0	0	0	0	0	0	0	0	1	10
2.1.2 Project Orientation to PPMBs/DARDs	0	0	1	8	1	8	1	8	1	8	4	32
2.1.3 Project Orientation to DPCs/PFMBs/SUFMBs	0	0	3	39	3	39	3	39	5	65	14	182
2.1.4 Project Orientation to CPCs and Village Working Groups	0	0	8	120	22	330	11	165	23	345	64	960
2.2.1 Annual Planning Workshop At the Central Level (with CPMB)	1	10	0	0	0	0	0	0	0	0	1	10
2.2.2 Annual Planning Workshop At the Provincial Level (with PPMBs)	0	0	1	8	1	8	1	8	1	8	4	32
2.3.1 Orientation and	0	0	3	81	3	81	3	81	5	135	14	378

Activities	CPMB		Dien Bien		Lai Chau		Son La		Hoa Binh		Overall	
	Q'ty	Cost	Q'ty	Cost	Q'ty	Cost	Q'ty	Cost	Q'ty	Cost	Q'ty	Cost
Guidance on Annual Work Plan and Guidelines to Forest Owners (PFMBs/SUFMBs)												
2.3.2 Orientation and Guidance on Annual Work Plan and Guidelines to DPCs, CPCs, and Village Working Groups	0	0	8	192	22	528	11	264	23	552	64	1,536
2.4.1 Orientation and Guidance on Benefit Sharing Mechanism to CPMBs/MARD	1	10	0	0	0	0	0	0	0	0	1	10
2.4.2 Orientation and Guidance on Benefit Sharing Mechanism to PPMBs/DARDs	0	0	1	8	1	8	1	8	1	8	1	32
2.4.3 Orientation and Guidance on Benefit Sharing Mechanism to DPCs/PFMBs/SUFMBs	0	0	3	72	3	72	3	72	5	120	14	336
2.4.4 Orientation and Guidance on Benefit Sharing Mechanism to CPCs and Village Working Groups	0	0	8	120	22	330	11	165	23	345	64	960
2.5.1 Orientation on JICA Environmental and Social Guidelines and ESMF Procedures	12	15	0	0	0	0	0	0	0	0	0	180
2.5.2 General Co-management and Participatory Forestry and REDD+ Training	12	23	0	0	0	0	0	0	0	0	0	276
3. Production and Publication of Project Documents												
3.1 Project Brief (Leaflets)	1	19	1	19	1	19	1	19	1	19	5	95
3.2 Project Newsletter	7	142	7	142	7	142	7	142	7	142	35	708
3.3 Awareness Raising Materials	0	0	1	49	1	49	1	49	1	49	4	196
4. Study Tour												
4.1 Study Tours to JICA 2 Sites for PPMUs and Forest Owners (PFMBs/SUFMBs)	2	349	0	0	0	0	0	0	0	0	2	349
4.2 Study Tours to SNRMP Sites for Forest Owners (PFMBs/SUFMBs) and Village Working Groups	0	0	2	349	2	349	2	349	2	349	8	1,394
4.3 Overseas Study Tours for CPMB/MBFPs and PPMBs/DARDs	2	2,668	0	0	0	0	0	0	0	0	2	2,668
5 Technical Guidance for the Stakeholders												

Activities	CPMB		Dien Bien		Lai Chau		Son La		Hoa Binh		Overall	
	Q'ty	Cost	Q'ty	Cost	Q'ty	Cost	Q'ty	Cost	Q'ty	Cost	Q'ty	Cost
5.1 Guidance on PLUP and GPS	0	0	1	36	1	36	1	36	1	36	1	144
5.2 Guidance on use of GIS	0	0	1	29	1	29	1	29	1	29	1	116
6 Review Meetings												
6.1 Bi-annual Review Meetings at the Central Level	19	181	0	0	0	0	0	0	0	0	19	181
6.2 Bi-annula Review Meetings at the Provincial Level	0	0	19	152	19	152	19	152	19	152	76	608
7. Monitoring and Evaluation of the Project Performance												
7.3 Initial Assessment, Monitoring, and Evaluation	1	1	0	0	0	0	0	0	0	0	1	1
7.4 Mid-term Assessment, Monitoring, and Evaluation	1	5	0	0	0	0	0	0	0	0	1	5
7.4 Terminal Assessment, Monitoring, and Evaluation	1	1	0	0	0	0	0	0	0	0	1	1
9. Project Management and Administration												
9.1Saraly of the Project Staff of CPMB and PPMBs 9.2 Operation Expenses of CPMB and PPMBs	10	262,100	10	197,800	10	197,800	10	197,800	10	197,800	10	197,800

Source: JICA Preparatory Survey Team (2016)

Tables

Table G-1 Cost breakdown of establishment of the project management boards

CPMB Unit: VND

No	Content of Expense	Unit cost	Month	Estimated cost
1	**Salaries for project staffs with special allowance**			1,297,932,000
	(1) Director (part-time) - 1 person (average coefficient of salaries = 5.33, position allowance coefficient=0.7, project management allowance = 2)	17,803,000	12	213,636,000
	(2) Vice director (Full time) - 1 person (average coefficient of salaries = 5.33, position allowance coefficient=0.3, project management allowane =2)	16,622,000	12	199,464,000
	(3) Other staff (contractual/seasonal) - 10 persons (average coefficient of salaries = 3.33, project management allowane	73,736,000	12	884,832,000
2	**Travel allowance**			134,400,000
	(1) Accomodation allowance (8 man-day x 4 provinces)	8,000,000	12	96,000,000
	(2) Meal allowance(8 man-day x 4 provinces)	3,200,000	12	38,400,000
3	**Payments to public services**			63,600,000
	(1) Gasoline for vehicles (two cars) 200km/week	5,300,000	12	63,600,000
4	**Office supplies** (books, Stationery, printing the document ...)			216,000,000
	(1) Stationery and printing costs	18,000,000	12	216,000,000
5	**Communications**	12,000,000	12	144,000,000
6	**Employment costs**			612,000,000
	(1) Annual audit costs			600,000,000
	(2) Others Employment costs			12,000,000
7	**Repair costs**			26,400,000
	(1) Repair of vehicle (0.2% of the purchase price)	2,200,000	12	26,400,000
8	**Others**			126,700,000
	(1) Insurace for vehicle	2,000,000	1	2,000,000
	(2) Other expenses (5% of other costs)			124,700,000
	Total Management Cost			**2,621,032,000**
		Salary and allowance		**1,432,000,000**
		Direct expenses		**1,189,000,000**

Table G-1 Cost breakdown of establishment of the project management boards

PPMB Unit: VND

No	Content of Expense	Unit cost	Month	Estimated cost
1	**Salaries for project staffs**			1,190,400,000
	(1) Director (part-time) - 1 person (average coefficient of salaries = 5.30, position allowance coefficient=0.6, project management allowance = 1.5)	13,064,000	12	156,768,000
	(2) Vice director (Full time) - 1 person (average coefficient of salaries = 5.30, position allowance coefficient=0.3, project management allowane =1.5)	12,400,000	12	148,800,000
	(3) Other staff (contractual/seasonal) - 10 persons (average coefficient of salaries = 3.33, project management allowane	73,736,000	12	884,832,000
2	**Travel allowance**			62,400,000
	(1) Accomodation allowance (5 staffs x 4 nights/month)	2,000,000	12	24,000,000
	(2) Meal allowance (5 staffs x 8 days/month)	3,200,000	12	38,400,000
3	**Energy and Fuel costs**			180,000,000
	(1) Gasoline for Vehicle (200 km/week)	5,200,000	12	62,400,000
	(2) Gasoline for motorbike (150km/week/unit)	9,800,000	12	117,600,000
4	**Office supplies** (books, Stationery, printing the document ...)			216,000,000
	(1) Stationery and printing costs	18,000,000	12	216,000,000
5	**Communications**	12,000,000	12	144,000,000
6	**Repair costs**			87,720,000
	(1) Repair of vehicle (0.2% of the purchase price)	3,900,000	12	46,800,000
	(2) Repair of motor bikes (2% of the purchase price)	3,410,000	12	40,920,000
7	**Others**			96,500,000
	(1) Insurace for vehicle	2,000,000	1	2,000,000
	(2) Insurace for motor bike	500,000	1	500,000
	(3) Other expenses (5% of other costs)			94,000,000
	Total Management Cost			**1,977,020,000**
		Salary and allowance		**1,253,000,000**
		Direct expenses		**724,000,000**

Table G-2 Cost breakdown of procurement of equipment

	Oerall			CMPB			Dien Bien			Lai Chau			Son La			Hoa Binh		
Equipment to be purchased	Q'ty	Unit cost	Amount (mil. VND)	Q'ty	Unit cost	Amount (mil. VND)	Q'ty	Unit cost	Amount (mil. VND)	Q'ty	Unit cost	Amount (mil. VND)	Q'ty	Unit cost	Amount (mil. VND)	Q'ty	Unit cost	Amount (mil. VND)
1 Desktop PC + software	22	27.71	609.6	6	27.71	166.3	4	27.71	110.8	4	27.71	110.8	4	27.71	110.8	4	27.71	110.8
2 Laptop PC + software	6	29.16	175.0	2	29.16	58.3	1	29.16	29.2	1	29.16	29.2	1	29.16	29.2	1	29.16	29.2
3 Printer (A4/A3)	5	18.18	90.9	1	18.18	18.2	1	18.18	18.2	1	18.18	18.2	1	18.18	18.2	1	18.18	18.2
4 Inkject Printer (A4/A3)	5	5.09	25.5	1	5.09	5.1	1	5.09	5.1	1	5.09	5.1	1	5.09	5.1	1	5.09	5.1
5 GIS software (MapInfo)	4	54.72	218.9	0	54.72	0.0	1	54.72	54.7	1	54.72	54.7	1	54.72	54.7	1	54.72	54.7
6 Photocopy Machine	5	87.48	437.4	1	87.48	87.5	1	87.48	87.5	1	87.48	87.5	1	87.48	87.5	1	87.48	87.5
7 UPS (1000VA)	22	2.00	44.0	6	2.00	12.0	4	2.00	8.0	4	2.00	8.0	4	2.00	8.0	4	2.00	8.0
8 A0 plotter	4	68.59	274.4	0	68.59	0.0	1	68.59	68.6	1	68.59	68.6	1	68.59	68.6	1	68.59	68.6
9 Digital handycum	5	22.72	113.6	1	22.72	22.7	1	22.72	22.7	1	22.72	22.7	1	22.72	22.7	1	22.72	22.7
10 GPS	20	11.48	229.6	0	11.48	0.0	5	11.48	57.4	5	11.48	57.4	5	11.48	57.4	5	11.48	57.4
11 Digital camera	10	8.17	81.7	2	8.17	16.3	2	8.17	16.3	2	8.17	16.3	2	8.17	16.3	2	8.17	16.3
12 Binoculars	8	8.11	64.9	0	8.11	0.0	2	8.11	16.2	2	8.11	16.2	2	8.11	16.2	2	8.11	16.2
13 Projector	5	37.20	186.0	1	37.20	37.2	1	37.20	37.2	1	37.20	37.2	1	37.20	37.2	1	37.20	37.2
Total			**2,551.4**			**423.6**			**531.9**			**531.9**			**531.9**			**531.9**
14 Replacement			**1,119.8**			**247.9**			**218.0**			**218.0**			**218.0**			**218.0**
Total			**3,671.2**			**671.5**			**749.9**			**749.9**			**749.9**			**749.9**

Note: These equipment will be replaced or upgraded in the 6th year.

Table No G-3
Cost Breakdown of 2.1.1, 2.2.1, 2.4.1: Orientation to CPMB
6.1: Review meeting at the central level

a. Basis for Cost Estimation

Cost norm	139/2010/TT-BTC, 219/2009/TT-BTC
Duration	1 day
Venue	Hanoi
Participants	30 persons
Executor	Orientation: Consultant office Review meeting: CPMB

b. Cost Breakdown in VND

Items	Unit cost (1) Unit	Q'ty (2) Unit	Q'ty (3) Unit	Total cost (1×2×3)
1 Material				
1.1 Meeting room	2,000,000 /day	1 day		2,000,000
1.2 Stationary & photocopy	50,000 /person	30 persons		1,500,000
1.3 Tea break	50,000 /person･day	30 persons	1 day	1,500,000
2 Others				
2.1 Meal allowance	150,000 /person	30 persons		4,500,000
Sub total				9,500,000
Management fee (10%)				0
Total				**9,500,000**

Table No G-4
Cost Breakdown of 2.1.2, 2.2.2,2.4.2: Orientation to PPMB
6.2: Review meeting at the provincial level

a. Basis for Cost Estimation

Cost norm	139/2010/TT-BTC, 219/2009/TT-BTC
Duration	1 day
Venue	Provincial capital
Participants	30 persons
Executor	Orientation: CPMB Review meeting: PPMB

b. Cost Breakdown in VND

Items	Unit cost (1) Unit	Q'ty (2) Unit	Q'ty (3) Unit	Total cost (1×2×3)
1 Material				
1.1 Meeting room	2,000,000 /day	1 day		2,000,000
1.2 Stationary & photocopy	50,000 /person	30 persons		1,500,000
1.3 Tea break	50,000 /person・day	30 persons	1 day	1,500,000
2 Others				
2.1 Meal allowance	100,000 /person	30 persons		3,000,000
Sub total				8,000,000
Management fee (10%)				0
Total				**8,000,000**

Table No G-5
Cost Breakdown of 2.3.1: Orientation and guidance to PFMBs/SUFMBs

a. Basis for Cost Estimation

Cost norm	139/2010/TT-BTC, 219/2009/TT-BTC
Duration	2 days
Venue	Provincial capital
Participants	30 persons
Executor	PPMB

b. Cost Breakdown in VND

	Items	Unit cost (1) Unit	Q'ty (2) Unit	Q'ty (3) Unit	Total cost (1×2×3)
1	**Material**				
1.1	Meeting room	2,000,000 /day	2 days		4,000,000
1.2	Stationary & photocopy	50,000 /person	30 persons		1,500,000
1.3	Tea break	50,000 /person･day	30 persons	2 days	3,000,000
2	**Others**				
2.1	Meal allowance of the participants	100,000 /day･person	2 days	30 persons	6,000,000
2.2	Accomodation allowance of the participants	250,000 /day･person	1 day	30 persons	7,500,000
2.3	Transportation allowance	2,500 /km	60 km	30 persons	4,500,000
	Sub total				26,500,000
	Management fee (10%)				0
	Total				**26,500,000**

Table No G-6
Cost Breakdown of 2.1.3: Orientation to PFMBs/SUFMBs, DPCs at the district level

a. Basis for Cost Estimation

Cost norm	139/2010/TT-BTC, 219/2009/TT-BTC
Duration	1 day
Venue	District center
Participants	30 persons
Executor	PPMB

b. Cost Breakdown in VND

	Items	Unit cost (1)	Unit	Q'ty (2)	Unit	Q'ty (3)	Unit	Total cost (1×2×3)
1	**Material**							
1.1	Stationary & photocopy	50,000	/person	30	persons			1,500,000
1.2	Meeting room	2,000,000	/day	1	day			2,000,000
1.3	Tea break	50,000	/person･day	30	persons	1	day	1,500,000
2	**Others**							
2.1	Meal allowance of the participants	100,000	/day･person	1	day	30	persons	3,000,000
2.2	Transportation of the participants	2,500	/km	60	km	30	persons	4,500,000
	Sub total							12,500,000
	Management fee (10%)							0
	Total							**12,500,000**

Table No G-7
Cost Breakdown of **2.1.4, 2.4.4: Orientation to village working groups (VWGs) and CPCs at the commune level**

a. Basis for Cost Estimation

Cost norm	139/2010/TT-BTC, 219/2009/TT-BTC
Duration	1 day
Venue	Commune center
Participants	60 persons
Executor	PPMB

b. Cost Breakdown in VND

	Items	Unit cost (1)	Unit	Q'ty (2)	Unit	Q'ty (3)	Unit	Total cost (1×2×3)
1	**Material**							
1.1	Stationary & photocopy	50,000	/person	60	persons			3,000,000
1.2	Tea break	50,000	/person･day	60	persons	1	day	3,000,000
2	**Others**							
2.1	Meal allowance of the participants	100,000	/day･person	1	day	60	persons	6,000,000
2.2	Transportation allowance of the participants	2,500	/km	20	km	60	persons	3,000,000
	Sub total							15,000,000
	Management fee (10%)							0
	Total							**15,000,000**

Table No G-8
Cost Breakdown of **2.3.2: Orientation and guidance on annual work plan and implementation guidelines to VWGs, DPCs, CPCs**
2.4.3: Orientation on BSM to PFMBs. SUFMBs, DPCs

a. Basis for Cost Estimation

Cost norm	139/2010/TT-BTC, 219/2009/TT-BTC
Duration	1 days
Venue	District center
Participants	60 persons
Executor	PPMB

b. Cost Breakdown in VND

	Items	Unit cost (1) Unit	Q'ty (2) Unit	Q'ty (3) Unit	Total cost (1×2×3)
1	**Material**				
1.1	Stationary & photocopy	50,000 /person	60 persons		3,000,000
1.2	Meeting room	3,300,000 /day	1 day		3,300,000
1.3	Tea break	50,000 /person･day	60 persons	1 day	3,000,000
2	**Others**				
2.1	Meal allowance of the participants and lecturers	100,000 /day･person	1 day	60 persons	6,000,000
2.2	Transportation allowance of the participants	2,500 /km	60 km/person	60 persons	9,000,000
	Sub total				24,300,000
	Management fee (10%)				0
	Total				**24,300,000**

Table No G-9

Cost Breakdown of 2.5.1: Guidance on Environmental and Social Monitoring Framework for PPMB and PFMBs/NRMBs

a. Basis for Cost Estimation

Cost norm	139/2010/TT-BTC, 219/2009/TT-BTC
Duration	3 days
Venue	Provincial capital
Participants	15 persons
Executor	CPMB with support from the project consultants

b. Cost Breakdown in VND

	Items	Unit cost (1) Unit	Q'ty (2) Unit	Q'ty (3) Unit	Total cost (1×2×3)
1	**Material**				
1.1	Meeting room	2,000,000 /day	3 days		6,000,000
1.2	Stationary & photocopy	50,000 /person	15 persons		750,000
1.3	Tea break	50,000 /person･day	15 persons	3 days	2,250,000
2	**Others**				
2.1	Meal allowance of the participants	100,000 /day･person	3 days	15 person	4,500,000
2.2	Accomodation allowance of the participants	250,000 /day･person	2 day	15 persons	7,500,000
2.3	Transportation allowance	2,500 /km	60 km	15 persons	2,250,000
	Sub total				23,250,000
	Management fee (10%)				0
	Total				**23,250,000**

Table No G-10

Cost Breakdown of 2.5.2: Guidance on Co-management and Participatory Forestry and REDD+

a. Basis for Cost Estimation

Cost norm	139/2010/TT-BTC, 219/2009/TT-BTC
Duration	2 days
Venue	Provincial capital
Participants	15 persons
Executor	CPMB with support from the project consultants

b. Cost Breakdown in VND

Items	Unit cost (1) Unit	Q'ty (2) Unit	Q'ty (3) Unit	Total cost (1×2×3)
1 Material				
1.1 Meeting room	2,000,000 /day	2 days		4,000,000
1.2 Stationary & photocopy	50,000 /person	15 persons		750,000
1.3 Tea break	50,000 /person･day	15 persons	2 days	1,500,000
2 Others				
2.1 Meal allowance of the participants	100,000 /day･person	2 days	15 person	3,000,000
2.2 Accomodation allowance of the participants	250,000 /day･person	1 day	15 persons	3,750,000
2.3 Transportation allowance	2,500 /km	60 km	15 persons	2,250,000
Sub total				15,250,000
Management fee (10%)				0
Total				**15,250,000**

Table G-11 Cost Breakdown of Production and Publication of Project Documents

a. Basis for Estimation:

Materials to be used: Existing materials can be used or the contents of materials shall be designed by PPMB.
Cost Norm: Actual payment record/ quatation
Purpose: Information Dissemination and Awareness raising

b. Cost Breakdown

Materials published	Specification	Unit cost (1)	Unit1	Q'ty (2)	Unit 2	Q'ty (3)	Unit 3	Total cost (1x2x3)
.2.1 Project Brouchure	A4 3pg with colour/ photograph	(VND) 4,738	/page	4	pages	1,000	sets	(VND) 18,953,000
2.2								
Newsletter (annual)	A4 4pg with colour/ photograph	5,057	/page	4	pages	1,000	sets	20,229,000
2.3								
CD documentary	30 min documentary	55,000	/ disk	200	CDs			11,000,000
Posters	A2 full colour (Trial)	67,320	/ page	1	set			67,320
	A2 full colour (Final)	67,320	/ page	200	sets			13,464,000
Enviornemtnal education material	10 pages colour for upper primary/secondary school children	4,796	/ page	10	pages	500	sets	23,980,000
Total cost for materials								87,693,320

Note: <1 Contents of materials shall be designed/decided by PPMB.
<2: Unit price includes management fee (10%)

Table No G-12
Cost Breakdown of 4.1, 4.2 Study tour for PPMU, PFMBs/SUFMBs

a. Basis for Cost Estimation

Cost norm	918/QD-BNN-TC, 139/2010/TT-BTC
Duration	3 days
Venue	JICA2 project site/ SNRMP site
Participants	20 persons

b. Cost Breakdown in VND

	Items	Unit cost (1)	Unit	Q'ty (2)	Unit	Q'ty (3)	Unit	Total cost (1×2×3)
1	**Labour**							
1.1	Facilitator (from province)	600,000	/MD	3	days	1	person	1,800,000
1.2	Assistant facilitator (from province)	600,000	/MD	3	days	1	person	1,800,000
1.3	Lecturer (from the study site)	1,000,000	/MD	3	MD			3,000,000
2	**Material**							
2.1	Stationary & photocopy	50,000	/person	23	persons			1,150,000
2.2	Meeting hall rental	2,000,000	/day	2	days			4,000,000
2.3	Tea break	50,000	/person	23	persons			1,150,000
3	**Others**							
3.1	Meal allowance of the participants & facilitators & lecturer	150,000	/day・person	3	days	23	persons	10,350,000
3.2	Accommodation of the participants & facilitators	250,000	/day・person	2	days	22	persons	11,000,000
3.3	Transportation (domestic airticket and airport transfer) of the participants&facilitators from the province to the airport near the study site	4,820,000	/trip	22	trips			106,040,000
3.4	Transportatoin (rental bus etc.) of the participants & facilitators in the study site province	6,000,000	/day・car	1	car	3	days	18,000,000
	Sub total							158,290,000
	Management fee (10%)							15,829,000
	Total							**174,119,000**

Table No G-13
Cost Breakdown of 4.3 Oversea study tour for CPMB and PPMB

a. Basis for Cost Estimation

Cost norm 102/2012/TT-BTC
Duration 7 days
Venue Japan
Participants 15 persons

b. Cost Breakdown Exchange rate: 1 USD = 21888 VND

	Items	Unit cost (1) (USD)	Unit	Q'ty (2)	Unit	Q'ty (3)	Unit	Total cost (USD) (1×2×3)	Total cost (VND)
1	**Labour**								
1.1	Lecturer	300	/lecture	7	lectures			2,100	45,964,800
1.2	Attendant	280	/day･person	7	days			1,960	42,900,480
2	**Material**								
2.1	Stationary & photocopy	5	/person	15	persons			75	1,641,600
2.2	Translation of the materials	11	/page	10	page/lecture	7	lectures	770	16,853,760
3	**Others**								
3.1	Per diem including accomodation allowance of the participants	200	/day･person	7	days	15	persons	21,000	459,648,000
3.2	Per diem including accomodation allowance of the attendant	200	/day･person	7	days			1,400	30,643,200
3.3	Transportation (international airticket and airport transfer)	1,127	/trip	15	trips			16,911	370,152,000
3.4	Travel cost in the tour site country (air ticket & railway ticket & rental car etc.) of the participants & attendant	700	/person	16	persons			11,200	245,145,600
	Sub total							55,416	1,212,949,440
	Management fee (10%)							5,542	121,294,944
	Total							**60,958**	**1,334,244,384**

Table No G-14

Cost Breakdown of 5.1: Guidance on PLUP and GPS to PFMBs/SUFMBs and contractor

a. Basis for Cost Estimation

Cost norm	139/2010/TT-BTC, 219/2009/TT-BTC
Duration	2 days
Venue	Provincial capital
Participants	30 persons

b. Cost Breakdown in VND

	Items	Unit cost (1)	Unit	Q'ty (2)	Unit	Q'ty (3)	Unit	Total cost (1×2×3)
1	**Labour**							
1.1	Lecturer (from Hanoi)	1,000,000	/day	2	days	1	person	2,000,000
1.2	Assistant lecturer (from Hanoi)	600,000	/day	2	days	1	person	1,200,000
2	**Material**							
2.1	Stationary & photoopy	50,000	/person	32	persons			1,600,000
2.2	Meeting room	2,000,000	/day	2	days			4,000,000
2.3	Tea break	50,000	/person・day	32	persons	2	days	3,200,000
3	**Others**							
3.1	Meal allowance of the participants	100,000	/day・person	2	days	32	persons	6,400,000
3.2	Accomodation allowance of the participants	250,000	/day・person	1	day	30	persons	7,500,000
3.3	Accomodation allowance of the lecturers	250,000	/day・person	2	days	2	persons	1,000,000
3.4	Transportation of the lecturers from Hanoi to province<1	2,800,000	/round trip・person	2	persons			5,600,000
	Sub total							32,500,000
	Management fee (10%)							3,250,000
	Total							**35,750,000**

<1: Average travel cost per person from Hanoi to each province is estimated as below:

Item	VND/ round trip	VND/ round trip/ person
Hanoi- Dien Bien (Air ticket cost)	3,880,000	3,880,000
Hanoi-Lai Chau (Rental car cast)*	8,880,000	2,960,000
Hanoi-Son La (Rental car cost)*	8,880,000	2,960,000
Hanoi-Hoa Binh (Rental car cost)*	4,100,000	1,366,667
Average travel cost per person	-	**2,800,000**

* Round trip cost per car is devided by three to estimate round trip cost per person.

Table No G-15

Cost Breakdown of 5.2: Guidance on demarcation with GIS operation to PFMBs/SUFMBs

a. Basis for Cost Estimation

Cost norm	139/2010/TT-BTC, 219/2009/TT-BTC
Duration	2 days
Venue	Provincial capital
Participants	20 persons

b. Cost Breakdown in VND

Items	Unit cost (1)	Unit	Q'ty (2)	Unit	Q'ty (3)	Unit	Total cost (1×2×3)
1 Labour							
1.1 Lecturer (from Hanoi)	1,000,000	/day	2	days	1	person	2,000,000
1.2 Assistant lecturer (from Hanoi)	600,000	/day	2	days	1	person	1,200,000
2 Material							
2.1 Stationary & photocopy	50,000	/person	22	persons			1,100,000
2.2 Meeting room	2,000,000	/day	2	days			4,000,000
2.3 Tea break	50,000	/person・day	22	persons	2	days	2,200,000
3 Others							
3.1 Meal allowance of the participants and lecturers	100,000	/day・person	2	days	22	persons	4,400,000
3.2 Accomodation allowance of the participants	250,000	/day・person	1	day	20	persons	5,000,000
3.3 Accomodation allowance of the participants and lecturers	250,000	/day・person	2	days	2	persons	1,000,000
3.4 Transportation of the lecturers from Hanoi to province<1	2,800,000	/round trip・person	2	persons			5,600,000
Sub total							26,500,000
Management fee (10%)							2,650,000
Total							**29,150,000**

<1: Average travel cost per person from Hanoi to each province is estimated as below:

Item	VND/ round trip	VND/ round trip/ person
Hanoi- Dien Bien (Air ticket cost)	3,880,000	3,880,000
Hanoi-Lai Chau (Rental car cast)*	8,880,000	2,960,000
Hanoi-Son La (Rental car cost)*	8,880,000	2,960,000
Hanoi-Hoa Binh (Rental car cost)*	4,100,000	1,366,667
Average travel cost per person	-	**2,800,000**

* Round trip cost per car is devided by three to estimate round trip cost per person.

Table G-16 Estimated Cost of the Mid-term Evaluation

#	Item	Unit	Amount	Unit cost (1000 VND)	Total amount (1000 VND)	Note/reference
1	**Preparation (design survey and questionnaires, project documents review)**				**77,750**	
1.1	Team leader consultant	Man month	0.5	30,500	15,250	Circular 219/2009/TT-BTC
1.2	Team member 1 (Forestry development expert)	Man month	0.5	25,000	12,500	ditto
1.3	Team member 2 (Bio-conservasion expert)	Man month	0.5	25,000	12,500	ditto
1.4	Team member 3 (Infastructure expert)	Man month	0.5	25,000	12,500	ditto
1.5	Team member 4 (Socio-economic expert)	Man month	0.5	25,000	12,500	ditto
1.6	Team member 5 (M&E expert)	Man month	0.5	25,000	12,500	ditto
2	**Field trip (data collection at province, district, commune and household levels, and direct measurement)**				**625,500**	
2.1	***Salary***				***311,000***	
+	Team leader (1 person)	Man month	2	30,500	61,000	Circular 219/2009/TT-BTC
+	Team member (5 persons)	Man month	10	25,000	250,000	ditto
2.2	***Perdiem***				***144,000***	
+	Team leader				24,000	
-	Accomodation	Man day	60	250	15,000	Circular No. 97/2010/TT-BTC
-	Daily allowance	Man day	60	150	9,000	Circular No. 192/2011/TT-BTC
+	Team member (5 persons)				120,000	
-	Accomodation	Man day	300	250	75,000	Circular No. 97/2010/TT-BTC
-	Daily allowance	Man day	300	150	45,000	Circular No. 192/2011/TT-BTC
2.3	***Travelling cost (4WD car) x 2 cars***	***Day***	***60***	***2,000***	***120,000***	
2.4	***Payment for local guide***	***Day***	***60***	***300***	***18,000***	
2.5	***Honorarium for households (20 communesx24hhs)***	***person***	***480***	***50***	***24,000***	Circular No.58/2011/TT-BTC
2.6	***Honorarium for women interviewed (20 commune x6 women/commune)***	***person***	***120***	***50***	***6,000***	ditto
2.7	***Photocopy of questionnaires***				***2,500***	
+	Questionnaire for commune staffs	copies	20	5	100	
+	Questionnaire for households	copies	480	5	2,400	
3	**Data analysis and report writing**				**222,850**	
3.1	***Data input (4 persons)***	***Man month***	***4***	***5,400***	***21,600***	Circular 219/2009/TT-BTC
3.2	***Data analysis***				***155,500***	
	Team leader	Man month	1	30,500	30,500	Circular 219/2009/TT-BTC
	Team member (5 persons)	Man month	5	25,000	125,000	ditto
3.3	***Report writing (0.6 month x 2 experts)***	***Man month***	***1.5***	***30,500***	***45,750***	ditto
4	**Sub total (1+2+3)**	**1,000 VND**			**926,100**	
5	**Management cost (8%)**	**1,000 VND**			**74,088**	
6	**Sub total (4+5)**	**1,000 VND**			**1,000,188**	
7	**VAT (10%)**	**1,000 VND**			**100,019**	
	Grand total (6+7)	**1,000 VND**			**1,100,207**	

Table G-17 Estimated Cost of the Terminal Evaluation (Physical Accomplishments)

#	Item	Unit	Amount	Unit cost (1000 VND)	Total amount	Note/reference
1	**Preparation (design survey and questionnaires, contact province, logistic…)**				**11,100**	
	Team leader	Man month	0.2	30,500	6,100	Circular 219/2009/TT-BTC
	Team member (1 person)	Man month	0.2	25,000	5,000	ditto
2	**Field trip (data collection at province and district levels interviews, field observation, and direct**				**214,500**	
2.1	***Salary***				***105,500***	
	Team leader	Man month	1	30,500	30,500	Circular 219/2009/TT-BTC
	Team member (3 persons)	Man month	3	25,000	75,000	ditto
2.2	***Perdiem***				***40,000***	
	Team leader	Man month	1	10,000	10,000	
	Team member (2 persons)	Man month	3	10,000	30,000	
2.3	***Travelling cost (4WD car)***	***Day***	***30***	***2,000***	***60,000***	
2.4	***Payment for local guide***	***Day***	***30***	***300***	***9,000***	
2.5	***Payment for interviewer***	***person***	***80***	***70***	***5,600***	
3	**Satalite images (Spot5) 8 images**	**Km2**	**73,690**	**41**	**2,984,445**	
4	**Satalite image analysis**				**202,600**	
4.1	***Data input (2 persons)***	***Man month***	***4***	***5,400***	***21,600***	Circular 219/2009/TT-BTC
4.2	***Image analysis***				***161,000***	
	Team leader	Man month	2	30,500	61,000	Circular 219/2009/TT-BTC
	Team member (2 persons)	Man month	4	25,000	100,000	ditto
5	**Field trip (Forest inventory in project area)**				**325,950**	
5.1	***Salary***				***158,250***	
	Team leader	Man month	1.5	30,500	45,750	Circular 219/2009/TT-BTC
	Team member (3 persons)	Man month	4.5	25,000	112,500	ditto
5.2	***Perdiem***				***60,000***	
	Team leader	Man month	1.5	10,000	15,000	
	Team member (3 persons)	Man month	4.5	10,000	45,000	
5.3	***Travelling cost (4WD car)***	***Day***	***45***	***2,000***	***90,000***	
5.4	***Payment for local guide***	***Day***	***45***	***300***	***13,500***	
5.5	***Payment for interviewee***	***Person***	***60***	***70***	***4,200***	
6	**Data analysis and report writing**				**156,950**	
6.1	***Data input (2 persons)***	***Man month***	***3***	***5,400***	***16,200***	Circular 219/2009/TT-BTC
6.2	***Data analysis***				***120,750***	
	Team leader	Man month	1.5	30,500	45,750	Circular 219/2009/TT-BTC
	Team member (2 persons)	Man month	3	25,000	75,000	ditto
6.3	***Writing report***	***Lumsum***			***20,000***	
7	**Sub total (1+2+3+4+5+6)**	**1,000 VND**			**3,895,545**	
8	**Management cost (8%)**	**1,000 VND**			**311,644**	
9	**Sub total (7+8)**	**1,000 VND**			**4,207,189**	
10	**VAT (10%)**	**1,000 VND**			**420,719**	
	Grand total (9+10)	**1,000 VND**			**4,627,907**	

Table G-18 Estimated Cost of the Terminal Evaluation (Socio-economic Impacts)

#	Item	Unit	Amount	Unit cost (1000 VND)	Total amount (1000 VND)	Note
1	**Preparation (design survey and questionnaires, contact province, logistic…)**				**16,650**	
+	Team leader	Man month	0.3	30,500	9,150	Circular 219/2009/TT-BTC
+	Team member (1 person)	Man month	0.3	25,000	7,500	ditto
2	**Field trip (data collection at province and district levels, interview stakeholders in value chains…)**				**969,800**	
2.1	***Salary***				***373,000***	
+	Team leader (1 person x 3 months)	Man month	3	31,000	93,000	Circular 219/2009/TT-BTC
+	Team member (3 persons x 3.63 months)	Man month	11.2	25,000	280,000	ditto
2.2	***DSA***				***240,000***	
+	Team leader				60,000	
-	Accomodation	Man day	90	250	37,500	Circular No. 97/2010/TT-BTC
-	Daily allowance	Man day	90	150	22,500	Circular No. 192/2011/TT-BTC
+	Team member (3 persons)				180,000	
-	Accomodation	Man day	336	250	112,500	Circular No. 97/2010/TT-BTC
-	Daily allowance	Man day	336	150	67,500	Circular No. 192/2011/TT-BTC
2.3	***Travelling cost (4WD car)***	***day***	***112***	***2,000***	***224,000***	
2.4	***Honorarium for local guides***	***day***	***112***	***200***	***22,400***	
2.5	***Honorarium for commune and village staffs***	***person***	***64***	***70***	***4,480***	Circular No.58/2011/TT-BTC
2.6	***Honorarium for households (98 communesx24hhs)***	***person***	***1,536***	***50***	***76,800***	ditto
2.7	***Honorarium for women interviewed (98 commune x6 women/commune)***	***person***	***384***	***50***	***19,200***	Circular No.58/2011/TT-BTC
2.8	***Photocopy of questionnaires***				***9,920***	
+	Questionnaire for commune staffs	copies	64	5	320	
+	Questionnaire for households	copies	1536	5	7,680	
+	Questionnaire for women	copies	384	5	1,920	
3	**Data analysis and report**				**139,600**	
3.1	***Data input (3 persons)***	***Man month***	***4***	***5,400***	***21,600***	Circular 219/2009/TT-BTC
3.2	***Data analysis***				***56,000***	
+	Team leader	Man month	1	31,000	31,000	Circular 219/2009/TT-BTC
+	Team member (2 persons)	Man month	1	25,000	25,000	ditto
3.3	***Writing report (2 persons)***	Man month	***2***	***31,000***	***62,000***	
4	**Sub total (1+2+3)**	**1.000 VND**			**1,126,050**	
5	**Management cost (8%)**	**1.000 VND**			**90,084**	
6	**Sub total (4+5)**	**1.000 VND**			**1,216,134**	
7	**VAT (10%)**	**1.000 VND**			**121,613**	
	Total (6+7)	**1.000 VND**			**1,337,747**	

Appendix

Appendix G-1

Draft Terms of Reference (TOR) of the Mid-term Evaluation

1.1 Background

The Sustainable Forest Development Project in the Northwest Sub-region is a project newly proposed by MARD with an aim to i) restore and improve watershed forests for both environment and economic purposes, ii) strengthen the capacity of local governments as well as forest owners of watershed forests for sustainable forest management, and iii) contribute to the reduction of GHG emission through reduction of deforestation and forest degradation. The project will be implemented mainly in protection forests and special use forests selected in four provinces in the Northwest sub-region, namely, Dien Bien, Lai Chau, Son La, and Hoa Binh.

The main components of the project will be: i) survey and detailed planning, ii) information dissemination and extension, iii) improvement of watershed forests, iv) development of silviculture infrastructure, v) development of small scale rural infrastructure, vi) support for livelihood development, vii) forest fire prevention, and viii) monitoring and extension.

The mid-term evaluation is one of the activities to be carried out in the component of monitoring and evaluation, which will be carried out in the middle of the project.

1.2 Objectives of the Work

The primary purpose of the mid-term evaluation is to verify whether the project has been implemented on the right track to achieve its goals and objectives in an efficient and effective manner. In addition, the mid-term evaluation aims to determine any difficulties and issues in the implementation of the project and figure out solutions for improvement of the project design and framework. Specifically, the mid-term evaluation shall focus on the assessment of relevant and efficiency of the project with determination of impeding and contributing factors for project operations.

1.3 Major Activities

Major activities to be carried out in the mid-term evaluation of this project are as follows:

- Confirmation and analysis of the progress of the project as compared to the plan
    - Review of the progress of the project activities that have been implemented in the four provinces as compared to the original plans;
    - Accomplishments made by the project activities as of the date when the mid-term evaluation is made;
- Field validation of the accomplishments made under the component of improvement of watershed forest component;

  Reforestation (Target areas for field validation will be 2 % of the planted areas. The size of one sample plot should be 400 m^2/plot.)
    - Year of planting
    - Number of trees planted and survival rate of trees planted in the selected plantations
    - Height of trees and diameter of tree trunk

- Quality of planted trees
- Growing stock of trees

ANR/Protection (Target areas for field validation will be 1 % of the contracted areas. The size of one sample plot should be 500 m^2/plot.)

- Year of contract
- Vegetation covers
- Height of trees and diameter of tree trunk
- Growing stock of trees

- Evaluation of general social impact on the target communes;

  - Number of communes and households involved in the project
  - Number of village working groups organized
  - Any changes in forest management practices / forest resource uses in the communes
  - Number of beneficiaries involved in the project
  - Livelihood improvement activities introduced

- Evaluation of economic impact on local households (The target sample size for evaluation of economic impact is 50 % of the beneficiary households involved in the project in two-fifth target communes.

  - Cash income generated by the project
  - Income generating activities additionally introduced

- Evaluation of the performance of the project;

- Lessons learned though the project implementation;

- Recommendations on project designs

1.4 Estimated Work Volume

Assuming about 50 % of the forest development contracts between MBs and the forest users' groups are made by the time when the mid-term evaluation is undertaken, the estimated targets for field validation and economic impact evaluation would be:

Reforestation/Afforestation: 160 ha (16,010 ha x 50% x 2 % = 160 ha)

ANR/Forest protection: 280 ha (55,960 ha x 50% x 1% = 280 ha)

Communes surveyed: 13 communes (64 communes x 50 % x 40 % = 13)

1.5 Work Items

The Contractor shall carry out the following activities in the course of the work.

- To design the mid-term evaluation study along with the DAC Five Evaluation Criteria and propose the design in the form of the evaluation design sheet. Submit the evaluation design sheet to the CPMB for their comments.

- To prepare questionnaires and other survey instruments, such as checklists and interview sheets, to be used for the study. Submit those materials to the CPMB for their comments.
- To collect data/ information for evaluation in such ways as documentation review, hearings from the executing agency and other Project-related organizations, surveys to direct and indirect beneficiaries, observation and direct measurement.
- To analyze the collected data and information and compile the evaluation findings in the form of the evaluation summary sheet. Submit the evaluation summary sheet to CPMB and PPMBs for their comments.
- To discuss the contents of the evaluation summary sheet with CPMB and PPMBs and finalize them.
- To prepare the mid-term evaluation report based on the finalized version of the evaluation summary sheet, and submit it to CPMB for their comments.
- To submit to CPMB the final version of the mid-term evaluation report with the supplementary information collected through the study.

1.6 Timeline

The mid-term evaluation will be carried out in the fifth year of the project. The total length of the work will be six (6) months from designing of a work plan to submission of the final report.

Appendix G-2

Draft Terms of References (TORs) of the Terminal Evaluation (for Assessment of Physical Accomplishments) of the Project

2.1 Background

The Sustainable Forest Development Project in the Northwest Sub-region is a project newly proposed by MARD with an aim to i) restore and improve watershed forests for both environment and economic purposes, ii) strengthen the capacity of local governments as well as forest owners of watershed forests for sustainable forest management, and iii) contribute to the reduction of GHG emission through reduction of deforestation and forest degradation. The project will be implemented mainly in protection forests and special use forests selected in four provinces in the Northwest sub-region, namely, Dien Bien, Lai Chau, Son La, and Hoa Binh.

The main components of the project will be: i) survey and detailed planning, ii) information dissemination and extension, iii) improvement of watershed forests, iv) development of silviculture infrastructure, v) development of small scale rural infrastructure, vi) support for livelihood development, vii) forest fire prevention, and viii) monitoring and extension.

The terminal evaluation which is one of the activities to be carried out in the component of monitoring and evaluation aims to comply with Decree on Management and Use of ODA and Concessional Loans granted by Foreign Sponsors (Decree No. 16/2016/ND-CP) and its associated circulars as well as JICA's Evaluation Guidelines. Hence, the terminal evaluation is composed of two (2) parts, namely i) physical evaluation and ii) socio-economic evaluation. This is the draft terms of reference for physical evaluation in the terminal evaluation of the project.

2.2 Objectives of the Work

The primary purpose of the physical evaluation is to confirm the physical accomplishments made by the project and assess the efficiency, effectiveness, impact, and sustainability of the project by reviewing the process of achieving the physical development, and confirm the efficiency, effectiveness, impact, and sustainability of the project by revising the physical development of the project. The terminal evaluation also allows for ensuring the accountability for the GOV and Donor country taxpayers.

2.3 Major Activities

Major activities to be carried out in the physical evaluation of the project are outlined below.

(1) To review the project design, overall framework, and process of project implementation by collecting and assessing the documents relating to the following information:

- Project designs and overall framework;
- Progress of the project activities that have been implemented in the 4 provinces as compared to the original plans;
- Implementation process of the project.

(2) To conduct a forestry inventory survey with an analysis of the latest satellite images in the following manner:

a. Analysis of the latest satellite images

- Purchase of the medium resolution satellite images such as CARTOSAT-1 covering the project areas
- Analysis of the satellite images to clarify the present land use and forest cover the project areas
- Development of latest land use and forest cover maps with GIS data on contour lines, roads, administrative boundaries, etc. by using GIS.
- Development of latest land use and forest cover maps with GIS data on contour lines, roads, administrative boundaries, etc. by using GIS.
- Revision and finalization of the latest land use and forest cover maps based on the results of ground truth surveys and forest inventory survey

b. Conduct of the forest inventory survey in the selected project areas in accordance with the following guidelines:

Guidelines for Selection of Sampled Areas

Target	Specifications of the survey	
Areas for afforestation	Sampling rate:	0.5 % of the total areas developed as afforestation
	Size of sampling plot:	400 m^2/plot (20mx20m)
	Survey items:	Total area of the plantations developed, species planted, survival rate, density of seedlings planted, height and breast height diameter of trees planted, forest status, and estimated carbon stock.
Areas for ANR and protection	Sampling rate:	5 plots each from the project areas in the target commune
	Size of sampling plot:	500 m2/plot (25 mx20m)
	Survey items (ANR):	Total area of areas rehabilitated, species planted, survival rate, density of seedlings planted, height and breast height diameter of trees planted, forest status, and estimated carbon stock increased
	Survey items (protection):	Total area of natural forests protected and forest status

Source: JICA Preparatory Survey Team

(3) To evaluate the efficiency of the inputs and activities made for the following forest related activities:

- Forest inventory, mapping, and detailed designing
- Forest development and improvement activities
- Silviculture infrastructure development
- Forest fire prevention

(4) To evaluate the sustainability of the project by assessing the following points:

- Technical and financial capacities of PFMBs and SUFMBs for management of forests within their jurisdiction
- Technical and financial capacities of PFMBs and SUFMBs for operation and maintenance of silvicultural infrastructure developed within their jurisdiction
- Technical, financial, and organizational capacities of the village working groups that would make collaborative management agreements with PFMBs or SUFMBs for management and protection of the assigned forests in a proper manner.

(5) To extract lessons and obtain good practices and recommendations for a future project similar to the project.

2.4 Work Items

The Contractor shall carry out the following activities in the course of the work.

- To design a work plan for the physical evaluation and submit it to CPMB for their comments and approval.
- To collect data/information for physical evaluation through literary reviews, interviews to the executing agency and other project-related organizations and individuals, field observation, and direct measurement.
- To procure the latest satellite images covering the project areas.
- To analyze the satellite images and develop the latest land use and forest cover with ground truth surveys.
- To carry out a forest inventory survey in the project areas.
- To analyze the collected data and information and assess the results for evaluation of the project.
- To compile the evaluation report and submit it to CPMB and PPMBs for their comments and approval.
- To discuss the contents of the evaluation report with CPMB and PPMBs and finalize them.
- To assign and allocate necessary human resources and arrange facilities and equipment needed for the evaluation.

2.5 Timeline

The terminal evaluation will be carried out in the ninth year of the project. The total length of the work will be six (6) months from designing of a work plan to submission of the final report.

Appendix G-3

3 Draft Terms of References (TORs) of the Terminal Evaluation (for Assessment of Socio-economic Impacts) of the Project

3.1 Background

The Sustainable Forest Development Project in the Northwest Sub-region is a project newly proposed by MARD with an aim to i) restore and improve watershed forests for both environment and economic purposes, ii) strengthen the capacity of local governments as well as forest owners of watershed forests for sustainable forest management, and iii) contribute to the reduction of GHG emission through reduction of deforestation and forest degradation. The project will be implemented mainly in protection forests and special use forests selected in four provinces in the Northwest sub-region, namely, Dien Bien, Lai Chau, Son La, and Hoa Binh.

The main components of the project will be: i) survey and detailed planning, ii) information dissemination and extension, iii) improvement of watershed forests, iv) development of silviculture infrastructure, v) development of small scale rural infrastructure, vi) support for livelihood development, vii) forest fire prevention, and viii) monitoring and extension.

The terminal evaluation which is one of the activities to be carried out in the component of monitoring and evaluation aims to comply with Decree on Management and Use of ODA and Concessional Loans granted by Foreign Sponsors (Decree No. 16/2016/ND-CP) and its associated circulars as well as JICA's Evaluation Guidelines. Hence, the terminal evaluation is composed of two (2) parts, namely i) physical evaluation and ii) socio-economic evaluation. This is the draft terms of reference for socio-economic evaluation in the terminal evaluation of the project.

3.2 Objectives of the Work

The primary purpose of terminal evaluation from the socio-economic point of view is to evaluate the project effect, sustainability, relevance, and impact from the socio-economic point of view putting its specific focus on socio-economic conditions of local communities in the target communes.

3.3 Major Activities

Major activities to be carried out in the terminal evaluation of socio-economic are as follows:

(1) To interview 24 households in the target communes, who are the same households that the baseline survey have interviewed in the beginning of the project, about the following topics/

Topics to be covered by the Interview Survey

Topics	Survey Items
General background	Size of family, Ethnicity, History of family, Information of family members (age, educational background, occupation, etc.)
Assets and facilities, and access to social services	Major assets owned by household, Type and size of house, Access to water supply system, electricity, healthcare services, etc.
Income and expenditures	Annual (or monthly) income level, Main sources of income, Annual (or monthly) expenditure
Land tenure	Land holding size, Land tenure
Agricultural production	Cropped areas, Farming types (shifting cultivation/permanent farms), Major staple and cash crops, Production, Yields, Selling prices, Farm inputs, etc.
Forest use and	Forest areas owned by household, Major forestry products (including NTFPs),

Topics	Survey Items
management	Selling prices, Forest management activities, Collection of fire wood
Livestock and fisheries	Number of livestock animals owned, Selling prices, Any fishery activities and production, etc.
Recommendations for sustainability of the project	Any suggestions and recommendations to ensure proper management of of plantations established and natural forests protected in the post project period

Source: JICA Preparatory Survey Team

(2) To interview the commune/village leaders to collect the updated general socio economic information of the target communes/villages. The following topics are to be covered.

a. Demographic conditions (villages, population, households, and ethnicity)
b. Agricultural production (cropped areas, major crops, production, and number of livestock animas)
c. Forestry production (area of production forests, major forestry products (including non-timber forest products), and sources of non-timber forest products)
d. Fishery production and other sources of livelihoods
e. Access to rural finance or existence of village funds
f. Existing rural and social infrastructure (roads, irrigation systems, electricity, water supply systems, marketing, school, and health clinic, etc.)
g. Any ongoing projects on poverty alleviation ad commune development
h. Existing mass organizations
i. Existing activities and organizations for forest management
j. Development needs of the commune

(3) To interview six (6) women selected by the baseline survey for gender sensitive analysis to collect information about any changes in gender differences and impacts on women caused by the project. The topics to be surveyed shall include, but not limited to, the following:

a. Main roles played by women in forest use and management
b. Gender differences in access to and control over forest resources
c. Gender differences in decision making processes relating to forest management
d. Benefits that women have obtained from forest management and protection
e. Impacts caused by the project to women

(4) To encode/input all the data collected in the interview surveys into the same formats (Excel worksheets) used by the socio economic survey so that the results can be compared with the situations before the implementation of the project.

3.4 Work Items

The Contractor shall carry out the following activities in the course of the work.

a. To design a work plan for the baseline survey in consultation with CPMB and PPMBs.
b. To arrange necessary equipment and facilities to collect and analyze the collected data.
c. To employ and arrange the field enumerators and data encoders for the survey.
d. To take necessary arrangements/coordination to conduct the field surveys.
e. To analyze the collected data and information and generate the outputs required.

3.5 Timeline

The terminal evaluation will be carried out in the ninth year of the project. The total length of the work will be six (6) months from designing of a work plan to submission of the final report.

4 Cost Estimations

The preparatory survey team estimated the costs of activities for the mid-term evaluation and terminal evaluation by collecting price quotations from third parties based on the draft TORs described in the previous sections.

Detailed cost estimates or cost breakdowns of the respective activities are shown in **Tables G-16~18**, and summarized below.

a. Mid-term evaluation: VND 1,000,2 million/64 communes
b. Terminal evaluation (Physical accomplishments): VND 4,207.2 million/16,010 ha
c. Terminal evaluation (Socio-economic impacts): VND 1,216.1 million/64 communes

Annex H

Annex H Project Evaluation

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Annex H: Project Evaluation

H.1 Economic and Financial Evaluation for Project Evaluation

The viability of the project was evaluated from economic and financial points of view. A cost and benefit analysis including a sensitivity analysis was made for evaluation of the project from the economic point of view, while the financial capacity of the provincial governments and project effect on household economy were assessed for the financial evaluation. The framework of the project evaluation is illustrated below.

H.1.1 Basic Assumptions for Economic and Financial Analysis

The following assumptions were made for both financial and economic analysis.

Basic Assumptions for the Analysis

<table>
<tr><th>Items</th><th>Assumptions</th></tr>
<tr><td>1) Exchange rate</td><td>The following exchange rates were given as the general conditions for the ODA project in 2016.
USD 1.0 = JPY 101.3 = VND 21,954, VND 1 = JPY 0.00461</td></tr>
<tr><td>2) Evaluation period</td><td>The evaluation period is set at 43 years including 3-year preparatory period (i.e., procurement of consulting services) before the start of forest development and improvement activities.
The life period of the construction facilities is estimated from 20 to 40 years. Replacement costs of facilities are added after the life period ends. The residual values of the facilities are not considered as the majority of facilities has 40 years of life period, and it matches to the evaluation period.</td></tr>
<tr><td>3) Inflation</td><td>The influence of inflation is not considered in the calculation of economic costs and benefits.</td></tr>
<tr><td>4) Discount rate</td><td>A discount rate of 10% is adopted for the calculation of the net present value. This rate is commonly used in evaluation of the development projects.</td></tr>
<tr><td>5) With-project and without-project conditions</td><td>The project benefits were estimated by comparing the “with-project conditions” to the “without project conditions.” The following table shows the basic assumptions in the changes of forest status with-project and without-project conditions.
<table>
<tr><th>With-Project Conditions</th><th>Without-Project Conditions</th></tr>
<tr><td><u>Bare lands/Grasslands/Bushes</u>
Bare lands/grass lands/bushes will be converted to plantations developed by afforestation. It is assumed that two afforestation models will be equally developed in the project area. Economic species planted in the plantations can be used for economic purposes.
<u>Natural forests</u>
Natural forests targeted for protection of natural forests can be protected and maintained as they are.
<u>Woodlots</u>
The woodlots will be protected and improved to regenerating natural forests which are eligible to be paid by the PFES scheme.</td><td><u>Bare lands/Grasslands/Bushes</u>
Bare lands/grasslands/bushes will be maintained as they are.
<u>Natural forests</u>
The area and quality of natural forests will be reduced and degraded at the same rates observed between 1990 and 2010.
<u>Woodlots</u>
The woodlots will be maintained as they are or further degraded into bushes or scrubs.</td></tr>
</table></td></tr>
</table>

Source: JICA Preparatory Survey Team (2016)

H.2 Economic Evaluation

H.2.1 Economic Cost

Economic cost of the project is calculated by the sum of the following three costs: (i) project cost; (ii) O&M cost; and (iii) replacement cost. Residual values of the facilities and equipment installed/developed by the project was not considered in the evaluation as their life periods would be almost the same with the evaluation period. All the costs were converted into the economic form by applying the conversion factors. To this end, the standard conversion factor

(SCF) and shadow wage rate (SWR) were determined as 0.9 and 0.6, respectively, based on the cases of similar types of investment projects appraised in Vietnam.

(1) Project cost

In general, the economic costs of the project components were calculated by multiplying SCF of 0.9 with the total costs of the components except for those of "Improvement of Watershed Forests," "Improvement of Silviculture Infrastructure," and "Improvement of Small-scale Rural Infrastructure," in which the labor costs account for the major share of the respective total cost. Since the labor cost of the improvement of watershed forest was clearly defined in accordance with the government regulations, SWR of 0.6 and SCF of 0.9 were simultaneously used for estimation of the economic cost. It was difficult to clearly differentiate the labor cost from other cost in the total costs of the other two components as the proportion of labor cost varies with the type, size, and quantity of infrastructure proposed. Hence, SCF adjusted as 0.8 was used for estimation. The following table indicates how the economic costs of the respective project components were calculated.

Conversion Factors for Economic Cost Calculation

Cost items	Conversion Factors
1) All the components except "improvement of watershed forest," "improvement of silviculture infrastructure," and "improvement of small-scale rural infrastructure"	Multiply SCF of 0.9 with the total costs of the components
2) Improvement of watershed forest	Multiply SWR of 0.6 and SCF of 0.9 with the total labor cost and the other cost, respectively
3) Improvement of silviculture infrastructure and improvement of small-scale rural infrastructure	Multiply adjusted SCF of 0.8 with the total costs of the components

Source: JICA Preparatory Survey Team (2016)

The total economic cost of the project was estimated at VND 1,243 billion as shown below. The financial cost is estimated in **Chapter 4.2** of Part II of the final report, and the detailed cost estimate of the improvement of watershed forests shown in **Annex D** of Volume II of the final report were used for calculation.

Table Economic Cost of the Project

(unit: VND million)

	Cost Items	Financial Cost	CF (Conversion Factor)	Economic Cost
1	Survey and Detailed Planning	65,131	0.9	58,617
2	Improvement of Watershed Forests	984,878	0.6 for labour cost, 0.9 for other cost	638,146
3	Improvement of Silviculture Infrastructure	112,469	0.8	89,974
4	Small scale infrastructure	148,755	0.8	119,004
5	Support for Livelihood Development	44,006	0.9	39,607
6	Forest Fire Control	16,881	0.9	15,195
7	**Sub-total OF Base Cost (1~6)**	**1,372,120**		**960,544**
8	Project Management	125,580	0.9	113,019
9	Price contingency of Base Cost and PM Cost	354,225	None *	0
10	**Sub-total (7+8+9)**	**1,851,925**		**1,073,563**
11	Physical Contingency (5% of items 7 and 8)	74,885	-	53,678
12	Consulting Services (including Phyical Cont.)	115,880	1.0	115,880
13	Price contingency of Consulting Services	15,173	-	0
14	Tax and Duty	196,778	None *	0
15	**GRAND TOTAL (10+11+12+13+14)**	**2,254,638**		**1,243,122**

*Note: The price contingency and tax is excluded from the economic cost

Source: JICA Preparatory Survey Team (2016)

(2) O&M cost

Operation and maintenance are required for the following components to ensure the sustainability of the project effects.

- Improvement of watershed forests
- Improvement of silviculture infrastructure
- Improvement of small-scale rural infrastructure

The O&M costs for the above-listed components were calculated on the basis of the following assumptions.

Table O&M Cost of the Project

Cost Items	Assumption
Improvement of Watershed Forests	The project areas, namely plantations established, forest rehabilitated and natural forest protected through the project, will be protected by the village working groups.
Improvement of Silviculture Infrastructure	Silviculture infrastructure facilities developed through the project will be maintained from the 7th year of the project. The O&M cost is estimated at 1% of the capital investment cost (**VND 900 million**) of the same component.
Improvement of small-scale Rural Infrastructure	Small-scale rural infrastructure facilities improved by the project will be maintained from the 7th year of the project with use of 1% of the capital investment cost (**VND 1,190 million**) of the same component.

Source: JICA Preparatory Survey Team (2016)

(3) Replacement cost

The equipment and facilities installed in the components of "improvement of silviculture infrastructure" and "improvement of small-scale rural infrastructure" need to be replaced at intervals of 20 to 30 years. The replacement costs estimated for the evaluation are shown below.

Table Replacement Cost of the Project

Cost Category	Item	Replacement Period	Economic Cost in Four Provinces (VND million)
Improvement of Silviculture Infrastructure	Fire watch towers, Information boards, Nursery	20 years	7,004
	Forest guard office, Forest guard station	30 years	9,895
Small scale infrastructure	Irrigation system, Water supply system	20 years	34,092

Source: JICA Preparatory Survey Team (2016)

H.2.2 Economic Benefit of the Project

The following economic benefits are expected to be generated through the implementation of the project.

a. Benefits from collection of firewood, timber, and resin from the plantations developed in protection forests
b. Benefits from CO_2 sequestration by afforestation and assisted natural regeneration
c. Benefits from reduction of CO_2 emissions through reduction of deforestation and forest degradation

The following table is the summary of the economic benefits estimated for the economic evaluation of the project. The payment for forest ecosystem services (PFES) was not counted as an economic benefit from the project as it was considered as a part of fund transfer within the country.

Assumption for Benefit Estimate of the Project

Type of benefits	Project activities related	Source of benefit (assumption)	Unit price	Volume (for the evaluation period)
Collection of firewood, timbers, & resin	Afforestation in the target protection forests	■ Fuel wood (*Pinus massoniana & Acacia mangium*) ■ Timber (*Pinus massoniana & Acacia mangium*) ■ Resin (*Pinus massoniana*)	VND 600,000/m^3 VND 550,000/m^3 VND 1,500,000/m^3 VND 1,150,000/m^3 VND 25,000/kg	4.5 m^3/ha 19.0 m^3/ha 6.8 m^3/ha 76 m^3/ha 40,130 kg/ha
CO_2 sequestration	Afforestation and ANR without enrichment in the target protection forests and special use forests	■ CO_2 sequestration in Afforested areas ■ CO_2 sequestration in ANR areas	US$ 3.3/ t CO_2 US$ 3.3/ t CO_2	10.46 t CO_2/ha 2,80 t CO_2/ha (Total 165,825 t CO_2/year)
Reduction of CO_2 emission	Protection of natural forests in the target protection forests and special use forests	■ Reduction of CO_2 emission from natural forests by protection	US$ 3.3/ t CO_2	8.81 t CO_2/year/ha (Total 338,499 t CO_2/year)

Source: JICA Preparatory Survey Team (2016)

The total values of the economic benefits over the evaluation period are summarized below.

Summary of the Economic Benefits

Province	Type of benefits	Total estimated values
Dien Bien	Collection of forest products	VND 1,710,538 million
	CO_2 sequestration	VND 91,356 million
	Reduction of CO_2 emission	VND 225,804 million
Lai Chau	Collection of forest products	VND 3,545,578 million
	CO_2 sequestration	VND 215,664 million
	Reduction of CO_2 emission	VND 0
Son La	Collection of forest products	VND 1,169,229 million
	CO_2 sequestration	VND 93,582 million
	Reduction of CO_2 emission	VND 214,948 million
Hoa Binh	Collection of forest products	VND 1,115,098 million
	CO_2 sequestration	VND 79,948 million
	Reduction of CO_2 emission	VND 540,193 million
Overall	Collection of forest products	VND 7,540,443 million
	CO_2 sequestration	VND 480,549 million
	Reduction of CO_2 emission	VND 980,945 million

Source: JICA Preparatory Survey Team (2016)

The overall result of economic cost and revenue of each forest development and improvement model is shown in **Tables H-1 to H-5**, and their summaries are also shown in **Table H-6.** The economic cost and benefits balances of the improvement of watershed forests in the respective target provinces are shown in **Tables H-7** to **H-10. Table H-11** shows the results of the estimation of the benefits from CO_2 sequestration and those from reduction of CO_2 emissions. The results of the economic cash flow analysis (economic cost and benefit analysis) of the entire project shown in **Table H-12 and Table H-13.**

The methodologies and assumptions to estimate the above-listed economic benefits are explained below.

(1) Benefit from collection of firewood, timber, and resin from the plantations developed in protection forests

a. Assumption 1: Type of the benefit

In protection forest invested by the state budget, the exploitation of subsidiary trees (economic species) as timber or firewood or non-timber forest products (NTFPs) are allowed. Assuming the following two types of afforestation model will be introduced for afforestation in the target

protection forests, timber, resin, and firewood are the major sources of benefits collected from the plantations developed by the project.

Afforestation Models and Estimated Benefit from the Each Model

Model ID	Models	Benefits
AFF-01A	Indigenous species: *Schima wallichii Choisy* (600 trees/ha) Economic species: *Pinus masoniana Lamb* (1000 trees/ha)	Fuel wood (*Pinus massoniana*) Timber (*Pinus massoniana)* Resin (*Pinus massoniana*)
AFF-01B	Indigenous species: *Chukrasia tabularis Choisy* (600 trees/ha) Economic species: *Acacia mangium* (1000 trees/ha)	Fuel wood (*Acacia mangium*) Timber (*Acacia mangium*)

Source: JICA Preparatory Survey Team (2016)

b. Assumption 2: Market price and factors to estimate volume to be collected

The volume of harvest and market prices were set based on the following assumptions.

Basic Assumption for Benefit Estimate

	Pinus Massoniana	*Acacia Mangium*
Growth rates (m3/ha/year)	4.5	12.5
Volume	- Firewood: 40% of the total harvested volume - Timber: 60% of the total harvested volume - Resin: 2.5 kg/tree/year	- Firewood:20% of total harvested volume - Timber:80% of total harvested volume
Market Prices	- Firewood: VND 600,000/m3 - Timber: VND 1,500,000/m3 - Resin VND 25,000/kg	- Firewood: VND 550,000/m3 - Timber: VND 1,150,00/m3
Timing for harvest*	Timber and Firewood: 7th year (100 trees), 12th year (150 trees), 17th year (150 trees) Resin:15th year (from the remaining trees)	Timber and Firewood: 7th year (300 trees), 9th year (300 trees) and 12th year (400 trees)
Cost for collection activities	Harvesting and transportation cost: 250,000 VND/m3 Labor cost: 231,000 VND/day	

Source: JICA Preparatory Survey Team (2016) based on the published documents[1]

*Note: Harvest timing and volume is referred to Decision No.15/2015/QF-TTg, dated June 09, 2015 issued by PM

c. Methodology for the benefit estimate

The benefit from the above mentioned forestry products are generally estimated as below.

Gross Benefit = Market unit price of the products × Expected production volume during the evaluation period

(2) Benefits from CO_2 sequestration by afforestation and ANR

Through afforestation and ANR in the project, CO_2 will be sequestrated in the planted/grown tree as wood biomass. The amount of the CO_2 sequestration is converted to carbon credit, which can be sold in the carbon market. The methodology and assumption to estimate this benefit are explained in the following sub-sections.

a. Methodology for Calculation of CO_2 Sequestration

The amount of the carbon sequestration by afforestation and ANR was calculated based on the guidelines of "JICA Climate-FIT Version 2.0 (March 2014)".

[1] Que, N.D. and Thang, N.V., 2008. Site classification for *Pinus massaonia* plantations in northwest region of Vietnam, Journal of Soil Science, Vol.3 (2008), pp.661-667.
Hai, V.D., 2008. Assessment of *Schima Wallichii Choisy* plantations in the Northwest region of Vietnam, Science and Technology Journal of Agriculture and Rural Development, Vol.4 (2008), pp.72-76.
Trieu, D.T, 2008. Carbon sequestration capacity of *Pinus massoniana* planted in different soil class in the Northeast of Vietnam. Science and Technology Journal of Agriculture and Rural Development, Volume 11(2008), pp.94-99.
World Bank. 2015. Vietnam - Forest Sector Development Project. World Bank Group. http://documents.worldbank.org/curated/en/2016/03/26087385/vietnam-forest-sector-development-project.

The Calculation applied to Estimate the Amount of CO2 Sequestration

Benefit of CO_2 sequestration	Guideline for Calculation of CO_2 Sequestration	Activity and Area
(i) Afforestation	JICA Climate-FIT Version 2.0, March 2014, 01. Forest and Natural Resources Conservation / Afforestation	Afforestation in protection forests (13,930ha) Afforestation in special use forests s (2,080ha) ANR without enrichment (12,500ha)

Source: JICA Preparatory Survey Team (2016)

The calculation formula is shown below.

$$\Delta C_t = (N_t - N_{t-1}) * (\frac{44}{12})/\Delta t$$

Where: ΔC_t: actual net CO_2 removal by sinks of afforestation model per annual (tCO_2 –e/year)
N_t = (AGB + BGB) x CF
Where: AGB: above ground biomass at time t under the project scenario (tC/ha),
AGB = SV_t x BEF x WD
Where: SV_t: stem volume at time t for the project scenario (m3/ha)
BEF: biomass expansion factor
WD: basic wood density (td.m./m3)
BGB: below ground biomass at time t under the project scenario (tC/ha),
BGB = AGB * RBA
RBA: ratio of below to above ground biomass

Δt: time increment (1 year)

The assumptions and factors applied in the formula shown above are summarized below.

Factors for Calculation of CO_2 Sequestration by afforestation and ANR

Tree Species	WD (Bulk density)	BEF (Biomass expansion factor)	CF (Carbon Fraction)	Ratio of below to above ground biomass
Pinus massonia	0.65	1.4	0.5	0.265
Schima wallichii Choisy[1]	0.53			
Acacia Mangium[2]	0.68			
Chukrasia tabularis[2]	0.59			
ANR Forest[3]	0.47	BCEF (biomass conversion and expansion factor): 0.9		0.203

Source: 1: Phuong, V.T (2012)
2: Towards a worldwide wood economics spectrum, (2009)
3: Vu Tien Dien (2015)
Others: Default value set by IPCC

Afforestation activities may cause the expansion of new farms in existing forests, as it converts some of existing crop lands and/or animal grazing areas into non-agricultural forms. Consequently, the possibility of additional deforestation or forest degradation (leakage) outside the project areas should be taken into account in general. However, the leakages is not considered in the calculation in accordance with the JICA's guidelines owing to the following reasons: i) existing farms were excluded from the project areas in the selection, ii) about 50~60% of the potential target areas, which might be in the fallow process of shifting cultivation, were selected as the project areas for afforestation; therefore, there would be still enough lands to cultivate in the future, and iii) those who hold de jure/de facto land use rights over the project areas could also sufficient cash income from the project during and after the project; hence, they would not intend to further expand their farmlands.

The results of calculation of the volume of carbon sequestrated by the forest development and improvement activities are shown in **Tables H-1 to H-5**, and summarized below.

Net CO_2 absorption by Each Forestry Activity

(unit: t- CO_2-e/year)

Year	5	10	20	30	40
Afforestation in PF(AFF_01A)	75.9	142.6	226.5	340.3	454.0
Afforestation in PF(AFF_01B)	144.5	95.8	191.6	287.3	383.1
Afforestation in SUF (AFF_02)	47.9	95.8	191.6	287.3	383.1
ANR without enrichment (ANR_01)	14.0	28.0	56.0	84.0	112.0
Protection (PF)	0.0	0.0	0.0	0.0	0.0

Source: JICA Preparatory Survey Team (2016)

In the process of land preparation for planting trees, existing vegetation, such as grasses and bushes, will be cleared. Since clearance of existing vegetation causes CO_2 emission, the estimated amount of emissions should be deducted from the amount of carbon sequestration by afforestation. Since there are no appropriate reference data of biomass volumes in the classes of Ia and Ib, the preparatory survey used the reference data (biomass volume of grass land and bushes) based on the survey made in Laos, where the vegetation and climate conditions are similar to the target provinces, for calculation of CO_2 emission[1].

Table H-11 shows the CO_2 sequestration and CO_2 emission by afforestation in each target province. The total amount of CO_2 sequestration was estimated on the basis of the tree growth models during 40 years, of which results are presented in **Tables H-1 to H-5.** The average CO_2 sequestration per year was also calculated by using the methodology described in the guidelines of JICA Climate-FIT Version 2.0 as shown in **Table H-14.** The total amount of CO_2 sequestration calculated on the basis of the annual average was the same as the estimation made in **Table H-11**. Hence, this annual average CO_2 sequestration was used for benefit analysis of the project.

b. Assumption 1: Price of carbon credit

The price of carbon credit is assumed at USD 3.3/tCO_2 by referring to "Forest Trend's Ecosystem Marketplace" (2016)[2], which globally provides the information on environmental finance, markets and payments for ecosystem services. A carbon credit market survey conducted by Forest Trend's Ecosystem in 2016 revealed the actual price widely ranged from USD 0.1/tCO_2 to USD 44.8/tCO_2, and the volume-weighted average was USD 3.3/ton in 2015. The data to support this assumption is issued by MARD in 2016. From 2013 to 2015, the Management Board of Biogas Program generated carbon credit by reduction of CO_2 emission by replacement of smoky cooking fires to biogas digesters with manures. This program produced the total of 660,000 carbon credits and received a revenue of VND 44 billion (equivalent to USD 2,011,000), which shows the trading price of carbon credit is about USD 3.1/ tCO_2. Another data to support this assumption is CDM projects implemented in Vietnam in 2012. In the CDM projects, Vietnam Environment Fund paid 3-4 EUR/ tCO_2 for the generated carbon credits (MONRE, 2012).

c. Result

The benefit of the total carbon sequestration is calculated with the following formula.

$$V = \Delta C_t \times P_t$$

[1] Inoue et al., 2003-2007. Improvement of carbon accumulation function and ecosystem management method of shifting cultivation at mountainous region in south-eastern Asia, Forestry and Forest Products Research Institute in Japan.

[2] Forest Trends, 2016. Raising ambition: State of Voluntary carbon markets 2016, Washington DC, United States.

Where: ΔC_t : actual net CO_2 removal by sinks per year (tCO_2 –e/year)

P_t : estimated price of carbon credit (CER-Certified Emission Reduction) in the market

The total economic benefit from afforestation and ANR is estimated at 12,014 VND million per year.

(3) Benefits from reduction of CO_2 emissions through REDD+

The proposed project will contribute to reduction of CO_2 emission through REDD+. This reduction of CO_2 emissions is expected to be converted to carbon credit to lead economic benefit. The methodologies and assumptions for calculation of the estimated economic benefit from REDD+ are explained in the following sub-sections.

a. Methodology for calculation of reduction amount of CO_2 emissions

The amount of the reduction of CO_2 emissions through REDD+ was calculated based on the guidelines of "JICA Climate-FIT Version 2.0 (March 2014)".

Calculation applied to Estimate the Amount of CO_2 Sequestration

Benefit of CO_2 sequestration	Guideline for Calculation of CO_2 Sequestration	Activity and Area
Deforestation	JICA Climate-FIT Version 2.0, March 2014, 02. Forest / Countermeasures for Deforestation and Forest Degradation	Protection of special use forestss (45,100ha)

Source: JICA Preparatory Survey Team (2016)

It is assumed that the carbon stock of the target forest would be maintained as the status quo under the with-the-project condition. In contrast the same would be reduced at the average rate of the carbon loss between 1990 and 2010 under the without-the-project condition. Therefore, the reduction of potential CO_2 emissions is estimated by assessing the changes in forest areas in the target protection forests and special use forests between two scenarios under the with-project and without-project conditions.

As shown in **Table H-15**, the baseline emission or the estimated annual emission under the without-project-condition was further estimated at 398,234 t CO2/year by using the above-mentioned guidelines of "JICA Climate-FIT Version 2.0 (March 2014)". The average emission rate was estimated at 8.81 t CO_2/year/ha.

CO_2 Emission from Forest Change in the Target Area

Target Area for forest protection (ha)	Emission without the project (t CO_2/year) <1	Average emission rate 1990-2010 (t CO_2/year/ha)
45,180	**398,234**	**8.81**

Note <1: The figure includes the leakage of 59,735 tCO_2/year.
Source: JICA Preparatory Survey Team (2016)

b. Assumption 1: Timing of benefit

It is assumed that the benefit is enjoyed every year from the 4th year of the evaluation period.

c. Result

The estimated annual benefit from reduction of CO_2 emissions through REDD+ is summarized below.

Annual Benefit from REDD+

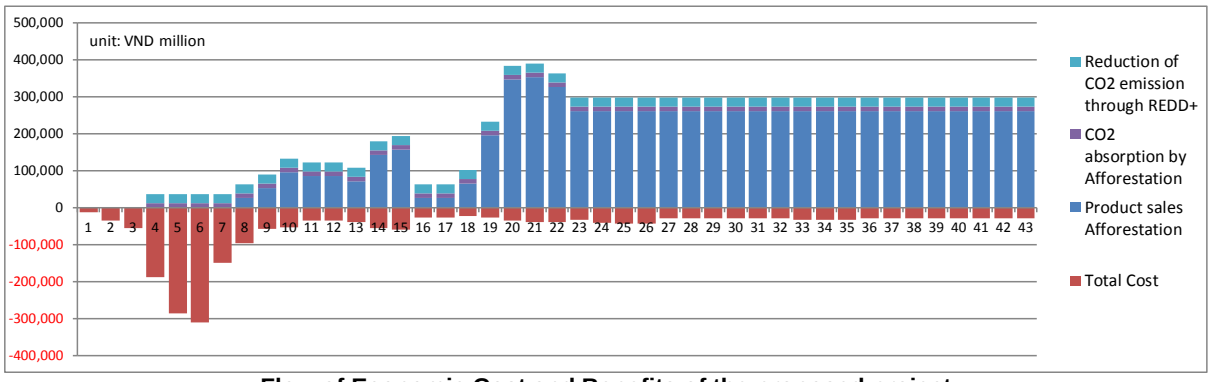
(Unit: VND million)

Benefit	10th year	20th year	30th year	40th year
Reduction of CO_2 emission through REDD+	24,524	24,524	24,524	24,524

Source: JICA Preparatory Survey Team (2016)

H.2.3 Cost-Benefit Analysis

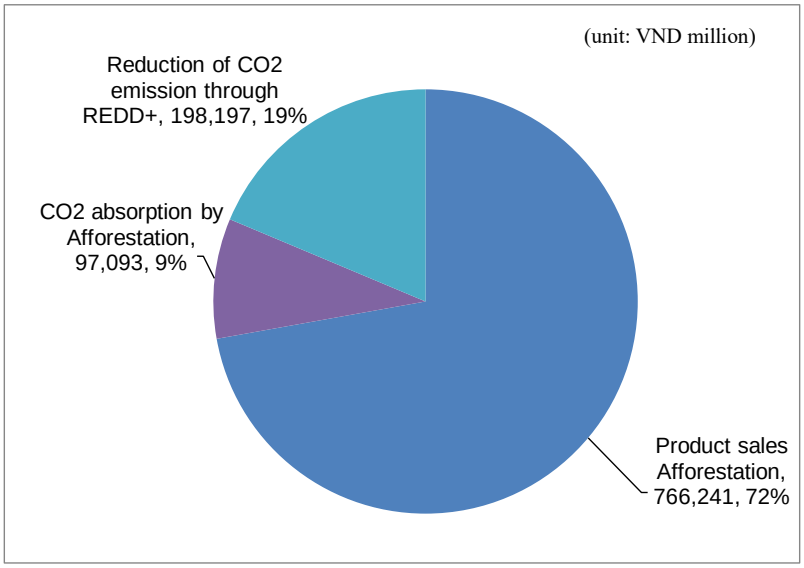
The flow of the economic cost and economic benefits during an evaluation period is presented below. The detailed result of the calculation is shown in **Table H-12 and H-13.**



Flow of Economic Cost and Benefits of the proposed project

Source: JICA Preparatory Survey Team (2016)

The composition of the present value of the benefit is shown in the figure below. The benefit from the product sales shares 72% followed by CO_2 sequestration by REDD+ and CO_2 sequestration by afforestation.



Share of the Present Value of Benefit

Source: JICA Preparatory Survey Team (2016)

The economic rate of return (EIRR), cost-benefit ratio (B/C) and the net present values (NPV) were estimated by using the discount rate of 10% to validate the economic feasibility of the project. The results of the estimation of the respective indicators are shown below.

Table Result of Economic Analysis

Provinces	EIRR	B/C	NPV
(i) Dien Bien	12.5 %	1.28	VND 52,474 million
(ii) Lai Chau	12.2 %	1.28	VND 87,861 million
(iii)Son La	11.0 %	1.10	VND 15,817 million

Provinces	EIRR	B/C	NPV
(iv)Hoa Binh	11.6 %	1.13	VND 27,791 million
(v) CPMB	-	-	- VND 108,905 million
Overall	10.7%	1.08	VND 75,037 million

Source: JICA Preparatory Survey Team (2016)

Although the project economic benefit or economic return is not expected to be as high as those of infrastructure development projects, the figures suggest that the validity of the project can be justified as all the indicators satisfy the minimum requirements. Generally, a community-based afforestation project does not generate substantial direct and short-term benefits, and if anything, the benefit of such a type of project is more long-term and intangible. Particularly, as the main objective of the proposed project is to protect important watershed forests for hydropower plants in the Northwest region, the indirect, long-term, and intangible benefits generated by the project would be considerably significant.

H.2.4 Sensitivity Analysis

To evaluate the reliability and stability of the project effect from the economic viewpoint, a sensitive analysis was made for the following negative scenarios.

- Case 1: 10% increase of the project cost
- Case 2: 20% increase of the project cost
- Case 3: 10% reduction of the project benefit
- Case 4: 20% reduction of the project benefit

The calculation results of the sensitivity analysis are shown in **Table H-16** attached to this Annex and its summary is shown below.

Result of Sensitivity Analysis of the Economic Analysis of the Project

	EIRR	EIRR Difference from the Base Case	B/C	NPV (VND million)
Base Case	10.7%	-	1.08	75,037
Case1: Cost +10%	9.8%	- 0.9%	0.98	-23,613
Case2: Cost +20%	9.0%	- 1.7%	0.90	-122,262
Case3: Benefit -10%	9.7%	- 1.0%	0.97	-31,117
Case4: Benefit -20%	8.6%	- 2.1%	0.86	-137,270

Source: JICA Preparatory Survey Team (2016)

Case 1 and Case 3 show reduction of EIRR value by about 1 %, while Case 2 and Case 4 reduces the EIRR by about 2%. This result indicates the prudent control and monitoring of the project cost should be encouraged to ensure the EIRR.

H.2.5 Other Intangible Benefits

In addition to the quantified benefits described above, the project is expected to generate other intangible benefits, which could not be quantified in financial value due to a lack of related data. Some of the intangible benefits are summarized below.

Table Summary of Intangible Benefits

Expected Benefits	Project Component	Remarks
Provision of clean water to the downstream users	Improvement of Watershed Forests	The forest development and improvement activities will result in the expansion of forest areas and improvement of the quality of forests in the critical watershed; and eventually contribute to the provision of clean and stable water to the downstream users, especially dams for hydropower generation.

Expected Benefits	Project Component	Remarks
Stabilization of peak flows and reduction of downstream flooding	Improvement of Watershed Forests	Likewise, the forest development and improvement activities will reduce the occurrence of flash floods owing to the stabilization of peak flows in rivers.
Reduction of soil erosions and inflow of sedimentation into rivers	Improvement of Watershed Forests	Restoration and rehabilitation of forests through afforestation and ANR of the forest development and improvement activities will reduce the risks of soil erosion and slope failure in the project areas. Reduction of inflow of sedimentation into rivers will further contribute to the sustainable operations of hydropower plants.
Climate and moisture regulation	Improvement of Watershed Forests	In addition to the reduction of GHG emission through reduction of deforestation and forest degradation, the increase of forest coverage through afforestation and ANR will also contribute to the improvement of micro climate which more favorable for the growth of trees.
Market access improvement	Small Scale Infrastructure Development	Improvement of commune and village roads through the component of "improvement of small-scale rural infrastructure" will allow local communities to transport their products to market easily, access to market and agricultural extension information, and access to agricultural inputs as well as reasonable credit schemes. As a result, the livelihood conditions of local communities will be significantly improved by improvement of rural roads in the areas.
Improvement of agricultural productivity	Small Scale Infrastructure Development	The component of "improvement of small-scale rural infrastructure" will also improve/upgrade the existing irrigation systems, which will improve the productivity of not only the staple crops but also cash crops such as vegetables. Hence, such an intervention is expected to substantially improve living conditions of local communities.
Reduction of forest fires	Forest Fire Control	Proper management of forest and fire prevention activities will reduce the risks of forest fires and minimize fire damage to not only forests but also farms and other economic property.
Biodiversity conservation	Improvement of Watershed Forests	Protection of natural forest will contribute to the protection and conservation of valuable ecosystems in the target protection forests and special use forests. Restoration and rehabilitation of forests in bare lands / grasslands / bushes and woodlots will also result in the increase of connectivity of the existing wildlife habitats.
Increase the income of local communities	Support for Livelihood Development	Local communities will have opportunities to learn skills and techniques effective in improving their livelihoods and developing alternative sources of cash income through the component of "support for livelihood improvement."

Source: JICA Preparatory Survey Team (2016)

H.3 Financial Analysis

The focus of the financial analysis was on the assessment of the financial capabilities of two levels of stakeholders, the provincial governments and local communities. For assessment of the financial capability of the provincial governments, the preparatory survey team analyzed their capacity to pay: i) the counterpart funds for operations of the projects and ii) the part of the loan portion of the component projects implemented in the provinces assuming the on-lending scheme was applied to the project. The project could generate additional sources of income which could make up for the potential losses of income caused by the project, particularly the losses caused by conversion of potential areas for crop production into forest.

H.3.1 Assessment of the Financial Capacity of the Provincial Governments

As GoV will shoulder the counterpart funds such as land acquisition cost and project management and a part of the loan portion of the project implemented in the provinces, the affordability of the counterpart funds required for operations of the component projects in the respective target provinces was first assessed as compared to the average provincial budgets, especially those categorized as "development investment expenditures." Moreover, the financial soundness of the provincial governments, in the case where the on-lending scheme would be adopted, was assessed by checking if the provincial governments could pay 50% of

the loan amount for the component projects implemented in the respective provinces. In the assessment, the average amount of budget allocated to "development investment expenditures." was compared to 50% of the highest annual loan disbursement in the respective provinces. The budgets of the provincial governments are summarized in **Section 4.6.1** of Part I of the final report. The following table shows the results of the assessments.

Result of Financial Capacity Assessment of the Target Provinces

(Unit: VND million)

Items	Dien Bien	Lai Chau	Son La	Hoa Binh
1. Capacity to pay the counterpart funds				
1.1 Annual counterpart funds required	783~12,741	783~23,092	783~12,245	783~13,537
1.2 Development Investment expenditures	**260,869	322,400	*386,100	**259,557
1.3 Proportion	0.3%~4.9%	0.2%~7.2%	0.2%~3.2%	0.3%~5.2%
2. Capacity to pay the part of loan				
2.1 50% of the loan amount in the highest year	49,073 (6th year)	103,816(6th year)	48,004 (6th year)	55,806 (6th year)
2.2 Development Investment expenditures	**260,869	322,400	*386,100	**259,557
2.3 Proportion	18.8%	32.2%	12.4%	21.5%

* In Son La, the planned budget amount in 2014 is used as the data in 2015 is not available.

** In Lai Chau and Hoa Binh provinces, two budget items related to the investment expenditures are not separated in the financial statement. The amount of "Development investment expenditures" is assumed to be 20% of the total expenditures based on the average rate of other provinces.

Source: JICA Preparatory Survey Team (2016)

The results shown above indicate that:

i) It would not be difficult for the target provinces to secure the counterpart budget necessary for the project implementation; and

ii) The target provinces might be capable to repay 50% of the loan amount allocated to the respective provinces in theory even if the on-lending scheme is applied to the project, although it would not necessarily be easy for the provincial governments coordinate the other priority development activities planned by other sectors in the provinces.

H.3.2 Assessment of the Financial Impact on Household Economy

A household budget analysis was made to assess the potential financial impact on local households who would participate in the forest development and improvement activities. The gross household income from the project activities were assessed assuming that the following four models would be the typical cases in which the majority of local communities would engage.

Model 1 Afforestation (1): 2 ha of mix plantation of Indigenous species with *Acacia mangium* in Protection forest
Model 2 Afforestation (2): 2 ha of plantation of Indigenous species in Special use forests
Model 3 ANR: 5 ha of ANR without enrichment
Model 4 Protection: 20 ha of protection of natural forest

The labor wage for the forest development and improvement activities including payment from the PFES scheme, and sales of forest products were considered as major income sources for the local communities participating in the project activities.

The wage payment from the project activities will be ended in the 4th year according to the implementation schedule. The total wage revenue was calculated from the sum of the total labor (Man-day) required for each forestry activity estimated for cost estimate.

Afterwards, from the 5th year, BSM and PFES scheme will be major income sources for the local communities. The benefit from collection of firewood/timber and resin in PF estimated as shown in **Section I.2.2** of this Chapter was applied for calculation of revenue amount from sales of forest resources. Moreover, it was assumed that 15% of the total sales revenue would be shared with the relevant government authorities according to the benefit sharing mechanism drafted by the JICA2 project.

Only harvesting cost were estimated as they might need to hire external laborers for harvesting. The results of household budget analysis are tabulated below.

Model 1: 2 ha of Afforestation in Protection Forest

(unit: VND million/year)

Items / Year	1	2	3	4	5 - 14	15 - 25
1. Gross income						
1) Wage Payment from PFMBs/SUFMBs <1	37.3	22.4	18.2	7.1	0 – 0.4	0.4
2) Sales of Forest Resources (85%)	0	0	0	0	0 – 88.0	0.0
2. Cost of Harvesting	0	0	0	0	0 – 25.0	0.0
3. Gross revenue (1-2)	37.3	22.4	18.2	7.1	0 – 63.0	0.4
Average gross revenue	**21.3**				12.1	0.4

Note: <1 The payment from the PFES scheme was assumed to start in the 10th year at a rate of VND 200,000/ha/year.
Source: JICA Preparatory Survey Team(2016)

Model 2: 2 ha of Afforestation in Special Use Forest

(unit: VND million)

Items / Year	1	2	3	4	5 - 14	15 - 25
1. Gross income						
1) Wage Payment from PFMBs/SUFMBs <1	37.3	22.4	18.2	7.1	0 – 0.4	0.4
2) Sales of Forest Resources (70%)	0	0	0	0	0	0
2. Cost of labor (for harvesting)	0	0	0	0	0	0
3. Gross revenue (1-2)	37.3	22.4	18.2	7.1	0 – 0.4	0.4
Average gross revenue	13.2				0.2	0.4

Note: <1 The payment from the PFES scheme was assumed to start in the 10th year at a rate of VND 200,000/ha/year.
Source: JICA Preparatory Survey Team(2016)

Model 3: 5 ha of ANR without enrichment

(unit: VND million)

Items / Year	1	2	3	4	5 - 14	15 - 25
1. Gross income						
1) Wage Payment from PFMBs/SUFMBs <1	9.1	9.1	9.1	2.0	2.0	2.0
2. Cost of labor	0.0	0.0	0.0	0.0	0.0	0.0
3. Gross revenue (1-2)	9.1	9.1	9.1	2.0	2.0	2.0
Average gross revenue	**8.3**				**2.0**	**2.0**

Note: <1 The payment from the PFES scheme was assumed to start in the 6th year at a rate of VND 200,000/ha/year.
Source: JICA Preparatory Survey Team(2016)

Model 4: 20 ha of protection of natural forest

(unit: VND million)

Items / Year	1	2	3	4	5 - 14	15 - 25
2. Gross income						
1) Wage Payment from PFMBs/SUFMBs <1	8.0	8.0	8.0	8.0	4.0-8.0	4.0
2. Cost of labor	0.0	0.0	0.0	0.0	0.0	0.0
3. Gross revenue (1-2)	8.0	8.0	8.0	8.0	4.0-8.0	4.0
Average gross revenue	**8.0**				**4.4**	**4.0**

Note: <1 The payment from the PFES scheme was assumed to start in the 6th year at a rate of VND 200,000/ha/year.
Source: JICA Preparatory Survey Team (2016)

The results of the assessment indicate that local household who participate in the forest development and improvement activities could earn cash income of VND 8.0 ~ 21.3 million/year for the first four years, which may be equivalent to 23% ~ 61% of the average households income in the target communes assuming that the average per capita annual income is VND 6~7 million and one family has five family members on average based on the results of the household survey made by the preparatory survey team in April and May 2016. The detailed result of the survey is shown in **Annex A** of the final report. In particular, substantial cash income are expected to be paid to local households who engage in afforestation activities. Furthermore, they are expected to be able to earn VND 0.3 million/year ~ 6.3 million/year on average for 20 years after the end of the project support in protection forests on conditions that local communities and PFMBs/SUFMBs concerned would exchange the collaborative management agreement with the benefit sharing mechanism developed by the project. It is, however, necessary to develop another benefit sharing mechanism for collaborative management of forests in special use forests in addition to the PFES scheme to ensure the sustainable forest management of forests in such areas in the post-project period.

Tables

Table H-1 Flow of Economic Cost and Benefit of 1 ha of Afforestation in Protection Forests (AFF-01A)

Assumptions	Rate	Unit
Pinus massonia planting density	1,000	seedling/ha
Schima wallichii Choisy planting density	600	seedling/ha
Replanting rate of Pinus massonia	10%	seedling/ha
Replanting rate of Schima wallichii Choisy	15%	seedling/ha
Growth Rate of Pinus massonia	4.5	m3/ha/year
Growth Rate of Schima wallichii Choisy	3.3	m3/ha/year
Price of Pinus massonia seedling	1,620	VND/seedling
Price of Schima wallichii Choisy seedling	5,850	VND/seeding
Price of Pinus massonia resin	25,000	VND/kg
Price of Pinus massonia firewood (ϕ ≤ 6cm)	600,000	VND/m^3
Price of Pinus massonia roundwood (ϕ ≥15cm)	1,500,000	VND/m^3
Price of a labour-day	138,600	VND/day
Harvesting and internal transporting cost	225,000	VND/m^3

Source:
(Ngo Dinh Que, et al (2009), applied to soil of class III - medium, density: 900 trees/ha
(4.95 m3/ha/year for the plantation of density of 900 trees/ha)

Conversion to Economic Cost

Financial Cost	Economic Cost	CF
1,800	1,620	0.9
6,500	5,850	0.9
25,000	25,000	1.0
600,000	600,000	1.0
1,500,000	1,500,000	1.0
231,000	138,600	0.6
250,000	225,000	0.9

Year		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Quantity of Inputs																					
Number of Economic species seedling	nos.	1,000	100																		
Number of Indigenous species seedling	nos.	600	90																		
Site preparation and planting	man-day	56.2	2.3																		
Tending, weeding, sapling thinning and pruning	man-day	20.1	37.5	30.8	6.6																
Harvesting of Pinuss massonia resin	man-day															9.4	9.4	9.4	7.5	7.5	7.5
Thinning of Pinus massonia	man-day							3.4					8.8					12.4			
Forest protection	man-day	4.4	8.7	8.7	8.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Clearing for fire break line	man-day																				
Total labor requirement	man-day	80.7	48.5	39.5	15.4	1.7	1.7	5.1	1.7	1.7	1.7	1.7	10.5	1.7	1.7	11.1	11.1	23.5	9.2	9.2	9.2
2. Cost of Production	('000 VND)	**17,940**	**8,153**	**6,021**	**2,342**	**264**	**264**	**1,043**	**264**	**264**	**264**	**264**	**2,269**	**264**	**264**	**1,693**	**1,693**	**4,655**	**1,407**	**1,407**	**1,407**
Number of Economic species seedling	('000 VND)	1,620	162																		
Number of Indigenous species seedling	('000 VND)	3,510	527																		
Cost of site prparation & planting	('000 VND)	7,793	312																		
Tending, weeding, sapling thinning and pruning	('000 VND)	2,780	5,200	4,262	918																
Harvesting of Pinuss massonia resin	('000 VND)															1,299	1,299	1,299	1,040	1,040	1,040
Thinning of Pinus massonia	('000 VND)							709					1,823					2,693			
Forest protection	('000 VND)	606	1,211	1,211	1,211	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
Clearing for fire break line	('000 VND)																				
Cost for management and administration	('000 VND)	1,631	741	547	213	24	24	95	24	24	24	24	206	24	24	154	154	423	128	128	128
3. Standing volume	*m3/ha*	7.8	15.6	23.4	31.2	39.0	46.8	51.5	58.8	66.2	73.5	80.9	80.1	86.8	93.5	100.1	106.8	101.5	107.5	113.5	119.5
Pinus massonia	*m3/ha*	4.5	9.0	13.5	18.0	22.5	27.0	28.4	32.4	36.5	40.5	44.6	40.5	43.9	47.3	50.6	54.0	45.4	48.1	50.8	53.5
Schima wallichii Choisy	*m3/ha*	3.3	6.6	9.9	13.2	16.5	19.8	23.1	26.4	29.7	33.0	36.3	39.6	42.9	46.2	49.5	52.8	56.1	59.4	62.7	66.0
4. Biomass of vegetation clearing (Ia, Ib)	*ton/ha*	-40.0																			
5. Yields of Products																					
Pinus massonia resin	kg															1,875.0	1,875.0	1,875.0	1,500.0	1,500.0	1,500.0
Pinus massonia firewood (ϕ ≤ 6cm)	m^3							1.3					3.2					4.6			
Pinus massonia roundwood (ϕ ≥15cm)	m^3							1.9					4.9					7.4			
6. Value of Products (Gross Income)	('000 VND)							**3,591**					**9,234**			**46,875**	**46,875**	**60,694**	**37,500**	**37,500**	**37,500**
Pinus massonia resin	('000 VND)															46,875	46,875	46,875	37,500	37,500	37,500
Pinus massonia firewood (ϕ ≤ 6cm)	('000 VND)							756					1,944					2,754			
Pinus massonia roundwood (ϕ ≥15cm)	('000 VND)							2,835					7,290					11,065			
7. Total Net Profit (6-2)	('000 VND)	**-17,940**	**-8,153**	**-6,021**	**-2,342**	**-264**	**-264**	**2,548**	**-264**	**-264**	**-264**	**-264**	**6,965**	**-264**	**-264**	**45,182**	**45,182**	**56,039**	**36,093**	**36,093**	**36,093**
8. CO_2 absorption by afforestation activites	t-CO2-e/year	**15.18**	**30.35**	**45.53**	**60.70**	**75.88**	**91.05**	**99.58**	**113.81**	**128.03**	**142.26**	**156.49**	**153.62**	**166.42**	**179.22**	**192.02**	**204.82**	**192.37**	**203.75**	**215.12**	**226.50**
Pinus massonia (WD:0.65)	t-CO2-e/year	9.50	18.99	28.49	37.99	47.48	56.98	59.83	68.38	76.93	85.47	94.02	85.47	92.60	99.72	106.84	113.96	95.83	101.53	107.23	112.93
Schima wallichii Choisy (WD:0.53)	t-CO2-e/year	5.68	11.36	17.04	22.71	28.39	34.07	39.75	45.43	51.11	56.79	62.47	68.14	73.82	79.50	85.18	90.86	96.54	102.22	107.90	113.57
9. CO_2 emission by vegetation clearing (Ia, Ib)	t-CO2-e/year	**-73.33**																			

Year		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1. Quantity of Inputs																					
Number of Economic species seedling	nos.																				
Number of Indigenous species seedling	nos.																				
Site preparation and planting	man-day																				
Tending, weeding, sapling thinning and pruning	man-day																				
Harvesting of Pinuss massonia resin	man-day	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5	7.5
Thinning of Pinus massonia	man-day																				
Forest protection	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Clearing for fire break line	man-day																				
Total labor requirement	man-day	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
2. Cost of Production	('000 VND)	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**	**1,407**
Number of Economic species seedling	('000 VND)																				
Number of Indigenous species seedling	('000 VND)																				
Cost of site prparation & planting	('000 VND)																				
Tending, weeding, sapling thinning and pruning	('000 VND)																				
Harvesting of Pinuss massonia resin	('000 VND)	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040
Thinning of Pinus massonia	('000 VND)																				
Forest protection	('000 VND)	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
Clearing for fire break line	('000 VND)																				
Cost for management and administration	('000 VND)	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128
3. Standing volume	*m3/ha*	125.5	131.5	137.5	143.5	149.5	155.5	161.5	167.5	173.5	179.5	185.5	191.5	197.5	203.5	209.5	215.5	221.5	227.5	233.5	239.5
Pinus massonia	*m3/ha*	56.2	58.9	61.6	64.3	67.0	69.7	72.4	75.1	77.8	80.5	83.2	85.9	88.6	91.3	94.0	96.7	99.4	102.1	104.8	107.5
Schima wallichii Choisy	*m3/ha*	69.3	72.6	75.9	79.2	82.5	85.8	89.1	92.4	95.7	99.0	102.3	105.6	108.9	112.2	115.5	118.8	122.1	125.4	128.7	132.0
4. Biomass of vegetation clearing (Ia, Ib)	*ton/ha*																				
5. Yields of Products																					
Pinus massonia resin	kg	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0	1,500.0
Pinus massonia firewood (ϕ ≤ 6cm)	m^3																				
Pinus massonia roundwood (ϕ ≥15cm)	m^3																				
6. Value of Products (Gross Income)	('000 VND)	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**	**37,500**
Pinus massonia resin	('000 VND)	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500
Pinus massonia firewood (ϕ ≤ 6cm)	('000 VND)																				
Pinus massonia roundwood (ϕ ≥15cm)	('000 VND)																				
7. Total Net Profit (6-2)	('000 VND)	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**	**36,093**
8. CO_2 absorption by afforestation activites	t-CO2-e/year	**237.88**	**249.25**	**260.63**	**272.01**	**283.38**	**294.76**	**306.14**	**317.52**	**328.89**	**340.27**	**351.65**	**363.02**	**374.40**	**385.78**	**397.15**	**408.53**	**419.91**	**431.28**	**442.66**	**454.04**
Pinus massonia (WD:0.65)	t-CO2-e/year	118.62	124.32	130.02	135.72	141.42	147.12	152.81	158.51	164.21	169.91	175.61	181.30	187.00	192.70	198.40	204.10	209.80	215.49	221.19	226.89
Schima wallichii Choisy (WD:0.53)	t-CO2-e/year	119.25	124.93	130.61	136.29	141.97	147.65	153.33	159.00	164.68	170.36	176.04	181.72	187.40	193.08	198.75	204.43	210.11	215.79	221.47	227.15
9. CO_2 emission by vegetation clearing (Ia, Ib)	t-CO2-e/year																				

Table H-2 Flow of Economic Cost and Benefit of 1 ha of Afforestation in Protection Forests (AFF-01B)

Assumptions	Rate	Unit
Acacia Mangium planting density	1,000	seedling/ha
Chukrasia tabularis planting density	600	seedling/ha
Replanting rate of Acacia Mangium	10%	seedling/ha
Replanting rate of Chukrasia tabularis	10%	seedling/ha
Growth Rate of Acacia Mangium	12.5	m3/ha/year
Growth Rate of Chukrasia tabularis	5.0	m3/ha/year
Price of Acacia Mangium seedling	1,620	VND/seedling
Price of Chukrasia tabularis seedling	5,850	VND/seeding
Price of Acacia Mangium firewood ($\phi \leq 6$cm)	550,000	VND/m^3
Price of Acacia Mangium roundwood ($\phi \geq 15$cm)	1,150,000	VND/m^3
Price of a labour-day	138,600	VND/day
Harvesting and internal transporting cost	225,000	VND/m^3

Source:
(18m3/ha/year for the plantation of density of 1600 trees/ha)
(10 m3/ha/year for the plantation of density of 1000 trees/ha)

Conversion to Economic Cost

Fin Cost	Eco Cost	CF
1,800	1,620	0.9
6,500	5,850	0.9
550,000	550,000	1.0
1,150,000	1,150,000	1.0
231,000	138,600	0.6
250,000	225,000	0.9

Year		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Quantity of Inputs																					
Number of Economic species seedling	nos.	1,000	100																		
Number of Indigenous species seedling	nos.	600	60																		
Site preparation and planting	man-day	56.2	2.3																		
Tending, weeding, sapling thinning and pruning	man-day	20.1	37.5	30.8	6.6																
Thinning of Acacia Mangium	man-day					20.3		28.4			54.1										
Forest protection	man-day	4.4	8.7	8.7	8.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Clearing for fire break line	man-day																				
Total labor requirement	man-day	80.7	48.5	39.5	15.4	22.0	1.7	30.1	1.7	1.7	55.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
2. Cost of Production	('000 VND)	**17,940**	**7,960**	**6,021**	**2,342**	**3,359**	**264**	**4,594**	**264**	**264**	**12,639**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**
Number of Economic species seedling	('000 VND)	1,620	162																		
Number of Indigenous species seedling	('000 VND)	3,510	351																		
Cost of site prparation & planting	('000 VND)	7,793	312																		
Tending, weeding, sapling thinning and pruning	('000 VND)	2,780	5,200	4,262	918																
Thinning of Acacia Mangium	('000 VND)					2,814		3,936			11,250										
Forest protection	('000 VND)	606	1,211	1,211	1,211	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
Clearing for fire break line	('000 VND)																				
Cost for management and administration	('000 VND)	1,631	724	547	213	305	24	418	24	24	1,149	24	24	24	24	24	24	24	24	24	24
3. Standing volume	*m3/ha*	**17.5**	**35.0**	**52.5**	**70.0**	**68.8**	**82.5**	**70.0**	**80.0**	**90.0**	**50.0**	**55.0**	**60.0**	**65.0**	**70.0**	**75.0**	**80.0**	**85.0**	**90.0**	**95.0**	**100.0**
Acacia Mangium	*m3/ha*	12.5	25.0	37.5	50.0	43.8	52.5	35.0	40.0	45.0											
Chukrasia tabularis	*m3/ha*	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0	100.0
4. Biomass of vegetation clearing (Ia, Ib)	*ton/ha*	-40.0																			
5. Yields of Products						**18.8**		**26.3**			**50.0**										
Acacia Mangium firewood ($\phi \leq 6$cm)	m^3					3.8		5.3			10.0										
Acacia Mangium roundwood ($\phi \geq 15$cm)	m^3					15.0		21.0			40.0										
6. Value of Products (Gross Income)	('000 VND)					**19,313**		**27,038**			**51,500**										
Acacia Mangium firewood ($\phi \leq 6$cm)	('000 VND)					2,063		2,888			5,500										
Acacia Mangium roundwood ($\phi \geq 15$cm)	('000 VND)					17,250		24,150			46,000										
7. Total Net Profit (6-2)	('000 VND)	**-17,940**	**-7,960**	**-6,021**	**-2,342**	**15,954**	**-264**	**22,444**	**-264**	**-264**	**38,861**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**
8. CO_2 absorption by afforestation activites	t-CO2-e/year	**37.18**	**74.35**	**111.53**	**148.70**	**144.48**	**173.38**	**144.32**	**164.94**	**185.56**	**95.78**	**105.36**	**114.94**	**124.52**	**134.09**	**143.67**	**153.25**	**162.83**	**172.41**	**181.99**	**191.56**
Acacia Mangium (WD:0.68)	t-CO2-e/year	27.60	55.20	82.79	110.39	96.59	115.91	77.27	88.31	99.35											
Chukrasia tabularis (WD:0.59)	t-CO2-e/year	9.58	19.16	28.73	38.31	47.89	57.47	67.05	76.63	86.20	95.78	105.36	114.94	124.52	134.09	143.67	153.25	162.83	172.41	181.99	191.56
9. CO_2 emission by vegetation clearing (Ia, Ib)	t-CO2-e/year	-73.33																			

Year		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1. Quantity of Inputs																					
Number of Economic species seedling	nos.																				
Number of Indigenous species seedling	nos.																				
Site preparation and planting	man-day																				
Tending, weeding, sapling thinning and pruning	man-day																				
Thinning of Acacia Mangium	man-day																				
Forest protection	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Clearing for fire break line	man-day																				
Total labor requirement	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
2. Cost of Production	('000 VND)	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**
Number of Economic species seedling	('000 VND)																				
Number of Indigenous species seedling	('000 VND)																				
Cost of site prparation & planting	('000 VND)																				
Tending, weeding, sapling thinning and pruning	('000 VND)																				
Thinning of Acacia Mangium	('000 VND)																				
Forest protection	('000 VND)	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
Clearing for fire break line	('000 VND)																				
Cost for management and administration	('000 VND)	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
3. Standing volume	*m3/ha*	**105.0**	**110.0**	**115.0**	**120.0**	**125.0**	**130.0**	**135.0**	**140.0**	**145.0**	**150.0**	**155.0**	**160.0**	**165.0**	**170.0**	**175.0**	**180.0**	**185.0**	**190.0**	**195.0**	**200.0**
Acacia Mangium	*m3/ha*																				
Chukrasia tabularis	*m3/ha*	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0	180.0	185.0	190.0	195.0	200.0
4. Biomass of vegetation clearing (Ia, Ib)	*ton/ha*																				
5. Yields of Products																					
Acacia Mangium firewood ($\phi \leq 6$cm)	m^3																				
Acacia Mangium roundwood ($\phi \geq 15$cm)	m^3																				
6. Value of Products (Gross Income)	('000 VND)																				
Acacia Mangium firewood ($\phi \leq 6$cm)	('000 VND)																				
Acacia Mangium roundwood ($\phi \geq 15$cm)	('000 VND)																				
7. Total Net Profit (6-2)	('000 VND)	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**
8. CO_2 absorption by afforestation activites	t-CO2-e/year	**201.14**	**210.72**	**220.30**	**229.88**	**239.45**	**249.03**	**258.61**	**268.19**	**277.77**	**287.34**	**296.92**	**306.50**	**316.08**	**325.66**	**335.24**	**344.81**	**354.39**	**363.97**	**373.55**	**383.13**
Acacia Mangium (WD:0.68)	t-CO2-e/year																				
Chukrasia tabularis (WD:0.59)	t-CO2-e/year	201.14	210.72	220.30	229.88	239.45	249.03	258.61	268.19	277.77	287.34	296.92	306.50	316.08	325.66	335.24	344.81	354.39	363.97	373.55	383.13
9. CO_2 emission by vegetation clearing (Ia, Ib)	t-CO2-e/year																				

Table H-3 Flow of Economic Cost and Benefit of 1 ha of Afforestation in Special Use Forests (AFF-02)

Assumptions	Rate	Unit
Indigenous tree planting density	600	seedling/ha
Replanting rate of indigenous tree	10%	seedling/ha
Price of Indigenous tree seedling	6,500	VND/seeding
Growth Rate of Chukrasia tabularis	5.0	m3/ha/year
Price of a labour-day	138,600	VND/day
PFES		VND/ha

Source:
(10 m3/ha/year for the plantation of density of 1000 trees/ha)

Conversion to Economic Cost

Fin Cost	Eco Cost	CF
231,000	138,600	0.6
		1.0

Year		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Quantity of Inputs																					
No. of indigenous tree seedlings	nos.	600	60																		
Site preparation and planting	man-day	38.8	0.7																		
Tending and weeding	man-day	14.7	26.8	20.0	6.6																
Forest protection	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Total labor requirement	man-day	55.3	29.2	21.7	8.4	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
2. Cost of Production	('000 VND)	**12,713**	**4,884**	**3,313**	**1,273**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**
Cost of Indigenous tree seedlings	('000 VND)	3,900	390																		
Cost of site prparation & planting	('000 VND)	5,383	100																		
Tending, weeding, sapling thinning and pruning	('000 VND)	2,035	3,710	2,772	918																
Forest protection	('000 VND)	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
Cost for management and administration	('000 VND)	1,156	444	301	116	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
3. Standing volume	*m3/ha*	**5.0**	**10.0**	**15.0**	**20.0**	**25.0**	**30.0**	**35.0**	**40.0**	**45.0**	**50.0**	**55.0**	**60.0**	**65.0**	**70.0**	**75.0**	**80.0**	**85.0**	**90.0**	**95.0**	**100.0**
Chukrasia tabularis	*m3/ha*	5.0	10.0	15.0	20.0	25.0	30.0	35.0	40.0	45.0	50.0	55.0	60.0	65.0	70.0	75.0	80.0	85.0	90.0	95.0	100.0
4. Biomass of vegetation clearing (Ia, Ib)	*ton/ha*	-40.0																			
5. Total Net Profit	('000 VND)	**-12,713**	**-4,884**	**-3,313**	**-1,273**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**
6. CO_2 absorption by afforestation activites	t-CO2-e/year	**9.58**	**19.16**	**28.73**	**38.31**	**47.89**	**57.47**	**67.05**	**76.63**	**86.20**	**95.78**	**105.36**	**114.94**	**124.52**	**134.09**	**143.67**	**153.25**	**162.83**	**172.41**	**181.99**	**191.56**
Chukrasia tabularis (WD:0.59)	t-CO2-e/year	9.58	19.16	28.73	38.31	47.89	57.47	67.05	76.63	86.20	95.78	105.36	114.94	124.52	134.09	143.67	153.25	162.83	172.41	181.99	191.56
7. CO_2 emission by vegetation clearing (Ia, Ib)	t-CO2-e/year	-73.33																			
8. CASH FLOW (5 - cash cost)	('000 VND)	**-5,056**	**-834**	**-301**	**-116**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**

Year		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1. Quantity of Inputs																					
No. of indigenous tree seedlings	nos.																				
Site preparation and planting	man-day																				
Tending and weeding	man-day																				
Forest protection	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Total labor requirement	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
2. Cost of Production	('000 VND)	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**
Cost of Indigenous tree seedlings	('000 VND)																				
Cost of site prparation & planting	('000 VND)																				
Tending, weeding, sapling thinning and pruning	('000 VND)																				
Forest protection	('000 VND)	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
Cost for management and administration	('000 VND)	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
3. Standing volume	*m3/ha*	**105.0**	**110.0**	**115.0**	**120.0**	**125.0**	**130.0**	**135.0**	**140.0**	**145.0**	**150.0**	**155.0**	**160.0**	**165.0**	**170.0**	**175.0**	**180.0**	**185.0**	**190.0**	**195.0**	**200.0**
Chukrasia tabularis	*m3/ha*	105.0	110.0	115.0	120.0	125.0	130.0	135.0	140.0	145.0	150.0	155.0	160.0	165.0	170.0	175.0	180.0	185.0	190.0	195.0	200.0
4. Biomass of vegetation clearing (Ia, Ib)	*ton/ha*																				
5. Total Net Profit	('000 VND)	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**
6. CO_2 absorption by afforestation activites	t-CO2-e/year	**201.14**	**210.72**	**220.30**	**229.88**	**239.45**	**249.03**	**258.61**	**268.19**	**277.77**	**287.34**	**296.92**	**306.50**	**316.08**	**325.66**	**335.24**	**344.81**	**354.39**	**363.97**	**373.55**	**383.13**
Chukrasia tabularis (WD:0.59)	t-CO2-e/year	201.14	210.72	220.30	229.88	239.45	249.03	258.61	268.19	277.77	287.34	296.92	306.50	316.08	325.66	335.24	344.81	354.39	363.97	373.55	383.13
7. CO_2 emission by vegetation clearing (Ia, Ib)	t-CO2-e/year																				
8. CASH FLOW (5 - cash cost)	('000 VND)	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**

Table H-4 Flow of Economic Cost and Benefit of 1 ha of ANR without enrichment (ANR-01)

Assumptions	Rate	Unit
Growth Rate of Forest	1.5	m3/ha/year
Price of a labour-day	138,600	VND/day
PFES		VND/ha

Conversion to Economic Cost

Fin Cost	Eco Cost	CF
231,000	138,600	0.6
		1.0

Year		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Quantity of Inputs																					
Clearing climers and insect affedted trees	man-day	4.0	4.0	4.0																	
Spots weeding for the regenerating trees	man-day	2.2	2.2	2.2																	
Protection	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Total labor requirement	man-day	7.9	7.9	7.9	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
2. Cost of Production	('000 VND)	**1,204**	**1,204**	**1,204**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**
Cost of clearing climers and insect affedted trees	('000 VND)	554	554	554																	
Cost for spots weeding for the regenerating trees	('000 VND)	301	301	301																	
Protection	('000 VND)	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
Cost for management and administration	('000 VND)	109	109	109	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
3. Standing volume	*m3/ha*	**1.5**	**3.0**	**4.5**	**6.0**	**7.5**	**9.0**	**10.5**	**12.0**	**13.5**	**15.0**	**16.5**	**18.0**	**19.5**	**21.0**	**22.5**	**24.0**	**25.5**	**27.0**	**28.5**	**30.0**
ANR Forest	*m3/ha*	1.5	3.0	4.5	6.0	7.5	9.0	10.5	12.0	13.5	15.0	16.5	18.0	19.5	21.0	22.5	24.0	25.5	27.0	28.5	30.0
4. Total Net Profit	('000 VND)	**-1,204**	**-1,204**	**-1,204**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**
5. CO_2 absorption by ANR activites	t-CO2-e/year	**2.80**	**5.60**	**8.40**	**11.20**	**13.99**	**16.79**	**19.59**	**22.39**	**25.19**	**27.99**	**30.79**	**33.59**	**36.38**	**39.18**	**41.98**	**44.78**	**47.58**	**50.38**	**53.18**	**55.98**
ANR Forest (WD:0.47, BEF:0.9)	t-CO2-e/year	2.80	5.60	8.40	11.20	13.99	16.79	19.59	22.39	25.19	27.99	30.79	33.59	36.38	39.18	41.98	44.78	47.58	50.38	53.18	55.98
6. CASH FLOW (4 - cash cost)	('000 VND)	**-109**	**-109**	**-109**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**

Year		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1. Quantity of Inputs																					
Clearing climers and insect affedted trees	man-day																				
Spots weeding for the regenerating trees	man-day																				
Protection	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Total labor requirement	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
2. Cost of Production	('000 VND)	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**
Cost of clearing climers and insect affedted trees	('000 VND)																				
Cost for spots weeding for the regenerating trees	('000 VND)																				
Protection	('000 VND)	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
Cost for management and administration	('000 VND)	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
3. Standing volume	*m3/ha*	**31.5**	**33.0**	**34.5**	**36.0**	**37.5**	**39.0**	**40.5**	**42.0**	**43.5**	**45.0**	**46.5**	**48.0**	**49.5**	**51.0**	**52.5**	**54.0**	**55.5**	**57.0**	**58.5**	**60.0**
ANR Forest	*m3/ha*	31.5	33.0	34.5	36.0	37.5	39.0	40.5	42.0	43.5	45.0	46.5	48.0	49.5	51.0	52.5	54.0	55.5	57.0	58.5	60.0
4. Total Net Profit	('000 VND)	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**
5. CO_2 absorption by ANR activites	t-CO2-e/year	**58.77**	**61.57**	**64.37**	**67.17**	**69.97**	**72.77**	**75.57**	**78.37**	**81.16**	**83.96**	**86.76**	**89.56**	**92.36**	**95.16**	**97.96**	**100.76**	**103.55**	**106.35**	**109.15**	**111.95**
ANR Forest (WD:0.47, BEF:0.9)	t-CO2-e/year	58.77	61.57	64.37	67.17	69.97	72.77	75.57	78.37	81.16	83.96	86.76	89.56	92.36	95.16	97.96	100.76	103.55	106.35	109.15	111.95
6. CASH FLOW (4 - cash cost)	('000 VND)	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**

Table H-5 Flow of Economic Cost and Benefit of 1 ha of Protection of Special Use Forests (PF-01)

Assumptions	Rate	Unit
Price of a labour-day	138,600	VND/day
PFES	0	VND/m^3

Conversion to Economic Cost

Fin Cost	Eco Cost	CF
231,000	138,600	0.6
	0	1.0

Year		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Quantity of Inputs																					
Protection	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Total labor requirement	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
2. Cost of Production	('000 VND)	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**
Cost for protection	('000 VND)	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
Cost for management and administration	('000 VND)	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
3. Total Net Profit (4-2)	('000 VND)	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**
4. CASH FLOW (- cash cost)	('000 VND)	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**

Year		21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
1. Quantity of Inputs																					
Protection	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Total labor requirement	man-day	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
2. Cost of Production	('000 VND)	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**	**264**
Cost for protection	('000 VND)	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240	240
Cost for management and administration	('000 VND)	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
3. Total Net Profit	('000 VND)	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**	**-264**
4. CASH FLOW (- cash cost)	('000 VND)	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**	**-24**

Table H-6 Flow of Economic Cost and Benefit by Model (unit: VND 1000/ha)

Model		Total	NPV (D.R.=10%)	Year																	
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
AFF_01A	Cost	-80,285	-39,033	-17,940	-8,153	-6,021	-2,342	-264	-264	-1,043	-264	-264	-264	-264	-2,269	-264	-264	-1,693	-1,693	-4,655	-1,407	-1,407	-1,407
	Revenue	1,029,769	114,534	0	0	0	0	0	0	3,591	0	0	0	0	9,234	0	0	46,875	46,875	60,694	37,500	37,500	37,500
	Balance	949,484	75,502	-17,940	-8,153	-6,021	-2,342	-264	-264	2,548	-264	-264	-264	-264	6,965	-264	-264	45,182	45,182	56,039	36,093	36,093	36,093
AFF_01B	Cost	-63,558	-43,636	-17,940	-7,960	-6,021	-2,342	-3,359	-264	-4,594	-264	-264	-12,639	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	Revenue	97,850	50,294	0	0	0	0	19,313	0	27,038	0	0	51,500	0	0	0	0	0	0	0	0	0	0
	Balance	34,292	6,658	-17,940	-7,960	-6,021	-2,342	15,954	-264	22,444	-264	-264	38,861	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
AFF_01ave	Cost	-71,921	-41,334	-17,940	-8,057	-6,021	-2,342	-1,811	-264	-2,819	-264	-264	-6,451	-264	-1,266	-264	-264	-978	-978	-2,459	-835	-835	-835
	Revenue	563,810	82,414	0	0	0	0	9,656	0	15,314	0	0	25,750	0	4,617	0	0	23,438	23,438	30,347	18,750	18,750	18,750
	Balance	491,888	41,080	-17,940	-8,057	-6,021	-2,342	7,845	-264	12,496	-264	-264	19,299	-264	3,351	-264	-264	22,459	22,459	27,888	17,915	17,915	17,915
AFF_02	Cost	-31,679	-22,765	-12,713	-4,884	-3,313	-1,273	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	Revenue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Balance	-31,679	-22,765	-12,713	-4,884	-3,313	-1,273	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
ANR_01	Cost	-13,372	-5,410	-1,204	-1,204	-1,204	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	Revenue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Balance	-13,372	-5,410	-1,204	-1,204	-1,204	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
PF_01	Cost	-10,550	-2,837	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	Revenue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Balance	-10,550	-2,837	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264

Model		Total	NPV (D.R.=10%)	Year																			
				21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
AFF_01A	Cost	described in the above column	described in the above column	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407	-1,407
	Revenue			37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500	37,500
	Balance			36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093	36,093
AFF_01B	Cost			-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	Revenue			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Balance			-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
AFF_01ave	Cost			-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835
	Revenue			18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750
	Balance			17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915	17,915
AFF_02	Cost			-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	Revenue			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Balance			-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
ANR_01	Cost			-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	Revenue			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Balance			-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
PF_01	Cost			-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	Revenue			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Balance			-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264

CO_2 absorption by Forestry Model (unit: t-CO2-e/year)

Model		Total	Year																				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
AFF_01A	CO_2 absorption	9,612	15.18	30.35	45.53	60.70	75.88	91.05	99.58	113.81	128.03	142.26	156.49	153.62	166.42	179.22	192.02	204.82	192.37	203.75	215.12	226.50
AFF_01B	CO_2 absorption	8,608	37.18	74.35	111.53	148.70	144.48	173.38	144.32	164.94	185.56	95.78	105.36	114.94	124.52	134.09	143.67	153.25	162.83	172.41	181.99	191.56
AFF_01ave	CO_2 absorption	9,110	26.18	52.35	78.53	104.70	110.18	132.22	121.95	139.38	156.80	119.02	130.93	134.28	145.47	156.66	167.85	179.04	177.60	188.08	198.56	209.03
AFF_02	CO_2 absorption	7,854	9.58	19.16	28.73	38.31	47.89	57.47	67.05	76.63	86.20	95.78	105.36	114.94	124.52	134.09	143.67	153.25	162.83	172.41	181.99	191.56
ANR_01	CO_2 absorption	2,295	2.80	5.60	8.40	11.20	13.99	16.79	19.59	22.39	25.19	27.99	30.79	33.59	36.38	39.18	41.98	44.78	47.58	50.38	53.18	55.98

Model		Total	Year																				
			21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
AFF_01A	CO_2 absorption	described in the above column	237.88	249.25	260.63	272.01	283.38	294.76	306.14	317.52	328.89	340.27	351.65	363.02	374.40	385.78	397.15	408.53	419.91	431.28	442.66	454.04
AFF_01B	CO_2 absorption		201.14	210.72	220.30	229.88	239.45	249.03	258.61	268.19	277.77	287.34	296.92	306.50	316.08	325.66	335.24	344.81	354.39	363.97	373.55	383.13
AFF_01ave	CO_2 absorption		219.51	229.99	240.47	250.95	261.42	271.90	282.38	292.86	303.33	313.81	324.29	334.76	345.24	355.72	366.20	376.67	387.15	397.63	408.11	418.59
AFF_02	CO_2 absorption		201.14	210.72	220.30	229.88	239.45	249.03	258.61	268.19	277.77	287.34	296.92	306.50	316.08	325.66	335.24	344.81	354.39	363.97	373.55	383.13
ANR_01	CO_2 absorption		58.77	61.57	64.37	67.17	69.97	72.77	75.57	78.37	81.16	83.96	86.76	89.56	92.36	95.16	97.96	100.76	103.55	106.35	109.15	111.95

Table H-7 Cost and Benefit Flow of Forestry part in Dien Bien (unit : VND million)

Model			Total	NPV (D.R.=10%)	Year																																							
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Afforestation (AFF_01, average)	Model Cost (VND 1000/ha)	Area	-71,921	-41,334	-17,940	-8,057	-6,021	-2,342	-1,811	-264	-2,819	-264	-264	-6,451	-264	-1,266	-264	-264	-978	-978	-2,459	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835
	-1st batch	632	-45,454	-26,123	-11,338	-5,092	-3,805	-1,480	-1,145	-167	-1,781	-167	-167	-4,077	-167	-800	-167	-167	-618	-618	-1,554	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528	-528
	-2st batch	1,264	-89,853	-47,473		-22,677	-10,184	-7,610	-2,960	-2,289	-333	-3,563	-333	-333	-8,154	-333	-1,600	-333	-333	-1,237	-1,237	-3,109	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056
	-3st batch	1,264	-88,796	-47,448			-22,677	-10,184	-7,610	-2,960	-2,289	-333	-3,563	-333	-333	-8,154	-333	-1,600	-333	-333	-1,237	-1,237	-3,109	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056	-1,056
	Total Cost	**3,160**	**-224,103**	**-121,044**	**-11,338**	**-27,769**	**-36,665**	**-19,274**	**-11,715**	**-5,416**	**-4,404**	**-4,063**	**-4,063**	**-4,744**	**-8,654**	**-9,288**	**-2,100**	**-2,100**	**-1,285**	**-2,188**	**-4,028**	**-4,873**	**-4,693**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**	**-2,640**
	Model Benefit (VND 1000/ha)	Area	563,810	82,414	0	0	0	0	9,656	0	15,314	0	0	25,750	0	4,617	0	0	23,438	23,438	30,347	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750
	-1st batch	632	356,328	52,086	0	0	0	0	6,103	0	9,679	0	0	16,274	0	2,918	0	0	14,813	14,813	19,179	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850	11,850
	-2st batch	1,264	688,955	94,177		0	0	0	0	12,206	0	19,357	0	0	32,548	0	5,836	0	0	29,625	29,625	38,359	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700
	-3st batch	1,264	665,255	93,601			0	0	0	0	12,206	0	19,357	0	0	32,548	0	5,836	0	0	29,625	29,625	38,359	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700	23,700
	Total Benefit	**3,160**	**1,710,538**	**239,865**	**0**	**0**	**0**	**0**	**6,103**	**12,206**	**21,884**	**19,357**	**19,357**	**16,274**	**32,548**	**35,466**	**5,836**	**5,836**	**14,813**	**44,438**	**78,429**	**79,834**	**73,909**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**	**59,250**
	Balance	**16%**	**491,888**	**41,080**	**-11,338**	**-27,769**	**-36,665**	**-19,274**	**-5,612**	**6,789**	**17,480**	**15,295**	**15,295**	**11,530**	**23,894**	**26,178**	**3,735**	**3,735**	**13,527**	**42,249**	**74,402**	**74,960**	**69,216**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**	**56,610**
Afforestation (AFF_02)	Model Cost (VND 1000/ha)	Area	-31,679	-22,765	-12,713	-4,884	-3,313	-1,273	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	-1st batch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Cost	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Model Benefit (VND 1000/ha)	Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1st batch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Benefit	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Balance	**N.A.**	**-31,679**	**-22,765**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Assisted Natural Regeneration	Model Cost (VND 1000/ha)	Area	-13,372	-5,410	-1,204	-1,204	-1,204	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	-1st batch	924	-12,356	-4,999	-1,113	-1,113	-1,113	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244	-244
	-2st batch	1386	-18,168	-6,809		-1,669	-1,669	-1,669	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366	-366
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Cost	**2,310**	**-30,524**	**-11,808**	**-1,113**	**-2,782**	**-2,782**	**-1,913**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**
	Model Benefit (VND 1000/ha)	Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1st batch	924	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	1386	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Benefit	**2,310**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Balance	**N.A.**	**-13,372**	**-5,410**	**-1,113**	**-2,782**	**-2,782**	**-1,913**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**	**-609**
Protection of Natural Forests	Model Cost (VND 1000/ha)	Area	-10,550	-2,837	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	-1st batch	4,160	-43,889	-11,803	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097	-1,097
	-2st batch	6,240	-64,188	-16,058		-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646	-1,646
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Cost	**10,400**	**-108,077**	**-27,861**	**-1,097**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**
	Model Benefit (VND 1000/ha)	Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1st batch	4160	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	6240	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Benefit	**10,400**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Balance	**N.A.**	**-10,550**	**-2,837**	**-1,097**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**	**-2,743**

Table H-8 Cost and Benefit of Forestry part in Lai Chau (unit : VND million)

Model			Total	NPV (D.R.=10%)	Year																																							
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Afforestation (AFF_01, average)	Model Cost (VND 1000/ha)	Area	-71,921	-41,334	-17,940	-8,057	-6,021	-2,342	-1,811	-264	-2,819	-264	-264	-6,451	-264	-1,266	-264	-264	-978	-978	-2,459	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835
	-1st batch	1,310	-94,217	-54,148	-23,502	-10,554	-7,887	-3,068	-2,373	-346	-3,692	-346	-346	-8,451	-346	-1,659	-346	-346	-1,282	-1,282	-3,222	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094	-1,094
	-2st batch	2,620	-186,245	-98,402		-47,004	-21,108	-15,774	-6,135	-4,745	-691	-7,384	-691	-691	-16,902	-691	-3,317	-691	-691	-2,563	-2,563	-6,443	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189
	-3st batch	2,620	-184,056	-98,349			-47,004	-21,108	-15,774	-6,135	-4,745	-691	-7,384	-691	-691	-16,902	-691	-3,317	-691	-691	-2,563	-2,563	-6,443	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189	-2,189
	Total Cost	**6,550**	**-464,518**	**-250,899**	**-23,502**	**-57,558**	**-75,999**	**-39,950**	**-24,282**	**-11,226**	**-9,129**	**-8,421**	**-8,421**	**-9,833**	**-17,939**	**-19,252**	**-4,354**	**-4,354**	**-2,664**	**-4,536**	**-8,349**	**-10,101**	**-9,727**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**	**-5,472**
	Model Benefit (VND 1000/ha)	Area	563,810	82,414	0	0	0	0	9,656	0	15,314	0	0	25,750	0	4,617	0	0	23,438	23,438	30,347	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750
	-1st batch	1310	738,591	107,962	0	0	0	0	12,650	0	20,062	0	0	33,733	0	6,048	0	0	30,703	30,703	39,755	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563	24,563
	-2st batch	2620	1,428,056	195,210		0	0	0	0	25,299	0	40,123	0	0	67,465	0	12,097	0	0	61,406	61,406	79,509	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125
	-3st batch	2620	1,378,931	194,016			0	0	0	0	25,299	0	40,123	0	0	67,465	0	12,097	0	0	61,406	61,406	79,509	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125	49,125
	Total Benefit	**6,550**	**3,545,578**	**497,188**	**0**	**0**	**0**	**0**	**12,650**	**25,299**	**45,361**	**40,123**	**40,123**	**33,733**	**67,465**	**73,513**	**12,097**	**12,097**	**30,703**	**92,109**	**162,567**	**165,478**	**153,197**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**	**122,813**
	Balance	**16%**	**491,888**	**41,080**	**-23,502**	**-57,558**	**-75,999**	**-39,950**	**-11,633**	**14,073**	**36,232**	**31,702**	**31,702**	**23,899**	**49,526**	**54,261**	**7,743**	**7,743**	**28,039**	**87,573**	**154,219**	**155,377**	**143,470**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**	**117,340**
Afforestation (AFF_02)	Model Cost (VND 1000/ha)	Area	-31,679	-22,765	-12,713	-4,884	-3,313	-1,273	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	-1st batch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Cost	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Model Benefit (VND 1000/ha)	Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1st batch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Benefit	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Balance	**N.A.**	**-31,679**	**-22,765**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Assisted Natural Regeneration	Model Cost (VND 1000/ha)	Area	-13,372	-5,410	-1,204	-1,204	-1,204	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	-1st batch	3,000	-40,117	-16,231	-3,613	-3,613	-3,613	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791	-791
	-2st batch	4,500	-58,988	-22,108		-5,420	-5,420	-5,420	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187	-1,187
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Cost	**7,500**	**-99,105**	**-38,339**	**-3,613**	**-9,033**	**-9,033**	**-6,211**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**
	Model Benefit (VND 1000/ha)	Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1st batch	3000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	4500	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Benefit	**7,500**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Balance	**N.A.**	**-13,372**	**-5,410**	**-3,613**	**-9,033**	**-9,033**	**-6,211**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**	**-1,978**
Protection of Natural Forests	Model Cost (VND 1000/ha)	Area	-10,550	-2,837	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	-1st batch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Cost	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Model Benefit (VND 1000/ha)	Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1st batch	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	0	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Benefit	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Balance	**N.A.**	**-10,550**	**-2,837**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Table H-9 Cost and Benefit of Forestry part in Son La (unit : VND million)

Model			Total	NPV (D.R.=10%)	Year																																							
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Afforestation (AFF_01, average)	Model Cost (VND 1000/ha)	Area	-71,921	-41,334	-17,940	-8,057	-6,021	-2,342	-1,811	-264	-2,819	-264	-264	-6,451	-264	-1,266	-264	-264	-978	-978	-2,459	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835
	-1st batch	432	-31,070	-17,856	-7,750	-3,480	-2,601	-1,012	-782	-114	-1,218	-114	-114	-2,787	-114	-547	-114	-114	-423	-423	-1,062	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361	-361
	-2st batch	864	-61,418	-32,450		-15,501	-6,961	-5,202	-2,023	-1,565	-228	-2,435	-228	-228	-5,574	-228	-1,094	-228	-228	-845	-845	-2,125	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722
	-3st batch	864	-60,696	-32,433			-15,501	-6,961	-5,202	-2,023	-1,565	-228	-2,435	-228	-228	-5,574	-228	-1,094	-228	-228	-845	-845	-2,125	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722	-722
	Total Cost	**2,160**	**-153,185**	**-82,739**	**-7,750**	**-18,981**	**-25,062**	**-13,174**	**-8,008**	**-3,702**	**-3,010**	**-2,777**	**-2,777**	**-3,243**	**-5,916**	**-6,349**	**-1,436**	**-1,436**	**-878**	**-1,496**	**-2,753**	**-3,331**	**-3,208**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**	**-1,805**
	Model Benefit (VND 1000/ha)	Area	563,810	82,414	0	0	0	0	9,656	0	15,314	0	0	25,750	0	4,617	0	0	23,438	23,438	30,347	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750
	-1st batch	432	243,566	35,603	0	0	0	0	4,172	0	6,616	0	0	11,124	0	1,995	0	0	10,125	10,125	13,110	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100	8,100
	-2st batch	864	470,931	64,374		0	0	0	0	8,343	0	13,232	0	0	22,248	0	3,989	0	0	20,250	20,250	26,220	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200
	-3st batch	864	454,731	63,981			0	0	0	0	8,343	0	13,232	0	0	22,248	0	3,989	0	0	20,250	20,250	26,220	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200	16,200
	Total Benefit	**2,160**	**1,169,229**	**163,958**	**0**	**0**	**0**	**0**	**4,172**	**8,343**	**14,959**	**13,232**	**13,232**	**11,124**	**22,248**	**24,243**	**3,989**	**3,989**	**10,125**	**30,375**	**53,610**	**54,570**	**50,520**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**	**40,500**
	Balance	**16%**	**491,888**	**41,080**	**-7,750**	**-18,981**	**-25,062**	**-13,174**	**-3,836**	**4,641**	**11,948**	**10,455**	**10,455**	**7,881**	**16,332**	**17,894**	**2,553**	**2,553**	**9,247**	**28,879**	**50,857**	**51,239**	**47,312**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**	**38,695**
Afforestation (AFF_02)	Model Cost (VND 1000/ha)	Area	-31,679	-22,765	-12,713	-4,884	-3,313	-1,273	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	-1st batch	212	-6,716	-4,826	-2,695	-1,035	-702	-270	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56	-56
	-2st batch	424	-13,320	-8,773		-5,390	-2,071	-1,405	-540	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112
	-3st batch	424	-13,208	-8,770			-5,390	-2,071	-1,405	-540	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112	-112
	Total Cost	**1,060**	**-33,244**	**-22,369**	**-2,695**	**-6,426**	**-8,164**	**-3,745**	**-2,000**	**-708**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**
	Model Benefit (VND 1000/ha)	Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1st batch	212	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	424	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	424	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Benefit	**1,060**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Balance	**N.A.**	**-31,679**	**-22,765**	**-2,695**	**-6,426**	**-8,164**	**-3,745**	**-2,000**	**-708**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**	**-280**
Assisted Natural Regeneration	Model Cost (VND 1000/ha)	Area	-13,372	-5,410	-1,204	-1,204	-1,204	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	-1st batch	988	-13,212	-5,346	-1,190	-1,190	-1,190	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261	-261
	-2st batch	1,482	-19,427	-7,281		-1,785	-1,785	-1,785	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391	-391
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Cost	**2,470**	**-32,639**	**-12,626**	**-1,190**	**-2,975**	**-2,975**	**-2,046**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**
	Model Benefit (VND 1000/ha)	Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1st batch	988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	1482	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Benefit	**2,470**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Balance	**N.A.**	**-13,372**	**-5,410**	**-1,190**	**-2,975**	**-2,975**	**-2,046**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**	**-651**
Protection of Natural Forests	Model Cost (VND 1000/ha)	Area	-10,550	-2,837	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	-1st batch	3,960	-41,779	-11,235	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044	-1,044
	-2st batch	5,940	-61,102	-15,286		-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567	-1,567
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Cost	**9,900**	**-102,881**	**-26,522**	**-1,044**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**
	Model Benefit (VND 1000/ha)	Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1st batch	3960	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	5940	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Benefit	**9,900**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Balance	**N.A.**	**-10,550**	**-2,837**	**-1,044**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**	**-2,611**

Table H-10 Cost and Benefit of Forestry part in Hoa Binh (unit : VND million)

Model			Total	NPV (D.R.=10%)	Year																																							
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Afforestation (AFF_01, average)	Model Cost (VND 1000/ha)	Area	-71,921	-41,334	-17,940	-8,057	-6,021	-2,342	-1,811	-264	-2,819	-264	-264	-6,451	-264	-1,266	-264	-264	-978	-978	-2,459	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835	-835
	-1st batch	412	-29,632	-17,030	-7,391	-3,319	-2,481	-965	-746	-109	-1,161	-109	-109	-2,658	-109	-522	-109	-109	-403	-403	-1,013	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344	-344
	-2st batch	824	-58,575	-30,948		-14,783	-6,639	-4,961	-1,930	-1,492	-217	-2,322	-217	-217	-5,316	-217	-1,043	-217	-217	-806	-806	-2,026	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688
	-3st batch	824	-57,886	-30,931			-14,783	-6,639	-4,961	-1,930	-1,492	-217	-2,322	-217	-217	-5,316	-217	-1,043	-217	-217	-806	-806	-2,026	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688	-688
	Total Cost	**2,060**	**-146,093**	**-78,909**	**-7,391**	**-18,102**	**-23,902**	**-12,565**	**-7,637**	**-3,531**	**-2,871**	**-2,648**	**-2,648**	**-3,093**	**-5,642**	**-6,055**	**-1,369**	**-1,369**	**-838**	**-1,427**	**-2,626**	**-3,177**	**-3,059**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**	**-1,721**
	Model Benefit (VND 1000/ha)	Area	563,810	82,414	0	0	0	0	9,656	0	15,314	0	0	25,750	0	4,617	0	0	23,438	23,438	30,347	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750	18,750
	-1st batch	412	232,290	33,955	0	0	0	0	3,978	0	6,309	0	0	10,609	0	1,902	0	0	9,656	9,656	12,503	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725	7,725
	-2st batch	824	449,129	61,394		0	0	0	0	7,957	0	12,619	0	0	21,218	0	3,804	0	0	19,313	19,313	25,006	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450
	-3st batch	824	433,679	61,019			0	0	0	0	7,957	0	12,619	0	0	21,218	0	3,804	0	0	19,313	19,313	25,006	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450	15,450
	Total Benefit	**2,060**	**1,115,098**	**156,367**	**0**	**0**	**0**	**0**	**3,978**	**7,957**	**14,266**	**12,619**	**12,619**	**10,609**	**21,218**	**23,120**	**3,804**	**3,804**	**9,656**	**28,969**	**51,128**	**52,044**	**48,181**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**	**38,625**
	Balance	**16%**	**491,888**	**41,080**	**-7,391**	**-18,102**	**-23,902**	**-12,565**	**-3,658**	**4,426**	**11,395**	**9,970**	**9,970**	**7,516**	**15,576**	**17,065**	**2,435**	**2,435**	**8,818**	**27,542**	**48,502**	**48,867**	**45,122**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**	**36,904**
Afforestation (AFF_02)	Model Cost (VND 1000/ha)	Area	-31,679	-22,765	-12,713	-4,884	-3,313	-1,273	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	-1st batch	204	-6,462	-4,644	-2,594	-996	-676	-260	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54	-54
	-2st batch	408	-12,817	-8,441		-5,187	-1,993	-1,352	-519	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108
	-3st batch	408	-12,710	-8,439			-5,187	-1,993	-1,352	-519	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108	-108
	Total Cost	**1,020**	**-31,989**	**-21,524**	**-2,594**	**-6,183**	**-7,856**	**-3,604**	**-1,925**	**-681**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**
	Model Benefit (VND 1000/ha)	Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1st batch	204	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	408	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	408	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Benefit	**1,020**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Balance	**N.A.**	**-31,679**	**-22,765**	**-2,594**	**-6,183**	**-7,856**	**-3,604**	**-1,925**	**-681**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**	**-269**
Assisted Natural Regeneration	Model Cost (VND 1000/ha)	Area	-13,372	-5,410	-1,204	-1,204	-1,204	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	-1st batch	336	-4,493	-1,818	-405	-405	-405	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89
	-2st batch	504	-6,607	-2,476		-607	-607	-607	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133	-133
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Cost	**840**	**-11,100**	**-4,294**	**-405**	**-1,012**	**-1,012**	**-696**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**
	Model Benefit (VND 1000/ha)	Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1st batch	336	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	504	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Benefit	**840**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Balance	**N.A.**	**-13,372**	**-5,410**	**-405**	**-1,012**	**-1,012**	**-696**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**	**-222**
Protection of Natural Forests	Model Cost (VND 1000/ha)	Area	-10,550	-2,837	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264	-264
	-1st batch	9,952	-104,996	-28,236	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625	-2,625
	-2st batch	14,928	-153,557	-38,417		-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937	-3,937
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Cost	**24,880**	**-258,552**	**-66,652**	**-2,625**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**
	Model Benefit (VND 1000/ha)	Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-1st batch	9952	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-2st batch	14928	0	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	-3st batch	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Total Benefit	**24,880**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Balance	**N.A.**	**-10,550**	**-2,837**	**-2,625**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**	**-6,562**

Table H-11 Calculation Result of Carbon Sequetration by Afforestation in the four Provinces

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Model			Unit	Total	Year																																							
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Afforestation (AFF_01)	Model CO_2 absorption (t-CO2-e/year)	Area	t-CO2-e/year	9,110	26.2	52.4	78.5	104.7	110.2	132.2	122.0	139.4	156.8	119.0	130.9	134.3	145.5	156.7	167.8	179.0	177.6	188.1	198.6	209.0	219.5	230.0	240.5	250.9	261.4	271.9	282.4	292.9	303.3	313.8	324.3	334.8	345.2	355.7	366.2	376.7	387.2	397.6	408.1	418.6
	-1st batch	632	1000 t-CO2-e/year	5,757	16.5	33.1	49.6	66.2	69.6	83.6	77.1	88.1	99.1	75.2	82.7	84.9	91.9	99.0	106.1	113.2	112.2	118.9	125.5	132.1	138.7	145.4	152.0	158.6	165.2	171.8	178.5	185.1	191.7	198.3	204.9	211.6	218.2	224.8	231.4	238.1	244.7	251.3	257.9	264.5
	-2st batch	1,264	1000 t-CO2-e/year	10,986		33.1	66.2	99.3	132.3	139.3	167.1	154.1	176.2	198.2	150.4	165.5	169.7	183.9	198.0	212.2	226.3	224.5	237.7	251.0	264.2	277.5	290.7	303.9	317.2	330.4	343.7	356.9	370.2	383.4	396.6	409.9	423.1	436.4	449.6	462.9	476.1	489.4	502.6	515.8
	-3st batch	1,264	1000 t-CO2-e/year	10,470			33.1	66.2	99.3	132.3	139.3	167.1	154.1	176.2	198.2	150.4	165.5	169.7	183.9	198.0	212.2	226.3	224.5	237.7	251.0	264.2	277.5	290.7	303.9	317.2	330.4	343.7	356.9	370.2	383.4	396.6	409.9	423.1	436.4	449.6	462.9	476.1	489.4	502.6
	CO_2 absorption	**3,160**	**1000 t-CO2-e/year**	**27,213**	**16.5**	**66.2**	**148.9**	**231.6**	**301.2**	**355.2**	**383.5**	**409.3**	**429.4**	**449.6**	**431.4**	**400.8**	**427.2**	**452.6**	**488.0**	**523.3**	**550.7**	**569.7**	**587.7**	**620.8**	**653.9**	**687.0**	**720.1**	**753.2**	**786.4**	**819.5**	**852.6**	**885.7**	**918.8**	**951.9**	**985.0**	**1,018.1**	**1,051.2**	**1,084.3**	**1,117.4**	**1,150.6**	**1,183.7**	**1,216.8**	**1,249.9**	**1,283.0**
	CO_2 emission by vegetation clearing (Ia, Ib)	**3,160**	**1000 t-CO2-e/year**	**232**	**46.3**	**92.7**	**92.7**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Afforestation (AFF_02)	Model CO_2 absorption (t-CO2-e/year)	Area	t-CO2-e/year	7,854	9.6	19.2	28.7	38.3	47.9	57.5	67.1	76.6	86.2	95.8	105.4	114.9	124.5	134.1	143.7	153.3	162.8	172.4	182.0	191.6	201.1	210.7	220.3	229.9	239.5	249.0	258.6	268.2	277.8	287.3	296.9	306.5	316.1	325.7	335.2	344.8	354.4	364.0	373.6	383.1
	-1st batch	0	1000 t-CO2-e/year	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	-2st batch	0	1000 t-CO2-e/year	0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	-3st batch	0	1000 t-CO2-e/year	0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CO_2 absorption	**0**	**1000 t-CO2-e/year**	**0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
	CO_2 emission by vegetation clearing (Ia, Ib)	**0**	**1000 t-CO2-e/year**	**0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Assisted Natural Regeneration	Model CO_2 absorption (t-CO2-e/year)	Area	t-CO2-e/year	2,295	2.8	5.6	8.4	11.2	14.0	16.8	19.6	22.4	25.2	28.0	30.8	33.6	36.4	39.2	42.0	44.8	47.6	50.4	53.2	56.0	58.8	61.6	64.4	67.2	70.0	72.8	75.6	78.4	81.2	84.0	86.8	89.6	92.4	95.2	98.0	100.8	103.6	106.4	109.2	112.0
	-1st batch	924	1000 t-CO2-e/year	2,121	2.6	5.2	7.8	10.3	12.9	15.5	18.1	20.7	23.3	25.9	28.4	31.0	33.6	36.2	38.8	41.4	44.0	46.6	49.1	51.7	54.3	56.9	59.5	62.1	64.7	67.2	69.8	72.4	75.0	77.6	80.2	82.8	85.3	87.9	90.5	93.1	95.7	98.3	100.9	103.4
	-2st batch	1386	1000 t-CO2-e/year	3,026		3.9	7.8	11.6	15.5	19.4	23.3	27.2	31.0	34.9	38.8	42.7	46.6	50.4	54.3	58.2	62.1	65.9	69.8	73.7	77.6	81.5	85.3	89.2	93.1	97.0	100.9	104.7	108.6	112.5	116.4	120.2	124.1	128.0	131.9	135.8	139.7	143.5	147.4	151.3
	-3st batch	0	1000 t-CO2-e/year	0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CO_2 absorption	**2,310**	**1000 t-CO2-e/year**	**5,146**	**2.6**	**9.1**	**15.5**	**22.0**	**28.4**	**34.9**	**41.4**	**47.8**	**54.3**	**60.8**	**67.2**	**73.7**	**80.2**	**86.6**	**93.1**	**99.6**	**106.0**	**112.5**	**119.0**	**125.4**	**131.9**	**138.3**	**144.8**	**151.3**	**157.7**	**164.2**	**170.7**	**177.2**	**183.6**	**190.1**	**196.5**	**203.0**	**209.5**	**215.9**	**222.4**	**228.9**	**235.3**	**241.8**	**248.3**	**254.7**
	Total CO_2 absorption	**5,470**	**1000 t-CO2-e/year**	**32,359**	**19.1**	**75.2**	**164.4**	**253.6**	**329.7**	**390.1**	**424.8**	**457.2**	**483.7**	**510.4**	**498.6**	**474.5**	**507.3**	**539.2**	**581.1**	**622.9**	**656.7**	**682.2**	**706.7**	**746.2**	**785.8**	**825.4**	**864.9**	**904.5**	**944.1**	**983.7**	**1,023.3**	**1,062.8**	**1,102.4**	**1,142.0**	**1,181.5**	**1,221.1**	**1,260.7**	**1,300.3**	**1,339.9**	**1,379.4**	**1,419.0**	**1,458.6**	**1,498.1**	**1,537.7**
	Eligible Rate (x100%)	**2,735**	**1000 t-CO2-e/year**	**48,668**	**19.1**	**75.2**	**164.4**	**253.6**	**329.7**	**390.1**	**424.8**	**457.2**	**483.7**	**510.4**	**498.6**	**474.5**	**507.3**	**539.2**	**581.1**	**622.9**	**656.7**	**682.2**	**706.7**	**746.2**	**785.8**	**825.4**	**864.9**	**904.5**	**944.1**	**983.7**	**1,023.3**	**1,062.8**	**1,102.4**	**1,142.0**	**1,181.5**	**1,221.1**	**1,260.7**	**1,300.3**	**1,339.9**	**1,379.4**	**1,419.0**	**1,458.6**	**1,498.1**	**1,537.7**
	Financial Value (*3.3 USD) of CO_2 absorption		**VND million**		**1,386**	**5,450**	**11,912**	**18,372**	**23,885**	**28,260**	**30,778**	**33,123**	**35,044**	**36,974**	**36,124**	**34,377**	**36,755**	**39,067**	**42,097**	**45,126**	**47,579**	**49,421**	**51,197**	**54,064**	**56,930**	**59,797**	**62,664**	**65,531**	**68,399**	**71,266**	**74,133**	**77,001**	**79,867**	**82,734**	**85,601**	**88,468**	**91,335**	**94,202**	**97,070**	**99,937**	**102,804**	**105,670**	**108,537**	**111,404**
	Difference From the Previous Evaluation		**VND million**		**1,386**	**4,064**	**6,461**	**6,461**	**5,513**	**4,375**	**2,518**	**2,344**	**1,922**	**1,930**	**-850**	**-1,747**	**2,378**	**2,312**	**3,030**	**3,030**	**2,452**	**1,842**	**1,777**	**2,867**	**2,866**	**2,866**	**2,867**	**2,867**	**2,867**	**2,867**	**2,867**	**2,868**	**2,867**	**2,866**	**2,867**	**2,867**	**2,867**	**2,867**	**2,868**	**2,867**	**2,866**	**2,866**	**2,867**	**2,867**
	Financial Value (*3.3 USD) of CO_2 emission		**VND million**		**3,358**	**6,715**	**6,715**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Net CO_2 absorption		**VND million**		**-1,972**	**-2,651**	**-254**	**6,461**	**5,513**	**4,375**	**2,518**	**2,344**	**1,922**	**1,930**	**-850**	**-1,747**	**2,378**	**2,312**	**3,030**	**3,030**	**2,452**	**1,842**	**1,777**	**2,867**	**2,866**	**2,866**	**2,867**	**2,867**	**2,867**	**2,867**	**2,867**	**2,868**	**2,867**	**2,866**	**2,867**	**2,867**	**2,867**	**2,867**	**2,868**	**2,867**	**2,866**	**2,866**	**2,867**	**2,867**

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Model			Unit	Total	Year																																							
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Afforestation (AFF_01)	Model Carbon Stock	Area	t-CO2-e/year	9,110	26.2	52.4	78.5	104.7	110.2	132.2	122.0	139.4	156.8	119.0	130.9	134.3	145.5	156.7	167.8	179.0	177.6	188.1	198.6	209.0	219.5	230.0	240.5	250.9	261.4	271.9	282.4	292.9	303.3	313.8	324.3	334.8	345.2	355.7	366.2	376.7	387.2	397.6	408.1	418.6
	-1st batch	1,310	1000 t-CO2-e/year	11,934	34.3	68.6	102.9	137.2	144.3	173.2	159.8	182.6	205.4	155.9	171.5	175.9	190.6	205.2	219.9	234.5	232.7	246.4	260.1	273.8	287.6	301.3	315.0	328.7	342.5	356.2	369.9	383.6	397.4	411.1	424.8	438.5	452.3	466.0	479.7	493.4	507.2	520.9	534.6	548.3
	-2st batch	2,620	1000 t-CO2-e/year	22,771		68.6	137.2	205.7	274.3	288.7	346.4	319.5	365.2	410.8	311.8	343.0	351.8	381.1	410.4	439.8	469.1	465.3	492.8	520.2	547.7	575.1	602.6	630.0	657.5	684.9	712.4	739.8	767.3	794.7	822.2	849.6	877.1	904.5	932.0	959.4	986.9	1,014.3	1,041.8	1,069.2
	-3st batch	2,620	1000 t-CO2-e/year	21,701			68.6	137.2	205.7	274.3	288.7	346.4	319.5	365.2	410.8	311.8	343.0	351.8	381.1	410.4	439.8	469.1	465.3	492.8	520.2	547.7	575.1	602.6	630.0	657.5	684.9	712.4	739.8	767.3	794.7	822.2	849.6	877.1	904.5	932.0	959.4	986.9	1,014.3	1,041.8
	CO_2 absorption	**6,550**	**1000 t-CO2-e/year**	**56,406**	**34.3**	**137.2**	**308.6**	**480.1**	**624.4**	**736.2**	**794.8**	**848.5**	**890.1**	**931.9**	**894.1**	**830.8**	**885.4**	**938.2**	**1,011.4**	**1,084.7**	**1,141.5**	**1,180.8**	**1,218.2**	**1,286.8**	**1,355.4**	**1,424.1**	**1,492.7**	**1,561.3**	**1,629.9**	**1,698.6**	**1,767.2**	**1,835.8**	**1,904.5**	**1,973.1**	**2,041.7**	**2,110.3**	**2,179.0**	**2,247.6**	**2,316.2**	**2,384.9**	**2,453.5**	**2,522.1**	**2,590.7**	**2,659.4**
	CO_2 emission by vegetation clearing (Ia, Ib)	**6,550**	**1000 t-CO2-e/year**	**480**	**96.1**	**192.1**	**192.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Afforestation (AFF_02)	Model Carbon Stock (t-CO2-e/year)	Area	t-CO2-e/year	7,854	9.6	19.2	28.7	38.3	47.9	57.5	67.1	76.6	86.2	95.8	105.4	114.9	124.5	134.1	143.7	153.3	162.8	172.4	182.0	191.6	201.1	210.7	220.3	229.9	239.5	249.0	258.6	268.2	277.8	287.3	296.9	306.5	316.1	325.7	335.2	344.8	354.4	364.0	373.6	383.1
	-1st batch	0	1000 t-CO2-e/year	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	-2st batch	0	1000 t-CO2-e/year	0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	-3st batch	0	1000 t-CO2-e/year	0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CO_2 absorption	**0**	**1000 t-CO2-e/year**	**0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
	CO_2 emission by vegetation clearing (Ia, Ib)	**0**	**1000 t-CO2-e/year**	**0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Assisted Natural Regeneration	Model Carbon Stock (t-CO2-e/year)	Area	t-CO2-e/year	2,295	2.8	5.6	8.4	11.2	14.0	16.8	19.6	22.4	25.2	28.0	30.8	33.6	36.4	39.2	42.0	44.8	47.6	50.4	53.2	56.0	58.8	61.6	64.4	67.2	70.0	72.8	75.6	78.4	81.2	84.0	86.8	89.6	92.4	95.2	98.0	100.8	103.6	106.4	109.2	112.0
	-1st batch	3,000	1000 t-CO2-e/year	6,885	8.4	16.8	25.2	33.6	42.0	50.4	58.8	67.2	75.6	84.0	92.4	100.8	109.1	117.5	125.9	134.3	142.7	151.1	159.5	167.9	176.3	184.7	193.1	201.5	209.9	218.3	226.7	235.1	243.5	251.9	260.3	268.7	277.1	285.5	293.9	302.3	310.7	319.1	327.5	335.9
	-2st batch	4,500	1000 t-CO2-e/year	9,824		12.6	25.2	37.8	50.4	63.0	75.6	88.2	100.8	113.4	126.0	138.6	151.2	163.7	176.3	188.9	201.5	214.1	226.7	239.3	251.9	264.5	277.1	289.7	302.3	314.9	327.5	340.1	352.7	365.2	377.8	390.4	403.0	415.6	428.2	440.8	453.4	466.0	478.6	491.2
	-3st batch	0	1000 t-CO2-e/year	0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CO_2 absorption	**7,500**	**1000 t-CO2-e/year**	**16,709**	**8.4**	**29.4**	**50.4**	**71.4**	**92.4**	**113.3**	**134.3**	**155.3**	**176.3**	**197.3**	**218.3**	**239.3**	**260.3**	**281.3**	**302.3**	**323.3**	**344.3**	**365.3**	**386.3**	**407.3**	**428.2**	**449.2**	**470.2**	**491.2**	**512.2**	**533.2**	**554.2**	**575.2**	**596.1**	**617.1**	**638.1**	**659.1**	**680.1**	**701.1**	**722.1**	**743.1**	**764.1**	**785.0**	**806.0**	**827.0**
	Total CO_2 absorption	**14,050**	**1000 t-CO2-e/year**	**73,115**	**42.7**	**166.6**	**359.0**	**551.5**	**716.8**	**849.5**	**929.2**	**1,003.8**	**1,066.4**	**1,129.2**	**1,112.5**	**1,070.1**	**1,145.7**	**1,219.4**	**1,313.7**	**1,408.0**	**1,485.7**	**1,546.0**	**1,604.4**	**1,694.1**	**1,783.7**	**1,873.2**	**1,962.9**	**2,052.5**	**2,142.1**	**2,231.7**	**2,321.4**	**2,411.0**	**2,500.6**	**2,590.2**	**2,679.8**	**2,769.4**	**2,859.1**	**2,948.7**	**3,038.3**	**3,128.0**	**3,217.5**	**3,307.1**	**3,396.8**	**3,486.4**
	Eligible Rate (x100%)	**7,025**	**1000 t-CO2-e/year**	**100,878**	**42.7**	**166.6**	**359.0**	**551.5**	**716.8**	**849.5**	**929.2**	**1,003.8**	**1,066.4**	**1,129.2**	**1,112.5**	**1,070.1**	**1,145.7**	**1,219.4**	**1,313.7**	**1,408.0**	**1,485.7**	**1,546.0**	**1,604.4**	**1,694.1**	**1,783.7**	**1,873.2**	**1,962.9**	**2,052.5**	**2,142.1**	**2,231.7**	**2,321.4**	**2,411.0**	**2,500.6**	**2,590.2**	**2,679.8**	**2,769.4**	**2,859.1**	**2,948.7**	**3,038.3**	**3,128.0**	**3,217.5**	**3,307.1**	**3,396.8**	**3,486.4**
	Financial Value (*3.3 USD) of CO_2 absorption		**VND million**		**3,093**	**12,068**	**26,011**	**39,952**	**51,929**	**61,546**	**67,316**	**72,725**	**77,259**	**81,809**	**80,597**	**77,526**	**83,004**	**88,344**	**95,175**	**102,005**	**107,639**	**112,006**	**116,239**	**122,732**	**129,222**	**135,712**	**142,206**	**148,699**	**155,193**	**161,686**	**168,178**	**174,673**	**181,165**	**187,655**	**194,147**	**200,640**	**207,134**	**213,628**	**220,122**	**226,615**	**233,105**	**239,595**	**246,089**	**252,582**
	Difference From the Previous Evaluation		**VND million**		**3,093**	**8,974**	**13,943**	**13,942**	**11,976**	**9,617**	**5,770**	**5,409**	**4,534**	**4,550**	**-1,212**	**-3,071**	**5,478**	**5,341**	**6,831**	**6,831**	**5,633**	**4,368**	**4,232**	**6,493**	**6,490**	**6,490**	**6,494**	**6,494**	**6,494**	**6,493**	**6,493**	**6,495**	**6,492**	**6,490**	**6,493**	**6,493**	**6,494**	**6,494**	**6,494**	**6,493**	**6,490**	**6,490**	**6,494**	**6,494**
	Financial Value (*3.3 USD) of CO_2 emission		**VND million**		**6,960**	**13,920**	**13,920**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Net CO_2 absorption		**VND million**		**-3,867**	**-4,945**	**23**	**13,942**	**11,976**	**9,617**	**5,770**	**5,409**	**4,534**	**4,550**	**-1,212**	**-3,071**	**5,478**	**5,341**	**6,831**	**6,831**	**5,633**	**4,368**	**4,232**	**6,493**	**6,490**	**6,490**	**6,494**	**6,494**	**6,494**	**6,493**	**6,493**	**6,495**	**6,492**	**6,490**	**6,493**	**6,493**	**6,494**	**6,494**	**6,494**	**6,493**	**6,490**	**6,490**	**6,494**	**6,494**

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Model			Unit	Total	Year																																							
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Afforestation (AFF_01)	Model Carbon Stock	Area	t-CO2-e/year	9,110	26.2	52.4	78.5	104.7	110.2	132.2	122.0	139.4	156.8	119.0	130.9	134.3	145.5	156.7	167.8	179.0	177.6	188.1	198.6	209.0	219.5	230.0	240.5	250.9	261.4	271.9	282.4	292.9	303.3	313.8	324.3	334.8	345.2	355.7	366.2	376.7	387.2	397.6	408.1	418.6
	-1st batch	432	1000 t-CO2-e/year	3,935	11.3	22.6	33.9	45.2	47.6	57.1	52.7	60.2	67.7	51.4	56.6	58.0	62.8	67.7	72.5	77.3	76.7	81.3	85.8	90.3	94.8	99.4	103.9	108.4	112.9	117.5	122.0	126.5	131.0	135.6	140.1	144.6	149.1	153.7	158.2	162.7	167.2	171.8	176.3	180.8
	-2st batch	864	1000 t-CO2-e/year	7,509		22.6	45.2	67.8	90.5	95.2	114.2	105.4	120.4	135.5	102.8	113.1	116.0	125.7	135.3	145.0	154.7	153.4	162.5	171.6	180.6	189.7	198.7	207.8	216.8	225.9	234.9	244.0	253.0	262.1	271.1	280.2	289.2	298.3	307.3	316.4	325.4	334.5	343.5	352.6
	-3st batch	864	1000 t-CO2-e/year	7,157			22.6	45.2	67.8	90.5	95.2	114.2	105.4	120.4	135.5	102.8	113.1	116.0	125.7	135.3	145.0	154.7	153.4	162.5	171.6	180.6	189.7	198.7	207.8	216.8	225.9	234.9	244.0	253.0	262.1	271.1	280.2	289.2	298.3	307.3	316.4	325.4	334.5	343.5
	CO_2 absorption	**2,160**	**1000 t-CO2-e/year**	**18,601**	**11.3**	**45.2**	**101.8**	**158.3**	**205.9**	**242.8**	**262.1**	**279.8**	**293.5**	**307.3**	**294.9**	**274.0**	**292.0**	**309.4**	**333.5**	**357.7**	**376.4**	**389.4**	**401.7**	**424.4**	**447.0**	**469.6**	**492.2**	**514.9**	**537.5**	**560.1**	**582.8**	**605.4**	**628.0**	**650.7**	**673.3**	**695.9**	**718.6**	**741.2**	**763.8**	**786.5**	**809.1**	**831.7**	**854.3**	**877.0**
	CO_2 emission by vegetation clearing (Ia, Ib)	**2,160**	**1000 t-CO2-e/year**	**158**	**31.7**	**63.4**	**63.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Afforestation (AFF_02)	Model Carbon Stock (t-CO2-e/year)	Area	t-CO2-e/year	7,854	9.6	19.2	28.7	38.3	47.9	57.5	67.1	76.6	86.2	95.8	105.4	114.9	124.5	134.1	143.7	153.3	162.8	172.4	182.0	191.6	201.1	210.7	220.3	229.9	239.5	249.0	258.6	268.2	277.8	287.3	296.9	306.5	316.1	325.7	335.2	344.8	354.4	364.0	373.6	383.1
	-1st batch	212	1000 t-CO2-e/year	1,665	2.0	4.1	6.1	8.1	10.2	12.2	14.2	16.2	18.3	20.3	22.3	24.4	26.4	28.4	30.5	32.5	34.5	36.6	38.6	40.6	42.6	44.7	46.7	48.7	50.8	52.8	54.8	56.9	58.9	60.9	62.9	65.0	67.0	69.0	71.1	73.1	75.1	77.2	79.2	81.2
	-2st batch	424	1000 t-CO2-e/year	3,168		4.1	8.1	12.2	16.2	20.3	24.4	28.4	32.5	36.5	40.6	44.7	48.7	52.8	56.9	60.9	65.0	69.0	73.1	77.2	81.2	85.3	89.3	93.4	97.5	101.5	105.6	109.7	113.7	117.8	121.8	125.9	130.0	134.0	138.1	142.1	146.2	150.3	154.3	158.4
	-3st batch	424	1000 t-CO2-e/year	3,009			4.1	8.1	12.2	16.2	20.3	24.4	28.4	32.5	36.5	40.6	44.7	48.7	52.8	56.9	60.9	65.0	69.0	73.1	77.2	81.2	85.3	89.3	93.4	97.5	101.5	105.6	109.7	113.7	117.8	121.8	125.9	130.0	134.0	138.1	142.1	146.2	150.3	154.3
	CO_2 absorption	**1,060**	**1000 t-CO2-e/year**	**7,842**	**2.0**	**8.1**	**18.3**	**28.4**	**38.6**	**48.7**	**58.9**	**69.0**	**79.2**	**89.3**	**99.5**	**109.7**	**119.8**	**130.0**	**140.1**	**150.3**	**160.4**	**170.6**	**180.7**	**190.9**	**201.0**	**211.2**	**221.3**	**231.5**	**241.6**	**251.8**	**261.9**	**272.1**	**282.3**	**292.4**	**302.6**	**312.7**	**322.9**	**333.0**	**343.2**	**353.3**	**363.5**	**373.6**	**383.8**	**393.9**
	CO_2 emission by vegetation clearing (Ia, Ib)	**1,060**	**1000 t-CO2-e/year**	**78**	**15.5**	**31.1**	**31.1**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Assisted Natural Regeneration	Model Carbon Stock (t-CO2-e/year)	Area	t-CO2-e/year	2,295	2.8	5.6	8.4	11.2	14.0	16.8	19.6	22.4	25.2	28.0	30.8	33.6	36.4	39.2	42.0	44.8	47.6	50.4	53.2	56.0	58.8	61.6	64.4	67.2	70.0	72.8	75.6	78.4	81.2	84.0	86.8	89.6	92.4	95.2	98.0	100.8	103.6	106.4	109.2	112.0
	-1st batch	988	1000 t-CO2-e/year	2,267	2.8	5.5	8.3	11.1	13.8	16.6	19.4	22.1	24.9	27.7	30.4	33.2	35.9	38.7	41.5	44.2	47.0	49.8	52.5	55.3	58.1	60.8	63.6	66.4	69.1	71.9	74.7	77.4	80.2	83.0	85.7	88.5	91.3	94.0	96.8	99.6	102.3	105.1	107.8	110.6
	-2st batch	1,482	1000 t-CO2-e/year	3,235		4.1	8.3	12.4	16.6	20.7	24.9	29.0	33.2	37.3	41.5	45.6	49.8	53.9	58.1	62.2	66.4	70.5	74.7	78.8	83.0	87.1	91.2	95.4	99.5	103.7	107.8	112.0	116.1	120.3	124.4	128.6	132.7	136.9	141.0	145.2	149.3	153.5	157.6	161.8
	-3st batch	0	1000 t-CO2-e/year	0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	CO_2 absorption	**2,470**	**1000 t-CO2-e/year**	**5,503**	**2.8**	**9.7**	**16.6**	**23.5**	**30.4**	**37.3**	**44.2**	**51.2**	**58.1**	**65.0**	**71.9**	**78.8**	**85.7**	**92.6**	**99.5**	**106.5**	**113.4**	**120.3**	**127.2**	**134.1**	**141.0**	**147.9**	**154.8**	**161.8**	**168.7**	**175.6**	**182.5**	**189.4**	**196.3**	**203.2**	**210.1**	**217.1**	**224.0**	**230.9**	**237.8**	**244.7**	**251.6**	**258.5**	**265.5**	**272.4**
	Total CO_2 absorption	**5,690**	**1000 t-CO2-e/year**	**31,946**	**16.1**	**63.0**	**136.6**	**210.3**	**274.9**	**328.8**	**365.2**	**400.0**	**430.8**	**461.6**	**466.3**	**462.4**	**497.5**	**532.0**	**573.2**	**614.4**	**650.2**	**680.2**	**709.7**	**749.4**	**789.0**	**828.7**	**868.4**	**908.1**	**947.8**	**987.5**	**1,027.2**	**1,066.9**	**1,106.6**	**1,146.3**	**1,186.0**	**1,225.7**	**1,265.4**	**1,305.1**	**1,344.8**	**1,384.5**	**1,424.2**	**1,463.9**	**1,503.6**	**1,543.3**
	Eligible Rate (x100%)	**2,845**	**1000 t-CO2-e/year**	**33,267**	**16.1**	**63.0**	**136.6**	**210.3**	**274.9**	**328.8**	**365.2**	**400.0**	**430.8**	**461.6**	**466.3**	**462.4**	**497.5**	**532.0**	**573.2**	**614.4**	**650.2**	**680.2**	**709.7**	**749.4**	**789.0**	**828.7**	**868.4**	**908.1**	**947.8**	**987.5**	**1,027.2**	**1,066.9**	**1,106.6**	**1,146.3**	**1,186.0**	**1,225.7**	**1,265.4**	**1,305.1**	**1,344.8**	**1,384.5**	**1,424.2**	**1,463.9**	**1,503.6**	**1,543.3**
	Financial Value (*3.3 USD)		**VND million**		**1,167**	**4,567**	**9,900**	**15,232**	**19,916**	**23,823**	**26,461**	**28,980**	**31,210**	**33,445**	**33,780**	**33,502**	**36,044**	**38,540**	**41,527**	**44,514**	**47,107**	**49,282**	**51,413**	**54,289**	**57,164**	**60,039**	**62,916**	**65,792**	**68,668**	**71,544**	**74,420**	**77,297**	**80,172**	**83,048**	**85,923**	**88,799**	**91,676**	**94,552**	**97,429**	**100,305**	**103,180**	**106,055**	**108,931**	**111,808**
	Difference From the Previous Evaluation		**VND million**		**1,167**	**3,400**	**5,333**	**5,332**	**4,684**	**3,906**	**2,638**	**2,519**	**2,230**	**2,235**	**335**	**-278**	**2,541**	**2,496**	**2,987**	**2,987**	**2,593**	**2,175**	**2,131**	**2,876**	**2,875**	**2,875**	**2,876**	**2,876**	**2,876**	**2,876**	**2,876**	**2,877**	**2,876**	**2,875**	**2,876**	**2,876**	**2,876**	**2,876**	**2,877**	**2,876**	**2,875**	**2,875**	**2,876**	**2,876**
	Financial Value (*3.3 USD) of CO_2 emission		**VND million**		**3,421**	**6,843**	**6,843**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Net CO_2 absorption		**VND million**		**-2,255**	**-3,443**	**-1,510**	**5,332**	**4,684**	**3,906**	**2,638**	**2,519**	**2,230**	**2,235**	**335**	**-278**	**2,541**	**2,496**	**2,987**	**2,987**	**2,593**	**2,175**	**2,131**	**2,876**	**2,875**	**2,875**	**2,876**	**2,876**	**2,876**	**2,876**	**2,876**	**2,877**	**2,876**	**2,875**	**2,876**	**2,876**	**2,876**	**2,876**	**2,877**	**2,876**	**2,875**	**2,875**	**2,876**	**2,876**

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Model			Unit	Total	Year																																							
					1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Afforestation (AFF_01)	Model Carbon Stock	Area	t-CO2-e/year	9,110	26.2	52.4	78.5	104.7	110.2	132.2	122.0	139.4	156.8	119.0	130.9	134.3	145.5	156.7	167.8	179.0	177.6	188.1	198.6	209.0	219.5	230.0	240.5	250.9	261.4	271.9	282.4	292.9	303.3	313.8	324.3	334.8	345.2	355.7	366.2	376.7	387.2	397.6	408.1	418.6
	-1st batch	412	1000 t-CO2-e/year	3,753	10.8	21.6	32.4	43.1	45.4	54.5	50.2	57.4	64.6	49.0	53.9	55.3	59.9	64.5	69.2	73.8	73.2	77.5	81.8	86.1	90.4	94.8	99.1	103.4	107.7	112.0	116.3	120.7	125.0	129.3	133.6	137.9	142.2	146.6	150.9	155.2	159.5	163.8	168.1	172.5
	-2st batch	824	1000 t-CO2-e/year	7,161		21.6	43.1	64.7	86.3	90.8	108.9	100.5	114.8	129.2	98.1	107.9	110.6	119.9	129.1	138.3	147.5	146.3	155.0	163.6	172.2	180.9	189.5	198.1	206.8	215.4	224.0	232.7	241.3	249.9	258.6	267.2	275.8	284.5	293.1	301.7	310.4	319.0	327.6	336.3
	-3st batch	824	1000 t-CO2-e/year	6,825			21.6	43.1	64.7	86.3	90.8	108.9	100.5	114.8	129.2	98.1	107.9	110.6	119.9	129.1	138.3	147.5	146.3	155.0	163.6	172.2	180.9	189.5	198.1	206.8	215.4	224.0	232.7	241.3	249.9	258.6	267.2	275.8	284.5	293.1	301.7	310.4	319.0	327.6
	Carbon Stock	**2,060**	**1000 t-CO2-e/year**	**17,740**	**10.8**	**43.1**	**97.1**	**151.0**	**196.4**	**231.5**	**250.0**	**266.9**	**279.9**	**293.1**	**281.2**	**261.3**	**278.5**	**295.1**	**318.1**	**341.2**	**359.0**	**371.4**	**383.1**	**404.7**	**426.3**	**447.9**	**469.5**	**491.0**	**512.6**	**534.2**	**555.8**	**577.4**	**599.0**	**620.5**	**642.1**	**663.7**	**685.3**	**706.9**	**728.5**	**750.0**	**771.6**	**793.2**	**814.8**	**836.4**
	CO_2 emission by vegetation clearing (Ia, Ib)	**2,060**	**1000 t-CO2-e/year**	**151**	**30.2**	**60.4**	**60.4**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Afforestation (AFF_02)	Model Carbon Stock (t-CO2-e/year)	Area	t-CO2-e/year	7,854	9.6	19.2	28.7	38.3	47.9	57.5	67.1	76.6	86.2	95.8	105.4	114.9	124.5	134.1	143.7	153.3	162.8	172.4	182.0	191.6	201.1	210.7	220.3	229.9	239.5	249.0	258.6	268.2	277.8	287.3	296.9	306.5	316.1	325.7	335.2	344.8	354.4	364.0	373.6	383.1
	-1st batch	204	1000 t-CO2-e/year	1,602	2.0	3.9	5.9	7.8	9.8	11.7	13.7	15.6	17.6	19.5	21.5	23.4	25.4	27.4	29.3	31.3	33.2	35.2	37.1	39.1	41.0	43.0	44.9	46.9	48.8	50.8	52.8	54.7	56.7	58.6	60.6	62.5	64.5	66.4	68.4	70.3	72.3	74.2	76.2	78.2
	-2st batch	408	1000 t-CO2-e/year	3,048		3.9	7.8	11.7	15.6	19.5	23.4	27.4	31.3	35.2	39.1	43.0	46.9	50.8	54.7	58.6	62.5	66.4	70.3	74.3	78.2	82.1	86.0	89.9	93.8	97.7	101.6	105.5	109.4	113.3	117.2	121.1	125.1	129.0	132.9	136.8	140.7	144.6	148.5	152.4
	-3st batch	408	1000 t-CO2-e/year	2,896			3.9	7.8	11.7	15.6	19.5	23.4	27.4	31.3	35.2	39.1	43.0	46.9	50.8	54.7	58.6	62.5	66.4	70.3	74.3	78.2	82.1	86.0	89.9	93.8	97.7	101.6	105.5	109.4	113.3	117.2	121.1	125.1	129.0	132.9	136.8	140.7	144.6	148.5
	Carbon Stock	**1,020**	**1000 t-CO2-e/year**	**7,546**	**2.0**	**7.8**	**17.6**	**27.4**	**37.1**	**46.9**	**56.7**	**66.4**	**76.2**	**86.0**	**95.7**	**105.5**	**115.3**	**125.1**	**134.8**	**144.6**	**154.4**	**164.1**	**173.9**	**183.7**	**193.4**	**203.2**	**213.0**	**222.8**	**232.5**	**242.3**	**252.1**	**261.8**	**271.6**	**281.4**	**291.1**	**300.9**	**310.7**	**320.4**	**330.2**	**340.0**	**349.8**	**359.5**	**369.3**	**379.1**
	CO_2 emission by vegetation clearing (Ia, Ib)	**0**	**1000 t-CO2-e/year**	**75**	**15.0**	**29.9**	**29.9**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Assisted Natural Regeneration	Model Carbon Stock (t-CO2-e/year)	Area	t-CO2-e/year	2,295	2.8	5.6	8.4	11.2	14.0	16.8	19.6	22.4	25.2	28.0	30.8	33.6	36.4	39.2	42.0	44.8	47.6	50.4	53.2	56.0	58.8	61.6	64.4	67.2	70.0	72.8	75.6	78.4	81.2	84.0	86.8	89.6	92.4	95.2	98.0	100.8	103.6	106.4	109.2	112.0
	-1st batch	336	1000 t-CO2-e/year	771	0.9	1.9	2.8	3.8	4.7	5.6	6.6	7.5	8.5	9.4	10.3	11.3	12.2	13.2	14.1	15.0	16.0	16.9	17.9	18.8	19.7	20.7	21.6	22.6	23.5	24.5	25.4	26.3	27.3	28.2	29.2	30.1	31.0	32.0	32.9	33.9	34.8	35.7	36.7	37.6
	-2st batch	504	1000 t-CO2-e/year	1,100		1.4	2.8	4.2	5.6	7.1	8.5	9.9	11.3	12.7	14.1	15.5	16.9	18.3	19.7	21.2	22.6	24.0	25.4	26.8	28.2	29.6	31.0	32.4	33.9	35.3	36.7	38.1	39.5	40.9	42.3	43.7	45.1	46.5	48.0	49.4	50.8	52.2	53.6	55.0
	-3st batch	0	1000 t-CO2-e/year	0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Carbon Stock	**840**	**1000 t-CO2-e/year**	**1,871**	**0.9**	**3.3**	**5.6**	**8.0**	**10.3**	**12.7**	**15.0**	**17.4**	**19.7**	**22.1**	**24.5**	**26.8**	**29.2**	**31.5**	**33.9**	**36.2**	**38.6**	**40.9**	**43.3**	**45.6**	**48.0**	**50.3**	**52.7**	**55.0**	**57.4**	**59.7**	**62.1**	**64.4**	**66.8**	**69.1**	**71.5**	**73.8**	**76.2**	**78.5**	**80.9**	**83.2**	**85.6**	**87.9**	**90.3**	**92.6**
	Total Carbon Stock	**3,920**	**1000 t-CO2-e/year**	**27,157**	**13.7**	**54.3**	**120.3**	**186.3**	**243.8**	**291.1**	**321.7**	**350.7**	**375.9**	**401.2**	**401.4**	**393.6**	**422.9**	**451.6**	**486.8**	**521.9**	**551.9**	**576.4**	**600.3**	**634.0**	**667.7**	**701.4**	**735.1**	**768.8**	**802.5**	**836.2**	**869.9**	**903.6**	**937.3**	**971.0**	**1,004.7**	**1,038.4**	**1,072.1**	**1,105.8**	**1,139.6**	**1,173.3**	**1,207.0**	**1,240.7**	**1,274.4**	**1,308.1**
	Eligible Rate (x100%)	**1,960**	**1000 t-CO2-e/year**	**31,726**	**13.7**	**54.3**	**120.3**	**186.3**	**243.8**	**291.1**	**321.7**	**350.7**	**375.9**	**401.2**	**401.4**	**393.6**	**422.9**	**451.6**	**486.8**	**521.9**	**551.9**	**576.4**	**600.3**	**634.0**	**667.7**	**701.4**	**735.1**	**768.8**	**802.5**	**836.2**	**869.9**	**903.6**	**937.3**	**971.0**	**1,004.7**	**1,038.4**	**1,072.1**	**1,105.8**	**1,139.6**	**1,173.3**	**1,207.0**	**1,240.7**	**1,274.4**	**1,308.1**
	Financial Value (*3.3 USD)		**VND million**		**991**	**3,930**	**8,715**	**13,499**	**17,666**	**21,091**	**23,306**	**25,407**	**27,232**	**29,063**	**29,081**	**28,515**	**30,638**	**32,718**	**35,266**	**37,814**	**39,985**	**41,759**	**43,490**	**45,932**	**48,373**	**50,814**	**53,256**	**55,698**	**58,140**	**60,582**	**63,023**	**65,466**	**67,908**	**70,349**	**72,791**	**75,232**	**77,675**	**80,117**	**82,559**	**85,001**	**87,442**	**89,883**	**92,325**	**94,767**
	Difference From the Previous Evaluation		**VND million**		**991**	**2,939**	**4,785**	**4,784**	**4,167**	**3,425**	**2,215**	**2,101**	**1,826**	**1,831**	**18**	**-566**	**2,123**	**2,080**	**2,548**	**2,548**	**2,172**	**1,773**	**1,731**	**2,442**	**2,441**	**2,441**	**2,442**	**2,442**	**2,442**	**2,442**	**2,442**	**2,442**	**2,442**	**2,441**	**2,442**	**2,442**	**2,442**	**2,442**	**2,442**	**2,442**	**2,441**	**2,441**	**2,442**	**2,442**
	Financial Value (*3.3 USD) of CO_2 emission		**VND million**		**3,273**	**6,545**	**6,545**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
	Net CO_2 absorption		**VND million**		**-2,282**	**-3,606**	**-1,761**	**4,784**	**4,167**	**3,425**	**2,215**	**2,101**	**1,826**	**1,831**	**18**	**-566**	**2,123**	**2,080**	**2,548**	**2,548**	**2,172**	**1,773**	**1,731**	**2,442**	**2,441**	**2,441**	**2,442**	**2,442**	**2,442**	**2,442**	**2,442**	**2,442**	**2,442**	**2,441**	**2,442**	**2,442**	**2,442**	**2,442**	**2,442**	**2,442**	**2,441**	**2,441**	**2,442**	**2,442**

Table H-12 Summary of Cost Benefit Analysis of the Project

(1) Whole Project

Year	Project Cost							O&M and Replacement		Total Cost	Benefit				Balance
	Survey and Detailed Planning	Improvement of Watershed Forest	Improvement of Silviculture Infrastructure	Improvement of Rural Infrastructure	Support for Livelihood Development	Forest Fire Control	Other Costs	Forest Management	Silviculture and Rural Infrastructure		Sales of forest product	REDD+ (CO2 sequestration)	REDD+ (Reduction of GHG emission	Total	
1	0	0	0	0	0	0	10,060	0	0	10,060	0	0	0	0	-10,060
2	4,630	0	0	0	0	5,789	26,418	0	0	36,836	0	0	0	0	-36,836
3	18,594	0	17,669	0	988	0	32,294	0	0	69,545	0	0	0	0	-69,545
4	24,162	63,774	32,486	39,668	1,733	8,447	42,676	0	0	212,947	0	12,014	24,524	36,537	-176,409
5	11,231	158,691	34,415	39,668	18,114	0	44,033	0	0	306,153	0	12,014	24,524	36,537	-269,616
6	0	204,108	5,404	39,668	17,131	959	40,650	0	0	307,919	0	12,014	24,524	36,537	-271,382
7		119,636	0	0	1,501	0	30,745	0	2,090	153,972	0	12,014	24,524	36,537	-117,435
8			0	0	140	0	23,721	68,790	2,090	94,741	26,902	12,014	24,524	63,440	-31,302
9					0	0	14,340	23,148	2,090	39,578	53,805	12,014	24,524	90,342	50,764
10							15,114	35,340	2,090	52,544	96,470	12,014	24,524	133,007	80,464
11								33,835	2,090	35,925	85,331	12,014	24,524	121,868	85,944
12								33,835	2,090	35,925	85,331	12,014	24,524	121,868	85,944
13								36,838	2,090	38,928	71,740	12,014	24,524	108,277	69,349
14								54,076	2,090	56,166	143,479	12,014	24,524	180,016	123,850
15								56,869	2,090	58,959	156,342	12,014	24,524	192,879	133,920
16								25,185	2,090	27,275	25,726	12,014	24,524	62,263	34,989
17								25,185	2,090	27,275	25,726	12,014	24,524	62,263	34,989
18								21,591	2,090	23,681	65,297	12,014	24,524	101,834	78,154
19								25,573	2,090	27,663	195,891	12,014	24,524	232,428	204,765
20								33,681	2,090	35,770	345,734	12,014	24,524	382,272	346,501
21								37,408	2,090	39,498	351,925	12,014	24,524	388,463	348,965
22								36,612	2,090	38,702	325,806	12,014	24,524	362,344	323,642
23								27,564	4,386	31,950	261,188	12,014	24,524	297,725	265,775
24								27,564	14,304	41,868	261,188	12,014	24,524	297,725	255,857
25								27,564	14,913	42,477	261,188	12,014	24,524	297,725	255,248
26								27,564	14,671	42,235	261,188	12,014	24,524	297,725	255,490
27								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
28								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
29								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
30								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
31								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
32								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
33								27,564	4,638	32,202	261,188	12,014	24,524	297,725	265,523
34								27,564	6,041	33,605	261,188	12,014	24,524	297,725	264,120
35								27,564	5,486	33,050	261,188	12,014	24,524	297,725	264,675
36								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
37								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
38								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
39								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
40								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
41								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
42								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
43								27,564	2,090	29,654	261,188	12,014	24,524	297,725	268,071
									NPV	986,495			NPV	1,061,531	75,037
														B/C	1.08
														EIRR	10.7%

Table H-13 Summary of Cost Benefit Analysis of the Project (2)

(2) Component Projects at the Prvincial Level

Province	Items		Project Area (ha)	Total	NPV (D.R.=10%)	Year																				
						1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Dien Bien	Total Cost			-478,613	-185,427	-1,912	-3,966	-11,854	-40,290	-58,840	-55,048	-28,926	-17,538	-7,521	-10,103	-7,886	-7,886	-8,568	-12,478	-13,112	-5,924	-5,924	-5,109	-6,012	-7,851	-8,697
		Improvement of Watershed Forest		-357,630	-114,855	0	0	0	-13,037	-32,507	-42,007	-24,863	-14,407	-4,903	-7,756	-7,415	-7,415	-8,096	-12,007	-12,640	-5,453	-5,453	-4,637	-5,541	-7,380	-8,226
		Silviculture Infrastructure		-48,941	-25,866	0	0	-6,150	-12,404	-12,670	-994	-322	-322	-322	-322	-322	-322	-322	-322	-322	-322	-322	-322	-322	-322	-322
		Small Scale Rural Infrastructure		-24,528	-11,526	0	0	0	-4,967	-4,967	-4,967	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149
		Others		-47,513	-33,180	-1,912	-3,966	-5,703	-9,882	-8,696	-7,079	-3,592	-2,659	-2,147	-1,876											
	Total Benefit			2,027,699	237,902	0	0	0	7,929	7,929	7,929	7,929	14,032	20,135	29,813	27,286	27,286	24,203	40,477	43,395	13,765	13,765	22,742	52,367	86,358	87,763
	Product sales	Afforestation	3,160	1,710,538	173,821	0	0	0	0	0	0	0	6,103	12,206	21,884	19,357	19,357	16,274	32,548	35,466	5,836	5,836	14,813	44,438	78,429	79,834
		Protection of Natural Forests	10,400	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Assisted Natural Regeneration	2,030	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CO_2 absorption by	Afforestation	165,825	91,356	18,458	0	0	0	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284
	Reduction of CO_2 emission through	REDD+	398,234	225,804	45,623	0	0	0	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645
	Balance of cost and benefit			1,549,086	52,474	-1,912	-3,966	-11,854	-32,361	-50,911	-47,119	-20,997	-3,506	12,613	19,710	19,400	19,400	15,636	27,999	30,283	7,841	7,841	17,633	46,355	78,507	79,066
		EIRR of the project in Dien Bien	12.5%	B/C	1.28																					
Lai Chau	Total Cost			-748,891	-316,006	-1,912	-4,181	-16,244	-67,487	-107,694	-112,440	-54,176	-29,479	-10,715	-13,705	-11,121	-11,121	-12,534	-20,639	-21,952	-7,054	-7,054	-5,364	-7,237	-11,049	-12,802
		Improvement of Watershed Forest		-555,239	-205,930	0	0	0	-25,952	-64,706	-83,903	-48,175	-25,541	-7,705	-11,107	-10,399	-10,399	-11,811	-19,917	-21,230	-6,332	-6,332	-4,642	-6,514	-10,327	-12,079
		Silviculture Infrastructure		-50,768	-27,056	0	0	-6,534	-12,099	-13,002	-2,101	-337	-337	-337	-337	-337	-337	-337	-337	-337	-337	-337	-337	-337	-337	-337
		Small Scale Rural Infrastructure		-67,058	-30,150	0	0	0	-12,831	-12,831	-12,831	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385
		Others		-75,826	-52,870	-1,912	-4,181	-9,710	-16,605	-17,156	-13,606	-5,278	-3,216	-2,288	-1,876											
	Total Benefit			3,761,241	403,867	0	0	0	5,392	5,392	5,392	5,392	18,041	30,691	50,753	45,515	45,515	39,124	72,857	78,905	17,488	17,488	36,095	97,501	167,959	170,870
	Product sales	Afforestation	6,550	3,545,578	360,293	0	0	0	0	0	0	0	12,650	25,299	45,361	40,123	40,123	33,733	67,465	73,513	12,097	12,097	30,703	92,109	162,567	165,478
		Protection of Natural Forests	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Assisted Natural Regeneration	7,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CO_2 absorption by	Afforestation	165,825	215,664	43,574	0	0	0	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392
	Reduction of CO_2 emission through	REDD+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Balance of cost and benefit			3,012,350	87,861	-1,912	-4,181	-16,244	-62,096	-102,303	-107,049	-48,784	-11,438	19,976	37,048	34,393	34,393	26,590	52,217	56,952	10,434	10,434	30,730	90,264	156,910	158,068
		EIRR of the project in Lai Chau	12.2%	B/C	1.28																					
Son La	Total Cost			-427,053	-165,334	-1,912	-3,882	-8,891	-33,719	-51,607	-54,685	-26,364	-15,899	-6,942	-8,776	-6,667	-6,667	-7,133	-9,806	-10,239	-5,326	-5,326	-4,768	-5,386	-6,643	-7,221
		Improvement of Watershed Forest		-317,825	-103,373	0	0	0	-12,185	-30,222	-38,586	-22,456	-12,964	-4,468	-6,553	-6,319	-6,319	-6,785	-9,458	-9,891	-4,978	-4,978	-4,421	-5,038	-6,295	-6,873
		Silviculture Infrastructure		-21,905	-10,719	0	0	-3,081	-4,192	-4,621	-1,258	-132	-132	-132	-132	-132	-132	-132	-132	-132	-132	-132	-132	-132	-132	-132
		Small Scale Rural Infrastructure		-38,250	-16,997	0	0	0	-7,209	-7,209	-7,209	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216
		Others		-49,073	-34,245	-1,912	-3,882	-5,810	-10,133	-9,555	-7,632	-3,560	-2,587	-2,126	-1,876											
	Total Benefit			1,477,759	181,152	0	0	0	7,713	7,713	7,713	7,713	11,885	16,056	22,672	20,945	20,945	18,837	29,961	31,956	11,702	11,702	17,838	38,088	61,323	62,283
	Product sales	Afforestation	3,220	1,169,229	118,814	0	0	0	0	0	0	0	4,172	8,343	14,959	13,232	13,232	11,124	22,248	24,243	3,989	3,989	10,125	30,375	53,610	54,570
		Protection of Natural Forests	9,900	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Assisted Natural Regeneration	2,130	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CO_2 absorption by	Afforestation	165,825	93,582	18,908	0	0	0	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340
	Reduction of CO_2 emission through	REDD+	398,234	214,948	43,430	0	0	0	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374
	Balance of cost and benefit			1,050,706	15,817	-1,912	-3,882	-8,891	-26,006	-43,893	-46,972	-18,651	-4,014	9,114	13,896	14,278	14,278	11,705	20,156	21,717	6,377	6,377	13,070	32,702	54,680	55,062
		EIRR of the project in Son La	11.0%	B/C	1.10																					
Hoa Binh	Total Cost			-591,778	-210,820	-1,912	-4,097	-9,628	-45,248	-64,203	-67,058	-28,849	-19,159	-8,826	-12,348	-10,250	-10,250	-10,694	-13,243	-13,656	-8,971	-8,971	-8,439	-9,028	-10,227	-10,778
		Improvement of Watershed Forest		-442,320	-123,388	0	0	0	-12,599	-31,257	-39,612	-24,141	-15,878	-6,072	-9,924	-9,701	-9,701	-10,145	-12,695	-13,108	-8,422	-8,422	-7,891	-8,479	-9,678	-10,230
		Silviculture Infrastructure		-17,367	-8,713	0	0	-1,903	-3,791	-4,123	-1,051	-109	-109	-109	-109	-109	-109	-109	-109	-109	-109	-109	-109	-109	-109	-109
		Small Scale Rural Infrastructure		-67,291	-33,499	0	0	0	-14,661	-14,661	-14,661	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440
		Others		-64,801	-45,220	-1,912	-4,097	-7,725	-14,197	-14,162	-11,734	-4,159	-2,733	-2,206	-1,876											
	Total Benefit			1,735,238	238,611	0	0	0	15,504	15,504	15,504	15,504	19,482	23,460	29,770	28,122	28,122	26,113	36,722	38,624	19,308	19,308	25,160	44,472	66,632	67,547
	Product sales	Afforestation	3,080	1,115,098	113,313	0	0	0	0	0	0	0	3,978	7,957	14,266	12,619	12,619	10,609	21,218	23,120	3,804	3,804	9,656	28,969	51,128	52,044
		Protection of Natural Forests	24,880	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Assisted Natural Regeneration	840	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CO_2 absorption by	Afforestation	165,825	79,947	16,153	0	0	0	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999
	Reduction of CO_2 emission through	REDD+	398,234	540,193	109,144	0	0	0	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505
	Balance of cost and benefit			1,143,460	27,791	-1,912	-4,097	-9,628	-29,744	-48,699	-51,554	-13,345	322	14,634	17,422	17,873	17,873	15,419	23,478	24,968	10,337	10,337	16,721	35,444	56,405	56,769
		EIRR of the project in Hoa Binh	11.6%	B/C	1.13																					
Total	Total Cost			-2,402,593	-986,495	-10,060	-36,836	-69,545	-212,947	-306,153	-307,919	-153,972	-94,741	-39,578	-52,544	-35,925	-35,925	-38,928	-56,166	-58,959	-27,275	-27,275	-23,681	-27,663	-35,770	-39,498
		Improvement of Watershed Forest		-1,673,013	-547,546	0	0	0	-63,774	-158,691	-204,108	-119,636	-68,790	-23,148	-35,340	-33,835	-33,835	-36,838	-54,076	-56,869	-25,185	-25,185	-21,591	-25,573	-33,681	-37,408
		Afforestation	16,010	-592,881	-122,252	0	0	0	0	0	0	0	-55,567	-25,264	-19,963	-18,458	-18,458	-21,461	-38,699	-41,492	-9,808	-9,808	-6,214	-10,196	-18,304	-22,031
		Protection of Natural Forests	45,180	-428,994	-65,089	0	0	0	0	0	0	0	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916
		Assisted Natural Regeneration	12,500	-124,577	-18,902	0	0	0	0	0	0	0	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460
		Silviculture Infrastructure		-138,982	-72,355	0	0	-17,669	-32,486	-34,415	-5,404	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900	-900
		Small Scale Rural Infrastructure		-197,127	-92,171	0	0	0	-39,668	-39,668	-39,668	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190
		Others		-237,212	-165,516	-7,647	-16,125	-28,948	-50,816	-49,569	-40,051	-16,589	-11,196	-8,767	-7,503	0	0	0	0	0	0	0	0	0	0	0
		Other cost of CPMU		-156,258	-108,907	-2,413	-20,711	-22,928	-26,202	-23,810	-18,688	-15,657	-12,666	-5,573	-7,611											
	Total Benefit			9,001,937	1,061,531	0	0	0	36,537	36,537	36,537	36,537	63,440	90,342	133,007	121,868	121,868	108,277	180,016	192,879	62,263	62,263	101,834	232,428	382,272	388,463
	Product sales	Afforestation	16,010	7,540,443	766,241	0	0	0	0	0	0	0	26,902	53,805	96,470	85,331	85,331	71,740	143,479	156,342	25,726	25,726	65,297	195,891	345,734	351,925
		Protection of Natural Forests	45,180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Assisted Natural Regeneration	12,500	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CO_2 absorption by	Afforestation		480,549	97,093	0	0	0	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014
	Reduction of CO_2 emission through	REDD+		980,945	198,197	0	0	0	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524
	Balance of cost and benefit			6,599,343	75,037	-10,060	-36,836	-69,545	-176,409	-269,616	-271,382	-117,435	-31,302	50,764	80,464	85,944	85,944	69,349	123,850	133,920	34,989	34,989	78,154	204,765	346,501	348,965
		EIRR of the whole project	10.7%	B/C	1.08																					
Sensitibity Analysis	**Cost**	+10%		-2,642,853	-1,085,144	-11,065	-40,520	-76,499	-234,241	-336,769	-338,711	-169,369	-104,215	-43,535	-57,798	-39,517	-39,517	-42,821	-61,783	-64,855	-30,002	-30,002	-26,049	-30,429	-39,347	-43,448
		+20%		-2,883,112	-1,183,793	-12,071	-44,204	-83,454	-255,536	-367,384	-369,503	-184,766	-113,689	-47,493	-63,053	-43,109	-43,109	-46,713	-67,399	-70,751	-32,730	-32,730	-28,417	-33,195	-42,924	-47,398
	Benefit	-10%		8,101,743	955,378	0	0	0	32,884	32,884	32,884	32,884	57,096	81,308	119,707	109,682	109,682	97,449	162,015	173,591	56,037	56,037	91,651	209,185	344,045	349,616
		-20%		7,201,550	849,225	0	0	0	29,230	29,230	29,230	29,230	50,752	72,274	106,406	97,495	97,495	86,621	144,013	154,303	49,811	49,811	81,467	185,942	305,817	310,770
		Balance	IRR	B/C	NPV																					
	Base		**10.7%**	**1.08**	**75,037**	-10,060	-36,836	-69,545	-176,409	-269,616	-271,382	-117,435	-31,302	50,764	80,464	85,944	85,944	69,349	123,850	133,920	34,989	34,989	78,154	204,765	346,501	348,965
	Case1	Cost +10%	**9.8%**	**0.98**	**-23,613**	-11,065	-40,520	-76,499	-197,704	-300,231	-302,174	-132,832	-40,776	46,807	75,209	82,351	82,351	65,456	118,234	128,025	32,261	32,261	75,786	201,999	342,924	345,015
	Case2	Cost +20%	**9.0%**	**0.90**	**-122,262**	-12,071	-44,204	-83,454	-218,999	-330,847	-332,966	-148,229	-50,250	42,849	69,955	78,759	78,759	61,563	112,617	122,129	29,534	29,534	73,418	199,233	339,347	341,065
	Case3	Benefit -10%	**9.7%**	**0.97**	**-31,117**	-10,060	-36,836	-69,545	-180,063	-273,270	-275,036	-121,088	-37,646	41,730	67,163	73,757	73,757	58,521	105,848	114,633	28,762	28,762	67,970	181,523	308,274	310,118
	Case4	Benefit -20%	**8.6%**	**0.88**	**-137,270**	-10,060	-36,836	-69,545	-183,717	-276,924	-278,689	-124,742	-43,990	32,696	53,862	61,570	61,570	47,694	87,847	95,345	22,536	22,536	57,787	158,280	270,047	271,272

Province	Items		Year																					
			22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
Dien Bien	Total Cost		-8,516	-6,692	-7,956	-8,078	-7,956	-6,464	-6,464	-6,464	-6,464	-6,464	-6,464	-7,340	-8,217	-7,924	-6,464	-6,464	-6,464	-6,464	-6,464	-6,464	-6,464	-6,464
		Improvement of Watershed Forest	-8,045	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992	-5,992
		Silviculture Infrastructure	-322	-550	-443	-565	-443	-322	-322	-322	-322	-322	-322	-1,198	-2,075	-1,782	-322	-322	-322	-322	-322	-322	-322	-322
		Small Scale Rural Infrastructure	-149	-149	-1,520	-1,520	-1,520	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149	-149
		Others																						
	Total Benefit		81,838	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179	67,179
	Product sales	Afforestation	73,909	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250	59,250
		Protection of Natural Forests	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Assisted Natural Regeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CO_2 absorption by	Afforestation	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284	2,284
	Reduction of CO_2 emission through	REDD+	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645	5,645
	Balance of cost and benefit		73,322	60,487	59,223	59,101	59,223	60,715	60,715	60,715	60,715	60,715	60,715	59,839	58,962	59,255	60,715	60,715	60,715	60,715	60,715	60,715	60,715	60,715
		EIRR of the project in Dien Bien																						
Lai Chau	Total Cost		-12,427	-9,115	-13,312	-13,434	-13,434	-8,173	-8,173	-8,173	-8,173	-8,173	-8,173	-8,740	-9,024	-9,024	-8,173	-8,173	-8,173	-8,173	-8,173	-8,173	-8,173	-8,173
		Improvement of Watershed Forest	-11,705	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451	-7,451
		Silviculture Infrastructure	-337	-1,279	-702	-824	-824	-337	-337	-337	-337	-337	-337	-904	-1,188	-1,188	-337	-337	-337	-337	-337	-337	-337	-337
		Small Scale Rural Infrastructure	-385	-385	-5,159	-5,159	-5,159	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385	-385
		Others																						
	Total Benefit		158,588	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204	128,204
	Product sales	Afforestation	153,197	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813	122,813
		Protection of Natural Forests	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Assisted Natural Regeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CO_2 absorption by	Afforestation	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392	5,392
	Reduction of CO_2 emission through	REDD+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Balance of cost and benefit		146,161	119,089	114,892	114,770	114,770	120,031	120,031	120,031	120,031	120,031	120,031	119,464	119,180	119,180	120,031	120,031	120,031	120,031	120,031	120,031	120,031	120,031
		EIRR of the project in Lai Chau																						
Son La	Total Cost		-7,098	-6,393	-8,813	-9,058	-9,058	-5,695	-5,695	-5,695	-5,695	-5,695	-5,695	-6,539	-6,257	-6,257	-5,695	-5,695	-5,695	-5,695	-5,695	-5,695	-5,695	-5,695
		Improvement of Watershed Forest	-6,750	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347	-5,347
		Silviculture Infrastructure	-132	-830	-376	-621	-621	-132	-132	-132	-132	-132	-132	-976	-694	-694	-132	-132	-132	-132	-132	-132	-132	-132
		Small Scale Rural Infrastructure	-216	-216	-3,090	-3,090	-3,090	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216	-216
		Others																						
	Total Benefit		58,233	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213	48,213
	Product sales	Afforestation	50,520	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500
		Protection of Natural Forests	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Assisted Natural Regeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CO_2 absorption by	Afforestation	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340	2,340
	Reduction of CO_2 emission through	REDD+	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374	5,374
	Balance of cost and benefit		51,136	41,821	39,401	39,156	39,156	42,519	42,519	42,519	42,519	42,519	42,519	41,675	41,957	41,957	42,519	42,519	42,519	42,519	42,519	42,519	42,519	42,519
		EIRR of the project in Son La																						
Hoa Binh	Total Cost		-10,660	-9,750	-11,787	-11,907	-11,787	-9,322	-9,322	-9,322	-9,322	-9,322	-9,322	-9,583	-10,107	-9,845	-9,322	-9,322	-9,322	-9,322	-9,322	-9,322	-9,322	-9,322
		Improvement of Watershed Forest	-10,112	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774	-8,774
		Silviculture Infrastructure	-109	-537	-229	-349	-229	-109	-109	-109	-109	-109	-109	-370	-894	-632	-109	-109	-109	-109	-109	-109	-109	-109
		Small Scale Rural Infrastructure	-440	-440	-2,785	-2,785	-2,785	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440	-440
		Others																						
	Total Benefit		63,685	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129	54,129
	Product sales	Afforestation	48,181	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625	38,625
		Protection of Natural Forests	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Assisted Natural Regeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CO_2 absorption by	Afforestation	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999	1,999
	Reduction of CO_2 emission through	REDD+	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505	13,505
	Balance of cost and benefit		53,024	44,378	42,341	42,221	42,341	44,806	44,806	44,806	44,806	44,806	44,806	44,545	44,021	44,283	44,806	44,806	44,806	44,806	44,806	44,806	44,806	44,806
		EIRR of the project in Hoa Binh																						
Total	Total Cost		-38,702	-31,950	-41,868	-42,477	-42,235	-29,654	-29,654	-29,654	-29,654	-29,654	-29,654	-32,202	-33,605	-33,050	-29,654	-29,654	-29,654	-29,654	-29,654	-29,654	-29,654	-29,654
		Improvement of Watershed Forest	-36,612	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564	-27,564
		Afforestation	-21,235	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187	-12,187
		Protection of Natural Forests	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916	-11,916
		Assisted Natural Regeneration	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460	-3,460
		Silviculture Infrastructure	-900	-3,196	-1,750	-2,359	-2,117	-900	-900	-900	-900	-900	-900	-3,448	-4,851	-4,296	-900	-900	-900	-900	-900	-900	-900	-900
		Small Scale Rural Infrastructure	-1,190	-1,190	-12,554	-12,554	-12,554	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190	-1,190
		Others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Other cost of CPMU																						
	Total Benefit		362,344	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725	297,725
	Product sales	Afforestation	325,806	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188	261,188
		Protection of Natural Forests	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		Assisted Natural Regeneration	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	CO_2 absorption by	Afforestation	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014	12,014
	Reduction of CO_2 emission through	REDD+	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524	24,524
	Balance of cost and benefit		323,642	265,775	255,857	255,248	255,490	268,071	268,071	268,071	268,071	268,071	268,071	265,523	264,120	264,675	268,071	268,071	268,071	268,071	268,071	268,071	268,071	268,071
		EIRR of the whole project																						
Sensitibity Analysis	**Cost**	+10%	-42,572	-35,145	-46,054	-46,724	-46,458	-32,619	-32,619	-32,619	-32,619	-32,619	-32,619	-35,422	-36,965	-36,355	-32,619	-32,619	-32,619	-32,619	-32,619	-32,619	-32,619	-32,619
		+20%	-46,442	-38,340	-50,241	-50,972	-50,682	-35,584	-35,584	-35,584	-35,584	-35,584	-35,584	-38,642	-40,326	-39,660	-35,584	-35,584	-35,584	-35,584	-35,584	-35,584	-35,584	-35,584
	Benefit	-10%	326,109	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952	267,952
		-20%	289,875	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180	238,180
		Balance																						
	Base		323,642	265,775	255,857	255,248	255,490	268,071	268,071	268,071	268,071	268,071	268,071	265,523	264,120	264,675	268,071	268,071	268,071	268,071	268,071	268,071	268,071	268,071
	Case1	Cost +10%	319,772	262,580	251,670	251,001	251,267	265,106	265,106	265,106	265,106	265,106	265,106	262,303	260,760	261,370	265,106	265,106	265,106	265,106	265,106	265,106	265,106	265,106
	Case2	Cost +20%	315,902	259,385	247,484	246,753	247,043	262,141	262,141	262,141	262,141	262,141	262,141	259,083	257,399	258,065	262,141	262,141	262,141	262,141	262,141	262,141	262,141	262,141
	Case3	Benefit -10%	287,408	236,003	226,085	225,476	225,718	238,299	238,299	238,299	238,299	238,299	238,299	235,751	234,348	234,903	238,299	238,299	238,299	238,299	238,299	238,299	238,299	238,299
	Case4	Benefit -20%	251,174	206,230	196,312	195,703	195,945	208,526	208,526	208,526	208,526	208,526	208,526	205,978	204,575	205,130	208,526	208,526	208,526	208,526	208,526	208,526	208,526	208,526

Table H-14 Emission Reduction of CO_2 per year by Afforestation and ANR

Project Name

The Preparatory Survey for the Project of Sustainable Forest Management in the Northwest Sub-region in the Socialist Republic of Vietnam

Country

Viet Nam

Emission Reduction

		Value	Unit
$ER_{AR,y}$	Net absorption	165825	tCO_2/year
$\Delta C_{PJ,y}$	Project absorption	195177	tCO_2/year
$\Delta C_{BL,y}$	Baseline absorption	0	tCO2/year
PE_y	Project emission	29352	tCO_2/year

Inputs

*Input only orange cell

Parameter	Description		Value	Unit
$A_{PJ,i}$	Acreage of the stratum i in the forested land	AFF-01A Pinus massonia	6965	ha
		AFF-01A Schima wallichii Choisy	6965	ha
		AFF-01B Acasia Mangium	0	ha
		AFF-01B Chukrasia tabularis	6965	ha
		ANR	12500	ha
		AFF-02	2080	ha
$T_{A,y,i}$	Per hectare aboveground biomass in the stratum i in year y	AFF-01A Pinus massonia	6.23	t dm/ha
		AFF-01A Schima wallichii Choisy	5.06	t dm/ha
		AFF-01B Acasia Mangium	0.00	t dm/ha
		AFF-01B Chukrasia tabularis	8.1361	t dm/ha
		ANR	2.68	t dm/ha
		AFF-02	8.14	t dm/ha
$T_{A,y-1,i}$	Per hectare aboveground biomass in the stratum i in year y-1	AFF-01A Pinus massonia	4.10	t dm/ha
		AFF-01A Schima wallichii Choisy	2.45	t dm/ha
		AFF-01B Acasia Mangium	0.00	t dm/ha
		AFF-01B Chukrasia tabularis	4.13	t dm/ha
		ANR	1.35	t dm/ha
		AFF-02	4.13	t dm/ha
CF_i	Carbon fraction of trees in the stratum i	AFF-01A Pinus massonia	0.5	tC/tdm
		AFF-01A Schima wallichii Choisy	0.5	tC/tdm
		AFF-01B Acasia Mangium	0	tC/tdm
		AFF-01B Chukrasia tabularis	0.5	tC/tdm
		ANR	0.47	tC/tdm
		AFF-02	0.5	tC/tdm
R_i	Ratio of belowground biomass to aboveground biomass (ratio of belowground vs. aboveground) for the stratum i	AFF-01A Pinus massonia	0.265	
		AFF-01A Schima wallichii Choisy	0.265	
		AFF-01B Acasia Mangium	0.265	
		AFF-01B Chukrasia tabularis	0.265	
		ANR	0.203	
		AFF-02	0.265	
$A_{gr,j}$	Acreage of the stratum j	Ia (Grass land)	9930	ha
		Ib (bush, small trees)	6080	ha
		Ic, II, III	12500	ha
				ha
$V_{A,py,j}$	Per hectare aboveground biomass in the stratum j in the year of clearance	Ia (bare lands/grass lands)	1	t dm/ha
		Ib (bushes/scrubs)	1	t dm/ha
		Ic, II, III	0	t dm/ha
				t dm/ha
R_j	Ratio of belowground biomass to aboveground biomass for the stratum j	Ia (bare lands/grass lands)	0	
		Ib (bushes/scrubs)	0	
		Ic, II, III	0	

Table H-15 Emission Reduction of CO_2 per year by Reduction of Deforestation and Forest Degradation

Project Name

The Preparatory Survey for the Project of Sustainable Forest Management in the Northwest Sub-region in the Socialist Republic of Vietnam

Country

Viet Nam

Emission Reduction

		Value	Unit
$ER_{AR,y}$	Emission reduction	338,499	tCO_2/year
$\Delta C_{PJ,y}$	Project emission	0	tCO_2/year
$\Delta C_{BL,y}$	Baseline emission	398234	tCO_2/year
$\Delta C_{LK,y}$	Leakage	59735	tCO_2/year

Inputs

*Input only orange cell

Parameter	Description		Value	Unit
$A_{BL,y,k}$	Acreage of the stratum k in the forest in the year y in the case of without project	Evergreen broadleaf forest, rich forest	6365.5	ha
		Evergreen broadleaf forest, medium forest	11888.8	ha
		Evergreen broadleaf forest, poor forest	18100.3	ha
				ha
				ha
$A_{BL,y+1,k}$	Acreage of the stratum k in the forest in the year y+1 in the case of without project	Evergreen broadleaf forest, rich forest	5886.155761	ha
		Evergreen broadleaf forest, medium forest	11620.2179	ha
		Evergreen broadleaf forest, poor forest	17721.7737	ha
				ha
				ha
$A_{PJ,y,k}$	Acreage of the stratum k in the forest in the year y in the case of project	Evergreen broadleaf forest, rich forest	6365.5	ha
		Evergreen broadleaf forest, medium forest	11888.8	ha
		Evergreen broadleaf forest, poor forest	18100.3	ha
				ha
				ha
$A_{PJ,y+1,k}$	Acreage of the stratum k in the forest in the year y+1 in the case of project	Evergreen broadleaf forest, rich forest	6365.5	ha
		Evergreen broadleaf forest, medium forest	11888.8	ha
		Evergreen broadleaf forest, poor forest	18100.3	ha
				ha
				ha
$TT_{A,y,k}$	Per hectare aboveground biomass in the stratum k in year y	Evergreen broadleaf forest, rich forest	267	tdm/ha
		Evergreen broadleaf forest, medium forest	143	tdm/ha
		Evergreen broadleaf forest, poor forest	71	tdm/ha
				tdm/ha
				tdm/ha
CF_k	Carbon fraction of trees in the strata i	Evergreen broadleaf forest, rich forest	0.47	tC/tdm
		Evergreen broadleaf forest, medium forest	0.47	tC/tdm
		Evergreen broadleaf forest, poor forest	0.47	tC/tdm
				tC/tdm
				tC/tdm
R_k	Ratio of belowground biomass to aboveground biomass (ratio of belowground vs. aboveground) for the stratum i	Evergreen broadleaf forest, rich forest	0.1927	
		Evergreen broadleaf forest, medium forest	0.1982	
		Evergreen broadleaf forest, poor forest	0.1965	

Table H-16 Results of Sensitivity Analysis

Year	Case 0: Base Case			Case 1: Cost 10% Up			Case 2: Cost 20% Up			Case 4: Benefit 10% Down			Case 5: Benefit 20% Down		
	Total Cost	Total Benefit	Balance	Total Cost	Total Benefit	Balance	Total Cost	Total Benefit	Balance	Total Cost	Total Benefit	Balance	Total Cost	Total Benefit	Balance
1	10,060	0	-10,060	11,065	0	-11,065	12,071	0	-12,071	10,060	0	-10,060	10,060	0	-10,060
2	36,836	0	-36,836	40,520	0	-40,520	44,204	0	-44,204	36,836	0	-36,836	36,836	0	-36,836
3	69,545	0	-69,545	76,499	0	-76,499	83,454	0	-83,454	69,545	0	-69,545	69,545	0	-69,545
4	212,947	36,537	-176,409	234,241	36,537	-197,704	255,536	36,537	-218,999	212,947	32,884	-180,063	212,947	29,230	-183,717
5	306,153	36,537	-269,616	336,769	36,537	-300,231	367,384	36,537	-330,847	306,153	32,884	-273,270	306,153	29,230	-276,924
6	307,919	36,537	-271,382	338,711	36,537	-302,174	369,503	36,537	-332,966	307,919	32,884	-275,036	307,919	29,230	-278,689
7	153,972	36,537	-117,435	169,369	36,537	-132,832	184,766	36,537	-148,229	153,972	32,884	-121,088	153,972	29,230	-124,742
8	94,741	63,440	-31,302	104,215	63,440	-40,776	113,689	63,440	-50,250	94,741	57,096	-37,646	94,741	50,752	-43,990
9	39,578	90,342	50,764	43,535	90,342	46,807	47,493	90,342	42,849	39,578	81,308	41,730	39,578	72,274	32,696
10	52,544	133,007	80,464	57,798	133,007	75,209	63,053	133,007	69,955	52,544	119,707	67,163	52,544	106,406	53,862
11	35,925	121,868	85,944	39,517	121,868	82,351	43,109	121,868	78,759	35,925	109,682	73,757	35,925	97,495	61,570
12	35,925	121,868	85,944	39,517	121,868	82,351	43,109	121,868	78,759	35,925	109,682	73,757	35,925	97,495	61,570
13	38,928	108,277	69,349	42,821	108,277	65,456	46,713	108,277	61,563	38,928	97,449	58,521	38,928	86,621	47,694
14	56,166	180,016	123,850	61,783	180,016	118,234	67,399	180,016	112,617	56,166	162,015	105,848	56,166	144,013	87,847
15	58,959	192,879	133,920	64,855	192,879	128,025	70,751	192,879	122,129	58,959	173,591	114,633	58,959	154,303	95,345
16	27,275	62,263	34,989	30,002	62,263	32,261	32,730	62,263	29,534	27,275	56,037	28,762	27,275	49,811	22,536
17	27,275	62,263	34,989	30,002	62,263	32,261	32,730	62,263	29,534	27,275	56,037	28,762	27,275	49,811	22,536
18	23,681	101,834	78,154	26,049	101,834	75,786	28,417	101,834	73,418	23,681	91,651	67,970	23,681	81,467	57,787
19	27,663	232,428	204,765	30,429	232,428	201,999	33,195	232,428	199,233	27,663	209,185	181,523	27,663	185,942	158,280
20	35,770	382,272	346,501	39,347	382,272	342,924	42,924	382,272	339,347	35,770	344,045	308,274	35,770	305,817	270,047
21	39,498	388,463	348,965	43,448	388,463	345,015	47,398	388,463	341,065	39,498	349,616	310,118	39,498	310,770	271,272
22	38,702	362,344	323,642	42,572	362,344	319,772	46,442	362,344	315,902	38,702	326,109	287,408	38,702	289,875	251,174
23	31,950	297,725	265,775	35,145	297,725	262,580	38,340	297,725	259,385	31,950	267,952	236,003	31,950	238,180	206,230
24	41,868	297,725	255,857	46,054	297,725	251,670	50,241	297,725	247,484	41,868	267,952	226,085	41,868	238,180	196,312
25	42,477	297,725	255,248	46,724	297,725	251,001	50,972	297,725	246,753	42,477	267,952	225,476	42,477	238,180	195,703
26	42,235	297,725	255,490	46,458	297,725	251,267	50,682	297,725	247,043	42,235	267,952	225,718	42,235	238,180	195,945
27	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
28	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
29	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
30	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
31	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
32	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
33	32,202	297,725	265,523	35,422	297,725	262,303	38,642	297,725	259,083	32,202	267,952	235,751	32,202	238,180	205,978
34	33,605	297,725	264,120	36,965	297,725	260,760	40,326	297,725	257,399	33,605	267,952	234,348	33,605	238,180	204,575
35	33,050	297,725	264,675	36,355	297,725	261,370	39,660	297,725	258,065	33,050	267,952	234,903	33,050	238,180	205,130
36	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
37	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
38	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
39	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
40	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
41	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
42	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
43	29,654	297,725	268,071	32,619	297,725	265,106	35,584	297,725	262,141	29,654	267,952	238,299	29,654	238,180	208,526
NPV	**986,495**	**1,061,531**	**75,037**	**1,085,144**	**1,061,531**	**-23,613**	**1,183,793**	**1,061,531**	**-122,262**	**986,495**	**955,378**	**-31,117**	**986,495**	**849,225**	**-137,270**
		B/C	**1.08**		**B/C**	**0.98**		**B/C**	**0.90**		**B/C**	**0.97**		**B/C**	**0.86**
		EIRR	**10.7%**		**EIRR**	**9.8%**		**EIRR**	**9.0%**		**EIRR**	**9.7%**		**EIRR**	**8.6%**

Annex I

Annex I Draft Integrated Environmental and Social Management Framework (ESMF)

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Annex I : Draft Integrated Environmental and Social Management Framework (ESMF)

I.1. Project Summary Description

I.1.1 Project Background and Rationale

Vietnam's forests covered 14.3 million ha, or about 43% of the total land area in 1943 (de Jong et al. 2006). During the next five decades, serious deforestation reduced forest cover substantially to just 27.8% of the land area by 1990 (FPD, 2010). There were various causes and underlying drivers of forest loss in this period. In the Northwest sub-region a combination of intensive logging to supply construction materials and generate income during the war as well as migration, resettlement and the expansion of populations and agriculture as part of the process of developing the remote hinterlands of the country were the primary reasons for deforestation. Nationally, the remaining forests consisted largely of degraded natural forests or plantations, with primary natural forest estimated at between 1% (FAO, 2010) and 2% of the forested area (RECOFTC, 2011).

In recognition that extensive deforestation posed significant threats to the national environment, economic activities, and people's lives in the country, the Government of Vietnam (GoV) has implemented several national reforestation programmes (e.g. Programme 327, National Five Million Hectare Reforestation Program). By 2009, the forest area had increased by 4.1 million ha and forest cover had been restored to 39.1%. This increase is due to plantation development, natural regeneration and as well as the re-categorisation and inclusion of previously omitted limestone forests. In addition, national forest tenure reform, the availability of new technologies, market opportunities for cash crops and the liberalisation of, and increase in, agricultural output have also contributed significantly to the increase in forest area (Sikor 2001).

The National Forest Development Strategy to 2020 demonstrated the GoV's commitment to maintaining this upward trend with the policy objective to increase forest cover to 42-43% by 2020 (MARD, 2006). This target was increased even further to 44-45% under the 2011-2020 National Forest Protection and Development Plan (FPDP). The latest official statistics indicate forest cover currently stands at 40.4% (MARD, 2014). Beyond increasing forest cover alone, GoV policy promotes forest development to accelerate economic growth, poverty alleviation, and environment protection with special attention to productivity, quality and efficiency of forest production, trade and management.

In order to achieve these goals, the GoV introduced Decision 1565[1] in 2013 proposing various reforms to enable the forestry sector to contribute to the economic growth of the country. It provides the long term orientations for reformation of the forestry sector toward 2030 specifying directions of forest development in the respective regions and strategies to i) increase forest areas of the three (3) types of forests, ii) enhance added values of timber products, iii) restructure forest management entities, and iv) mobilize financial resources.

Another key development in national forest policy has been the piloting and development of a national Payments for Forest Ecosystem Services (PFES) mechanism (the first in SE Asia) whereby users of environmental services pay forest owners as well as households and communities for their forest protection services. Indeed, Son La was one of the two provinces

[1] No. 1565/QD-BNN-TCLN dated July 08, 2013

in the country to pilot the mechanism. Whilst the overwhelming majority of PFES payments are made by hydropower communities to upland forest owners, communities and households, Vietnam has also made demonstrable commitments to the development of a National Reduced Emissions from Deforestation and Forest Degradation (REDD+) programme. The country is expected to be 'ready' for REDD+ between 2018-20, and as such would be able to receive international results-based payments for REDD+ activities including avoided deforestation, avoided degradation, sustainable forest management, forest conservation and the enhancement of forest carbon stocks. To this end, the GoV approved the National REDD+ Action Plan (NRAP) in 2012.

In spite of these achievements, the quality of the forests remains poor in many areas, especially in the Northwest sub-region. Bare hillsides and sparsely forested slopes do not provide adequate protection in a part of the country that is among the most vulnerable to the effects of climate change, notably the increased occurrence and severity of hazard events such as flash floods and shifts towards higher temperatures and longer periods without rainfall. Additionally, the Northwest is a mountainous region and among other things is strategically important for hydro-electric power generation. As such a high priority is increasing and improving the quality of watershed protection forests in order to mitigate soil erosion and the subsequent deposition of sediment in reservoirs which can reduce the life of dams. The GoV really wishes to address this problem and achieve its forest development policy goals but unfortunately is constrained by insufficient funds. This is the rationale for the project.

The Japan International Cooperation Agency (JICA) is well-placed to offer this type of assistance and has been supporting GoV in addressing deforestation and forest degradation through the implementation of a number of Japanese ODA projects, such as Rural Infrastructure Development and Living Standard Improvement Project III (Forest Sector) (2002~2008), Sustainable Forest Management in the Northwest Watershed Area (SUSFORM-NOW) (2010-2015), and Protection Forest Restoration and Sustainable Management Project (2012~2021), to name a few. JICA has also recently focused its effort on the support for implementation of the National REDD+ Action Plan through supporting the development and implementation of Vietnam's first provincial REDD+ action plan (PRAP) in Dien Bien. In August 2015, JICA has launched a technical cooperation project named "Sustainable Natural Resource Management Project (SNRMP)" to assist four (4) provinces, namely Dien Bien, Son La, Lai Chau, and Hoa Binh, in the preparation of PRAPs and implementation of pilot activities in selected communities in the provinces. Such experiences and initiatives provide an ideal platform for development cooperation and the implementation of a successful forest development loan project in the Northwest sub-region.

I.1.2 Project Objectives

The project intends to contribute towards the above-mentioned forest sector development policy goals of the GoV in the four Northwest sub-region provinces of Hoa Binh, Son La, Dien Bien and Lai Chau. The overall goals of the Project are: i) sustainable development, management and protection of forests in the Northwest sub-region; ii) improvement of the production values of forest products; iii) conservation of biodiversity; and iv) reduction of poverty and improvement of livelihoods of households living in mountainous areas. In order to achieve these overall goals, the Project specifically aims:

a) to restore and improve watershed forests in four provinces in the Northwest sub-region for both economic and environmental purposes;

b) to strengthen the capacity of the local governments and owners of forests, such as, management boards of protection and special use forests, organizations, groups of households, and individuals for sustainable forest management; and

c) to contribute to the achievement of the goal and objectives of the National REDD+ Action Plan, especially the reduction of greenhouse gas (GHG) emissions through reduction of deforestation and forest degradation in the Northwest region.

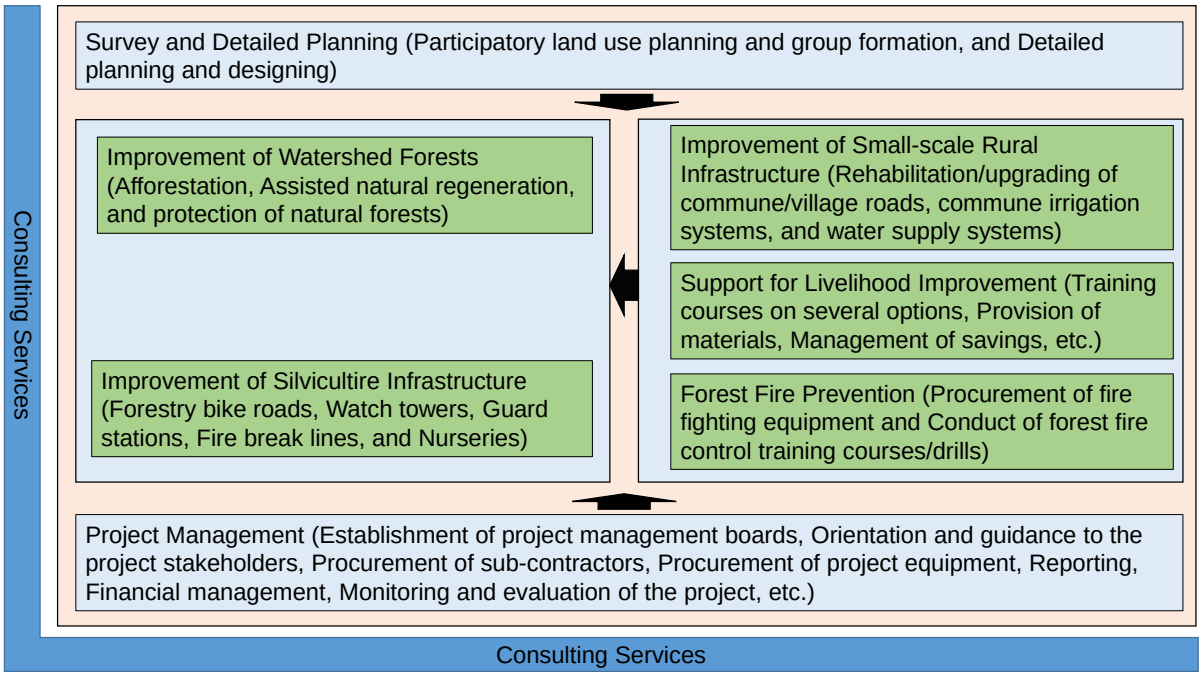
I.1.3 Project Components and Activities

I.1.3.1 Overview

The proposed project is composed of eight components, namely:

1) Survey and detailed planning
2) Improvement of watershed forests
3) Development of silviculture infrastructure
4) Development of small scale rural infrastructure
5) Support for livelihood development
6) Forest fire prevention
7) Project Management
8) Technical cooperation/consulting services

The project components will interrelate and interact with each other to generate synergy as shown below.



Source: JICA Preparatory Survey Team (2016)

Fig. I.1.1: Overview of Project Components

The following table shows the purposes of each component proposed in the project.

I.1.3.2 Major Purposes of the Project Components

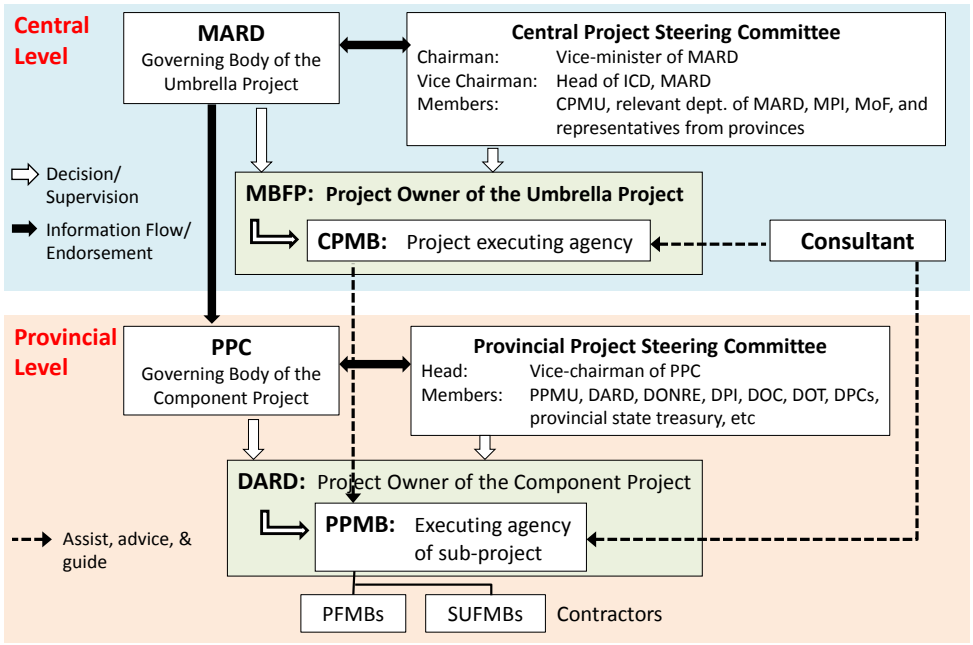
Table I.1.1: Main Activities and Purposes of the Project Components

Component	Main Activities/Purpose
Survey and detailed planning	- Purchase high resolution satellite images covering the target protection forests and special use forests. - Develop photo-like maps covering the target communes for the participatory land use planning (PLUP) - Conduct PLUP in the communes geographically relating to the target protection forests and special use forests to determine the project areas in a participatory manner. - Select local households and communities who will take part in the project and organize them into village working groups. - Prepare detailed plans of forest development/improvement activities
Improvement of watershed forests	- Restore forests in bare lands/grasslands/bushes in the target protection forests and special use forests located in critical watersheds in a participatory manner. - Improve degraded forests and protect natural forests in the target protection forests and special use forests located in critical watersheds in a participatory manner. - Prepare regulations and decisions on benefit sharing mechanism and collaborative management system.
Improvement of silviculture infrastructure	- Develop and construct silviculture infrastructure, such as motorbike roads, watch towers, guard stations, fire break lines, and information boards, to enable forest owners to manage the target protection and special use forests in a proper and efficient manner.
Improvement of small-scale rural infrastructure	- Improve small-scale rural infrastructure, such as village roads, communal irrigation systems, and water supply systems, which could improve the marketing conditions and increase productivity or profitability of existing or potential income generating activities and/or contribute to the improvement of living conditions in the target communes/villages.
Support for livelihood improvement	- Identify priority potential income generating/livelihood development activities in the target communes. - Develop strategies for marketing major forestry and agricultural products in the target provinces. - Develop the capacity of local communities to introduce new techniques and skills for improvement of agricultural production, sustainable forest management, utilization and processing of NTFPs, and production of any marketable commodities. - Help the village working groups/group members save a certain amount of payments made by the project for forest development, improvement and protection activities and to effectively use the savings for livelihood improvement of the members and forest protection in the post project period.
Forest fire control	- Capacitate forest rangers and local communities to prevent and control forest fires by provision of fire extinction equipment and training on forest fire control.
Project management	- Establish organizational structures at both the central and provincial levels and deploy/hire project officers for project implementation and management. - Prepare the project implementation guidelines/regulations for CPMB and PPMBs. - Prepare technical handbooks for PFMBs, SUFMBs, and village working groups. - Procure project equipment for CPMB and PPMBs. - Develop a GIS-based monitoring system. - Make CPMB, MBFPs, PPMBs, DARDs, PFMBs, and SUFMBs understand the project concept, guidelines/regulations and procedures for project implementation - Help CPMB, MBFPs, PPMBs, and DARDs implement and manage the project in a proper and effective manner. - Make CPCs and local communities in the target communes/villages aware of the project (outlines, concepts, activities, expected benefits and obligations of the communities). - Help PFMBs, DPCs, CPCs, and extension workers provide technical assistance to local communities. - Check physical and financial progress of the project and detect issues/problems that would affect the project implementation at an early stage. - Provide adequate data and information to the project owners and project implementation agencies for proper project management on a timely manner. - Support the relevant forest management boards (PFMBs/SUFMBs) concerned in monitoring the changes of forest cover in the project areas and reporting the annual changes to DARDs/PPCs. - Evaluate the impact of the project.
Technical cooperation / Consulting services	- Assist CPMB and PPMBs in the implementation and management of the project in an effective and proper manner. - Provide necessary coaching and guidance to the relevant stakeholders, especially CPMB and PPMBs, for improvement and enhancement of their managerial, administrative, and technical capacities.

Source: JICA Preparatory Survey Team (2016)

I.1.4 Project Implementation Arrangements

The diagram below illustrates the proposed project implementation arrangements.



Source: JICA Preparatory Survey Team (2016)

Figure I.1.2: Project Implementation Set-up

The project is categorized as a 'joint project' whereby MARD and the respective PPCs will have overall responsibility for project implementation. The Management Board of Forestry Projects (MBFP) and the respective provincial DARDs will be assigned as the joint owners of the project. A Central Project Management Board (CPMB) will be established at central level and Provincial Project Management Boards (PPMBs) will be established in each of the four provinces. Thus, overall project implementation is guided and supervised by the CPMB whilst the PPMBs are responsible for providing more detailed supervision and guidance in the provinces. Nature Reserve and Protection Forest Management Boards (NRMBs and PFMBs) are responsible for implementing the project components and activities on the ground at the various sites.

I.2. Objectives and Scope of the Integrated ESMF

I.2.1 Selection of Safeguards Instruments

The following section explains the selection of safeguards instruments for the management and mitigation of environmental and social impacts/risks associated with the project. The JICA guidelines indicate that several safeguards instruments may be required for the management of environmental and social risks in a project of this nature, including;

- An Environmental and Social Management Plan (and draft monitoring plan)
- Resettlement Plan (if required)
- Indigenous Peoples Plan (IPP – if required)

An instrument for the management and mitigation of identified environmental and social impacts/risks is certainly required for a Category B project. However, it is necessary to clarify which safeguards instrument(s) is most appropriate to apply in the context:

I.2.1.1 Environmental and Social Management Framework

The main safeguards instrument is an Integrated Environmental and Social Management Framework (ESMF) and not an Environmental and Social Management Plan (ESMP). The reason for this is that unlike a typical infrastructure project, the project will have multi-faceted interventions and activities, implemented at numerous sites with many sub-projects and many of these sub-projects are as yet defined in detail (site location, size/scope of the activity). Thus, it would be impossible at this stage in project preparation to assess the environmental and social impacts and propose management and mitigation measures accordingly. However, it is feasible to assess the broad types of activities proposed and provide guidance on what the size/scale/scope of the sub-project should be as well as outline procedures for managing and mitigating any potential risks associated with the activity during implementation. Therefore, a framework guiding the management and mitigation of environmental and social risks in implementation is developed.

The ESMF is comprised of several sets of procedures but for ease of reference are integrated within one document, including measures for eliminating subprojects with significant impacts, Environmental Management and Monitoring procedures, a framework for consultation and participation and a grievance redress mechanism.

I.2.1.2 Resettlement Plan

A Resettlement Plan/Framework will not be prepared because there will no physical relocation nor involuntary resettlement at all in the project (nor linked to the project).

Although the JICA Guidelines are not explicit in terms of defining 'involuntary resettlement' and in the text mainly discuss physical relocation, its policies are consistent with those of the World Bank and other major multilateral development agencies. Hence, the involuntary resettlement could additionally refer to i) the loss of assets or access to assets; ii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or iii) the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons. As such, the case for a resettlement plan or framework should be made. Likewise, an abbreviated resettlement action plan (A-RAP) should also be required for projects where such involuntary resettlement would be on a small scale.

In this project, any types of involuntary resettlement is not expected to take place as long as the proposed FCIP process and procedures will be taken and the negative checklist will be fully utilized in the selection of the project areas and scope of the sub-projects.

There are quite likely sensitive informal land acquisition issues at a number of the PF and SUF sites where there are latent land conflict issues i.e. the potential acquisition of lands for afforestation and ANR which have not been formally allocated to households or communities but which are claimed as areas of customary or traditional use. It is proposed that where this is the case, the situation would be resolved through consultation and participatory land use planning, whereby an affected household/community may agree (or not) to voluntary land acquisition in return for prioritisation to receive project benefits (and/or other related benefits such as PFES payments) or a land swap. If the household/community does not agree and is able to provide sufficient evidence of the validity of their claim, the land area must not be included in the planned afforestation/ANR area. In this way, involuntary resettlement can be eliminated from project activities and/or is addressed through the Consultation and Participation Guidelines which includes participatory land use planning.

Finally, although the project will support forest development at several protected area sites there are no activities within the project that involve a significant strengthening of restrictions on access. As discussed above there is the potential for some loss of assets, access to assets and/or loss of access to a means of livelihood, however this will be in general avoided, managed and mitigated through the ESMF and attached procedures.

I.2.1.3 Ethnic Minority Development Plan

Vietnam does not use the term indigenous peoples in reference to peoples within its own borders. Vietnam does however recognise 'ethnic minorities or ethnic minority groups'. These minority groups share many equivalent characteristics with the definition of 'indigenous peoples' and typically, major international development agencies apply the policies relating to IPs and require the preparation of an Ethnic Minority Development Plan (EMDP) for projects which affect ethnic minority populations in Vietnam.

A stand-alone EMDP has not been prepared for two reasons; i) for the same reason as above that a framework is selected because it has not been possible within the short preparatory survey to assess impacts at all sites particularly when detailed activities and sites cannot be clearly fixed; and ii) because Ethnic Minorities represent the majority of populations at project sites. In place of an EMDP or framework, ethnic minority issues are fully integrated into the ESMF and project implementation procedures themselves to avoid repetition and confusion – it is clearer and easier to follow than having an ESMF and an EMDP.

The ESMF includes guiding measures and procedures to ensure that the constituent and substantive elements required for an IPP are met in the process of developing detailed action plans for project implementation at each site. These substantive elements include:

- Summary of the Social Assessment
- Summary of the results of free, prior and informed consultation with the affected ethnic minority groups in site-level project planning
- A framework for ensuring continued free, prior and informed consultation with the affected ethnic minority groups throughout project implementation
- The site-level action plan (ensuring culturally appropriate social and economic benefits)
- Mitigation actions/measures for identified adverse impacts (included in the plan)
- Cost estimates and financing plan
- Monitoring and evaluation of the plan

Further details on site-level project planning, including the above elements is provided in **Appendix-D –** The Consultation and Participation Guidelines.

I.2.1.4 Conclusion

The main safeguards instrument will be an ESMF that fully considers and integrates ethnic minority issues as a central feature. Another important feature of the ESMF is that it is designed to be as compatible as possible with existing environmental and social systems in Vietnam. In this sense it is believed that the ESMF will likely be largely sufficient to address and respect Cancun environmental and social safeguard requirements through a future country approach to safeguards. Where there are important gaps between Vietnamese environmental and social management systems and the Cancun Safeguards and JICA requirements they are addressed appropriately e.g. Vietnamese legislation does not rule out

conversion of natural forest but this is a primary requirement for a REDD+ activity under the UNFCCC, therefore it is also eliminated under this project.

I.2.2 ESMF Objectives

The Sustainable Forest Development Project in the North-west Sub-region is expected to have largely positive environmental impacts. It is also expected to present some social benefits for local and predominantly poor ethnic minority communities in the project area. However, the project could also present some potential negative environmental and social impacts. The integrated ESMF is prepared to ensure that such impacts are safeguarded against in accordance with JICA's policies on environmental and social considerations in development projects, as well as Vietnam's own relevant policies, laws and regulations.

The ESMF aims to manage the potential adverse impacts by establishing a guide consisting of a set of relatively simple procedures and measures to facilitate adequate environmental and social management, including risk management of environmental and social impacts, in relation to the activities to be financed by the project.

I.2.3 ESMF Principles

The ESMF has been designed based on the following principles.

- The ESMF should be designed in accordance with JICA's policies and 'Guidelines for environmental and social considerations' in development projects.
- The ESMF should be prepared based on consideration of a wide range of environmental and social considerations.
- The ESMF should include tangible measures and procedures to address, avoid, manage, minimize and mitigate the full range of environmental and social risks identified.
- The ESMF should propose safeguards measures that are appropriate and feasible to context, i.e., where possible appropriate to the existing legal and institutional systems on the ground. Where gaps between country systems and JICA policies are identified, specific project-based safeguards solutions should be relatively straight-forward and implementable, at a reasonable cost and achievable with some investment where necessary in capacity-building for appropriate actors or institutions.
- The ESMF should be an integrated document, a 'one-window' reference covering all relevant environmental and social considerations (as opposed to separate documents for environmental management, resettlement, indigenous peoples, gender etc.).
- The ESMF should be comprised of simple and straightforward procedures and measures for ease of implementation.
- The ESMF should be agreed by key project stakeholders through consultation.

I.2.4 Focus of the ESMF

I.2.4.1 Key Conservation Landscapes, Ecosystems, Fauna and Flora

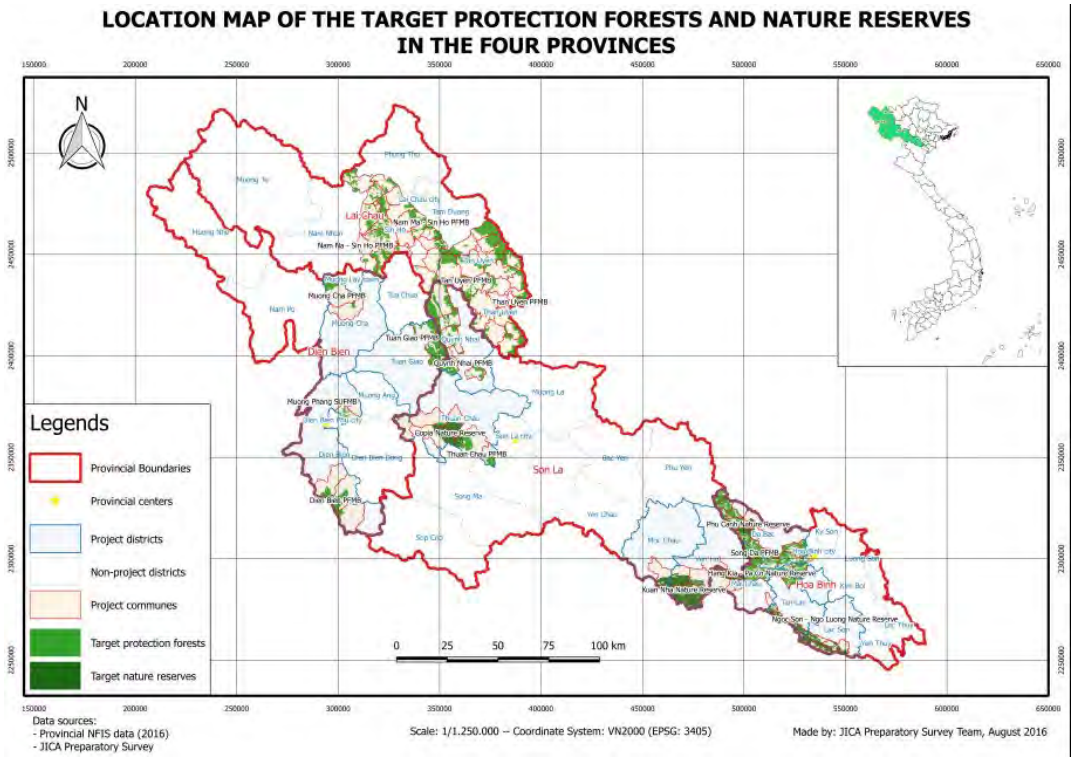
The ESMF includes measures to avoid, minimise, manage and mitigate all potential environmental risks associated with implementation of the project activities. However, as a forestry development project implemented in the forested regions of mountainous Northwest Vietnam, the main concern from an environmental safeguards perspective relates to landscapes, ecosystems and sites of significance to biodiversity conservation as well as the species of fauna and flora they support.

Vietnam is recognised as one of the most ecologically diverse countries on the planet, recognised for its unique species and high levels of species richness and biological endemism. Vietnam's wealth of biological diversity stems from its complex geology and climate and its geographic location in the sub-tropics. In terms of the country's geological history, Vietnam's mountains have developed as composites of marine sediments, rocks of metamorphic and volcanic origin, and ancient uplifted basement formations. This complex geology and the variety of rock types is the reason for much of the endemism as unique species of both flora and fauna have evolved in isolation or to suit specific ecological niche conditions. Meanwhile, long-term oscillations in climatic conditions seem to have greatly affected distribution and dispersal of species in Southeast Asia, and especially in Vietnam. In addition, the country's geographic location also mean that there are quite significant seasonal fluctuations in climate, which also create conditions conducive to biological diversity and endemism2.

The north-western region of Vietnam is recognized as a priority area for conservation. It is considered as one of the main regions of plant diversity in Vietnam, in particular the limestone range that extends south-east from the Son La plateau through Hang Kia –Pa Co, Pu Luong and Ngoc Son – Ngo Luong Nature Reserves to Cuc Phuong National Park in Hoa Binh Province, which has been recognised as a priority landscape for biodiversity conservation within the lower Mekong eco-region. Meanwhile, part of the North-eastern part of the project area (i.e Than Uyen PF area) falls within another globally significant conservation landscape, as part of the southern reaches of the Hoang Lien Son Mountain range, which extends north through Lao Cai Province, into China and beyond. The Hoang Lien Son is the southern-most extent of the Himalayan mountain chain. The Hoang Lien Mountain Range with an altitudinal range from 300 to 3,143 meters lies at the junction of two biogeographic realms (Palearctic and Indomalayan), and three biomes (tropical dry forests/woodlands, tropical humid forests, and subtropical/ temperate rainforest/woodlands). The montane flora of the Hoang Lien Mountains therefore contains a unique assemblage of species representing these different biogeographic realms and biomes. Nguyen Nghia Thin (1998), estimates that this mountain range is home to 25% of Vietnam's endemic plant species. In addition to endemic species, many threatened and relict species survive in the Hoang Lien Mountains. While mammal diversity and distribution is relatively low as a result of intensive hunting pressure the Hoang Lien Mountains are rich in other animal groups

The preparation survey has identified a total of 6 protected areas within the Northwest provinces as potential target sites for project implementation, as shown in Fig 2.1 below.

2



Source: JICA Preparatory Survey Team (2016)

Fig. I.2.1: Location Map of Protection Forests and Nature Reserves in the Target Provinces

Summary profiles of these sites and their conservation importance are presented below:

Project Protected Area Sites in Hoa Binh Province

1) **Hang Kia – Pa Co Nature Reserve** is located in the extreme west of Hoa Binh province, on the border with Son La province. The site lies in the limestone range that extends south-east from the Son La plateau to Cuc Phuong National Park. The main physical feature within the NR is a high ridge, which reaches 1,536 m in the north-west of the nature reserve.

   Three orchid species thought to be new to science were recently discovered at the site, and the site may be of importance for the conservation of a number of other plant species of conservation concern. However, because the remaining forest at the site is heavily disturbed and fragmented, and continues to be degraded as a result of human activities, it is unlikely that Hang Kia – Pa Co is of high importance for the conservation of bird and mammal species.

2) **Ngoc Son – Ngo Luong Nature Reserve** was established in 2004 with a total area of 19,254 ha. The NR is a key site located within the Cuc Phuong – Pu Luong Karst Conservation Landscape which is believed to encompass much of the remaining limestone-associated species-richness in this region, and is recognized as a priority landscape for biodiversity conservation within the lower Mekong eco-region. Ngoc Son-Ngo Luong is comprised of a limestone range which forms a corridor connecting Cuc Phuong National Park to Pu Luong Nature Reserve. The NR plays an important role in preserving not only its own geological and biodiversity values but also the values of the limestone landscape as whole.

The NR is home to several endemic, rare and endangered species of global importance, including the plants *Anoectochilus setaceus, Diospyros sallet, Garcinia fagraoides, Excentrodendron tonkinensis,* together with many threatened fauna species such as the Sumataran Serow *Naemorhedes sumatraensis, King Cobra Ophiophagus hannah,* Rhesus Macaque *Macaca mulatta,* and some typical birds such as the Great hornbill *Buceros bicornis,* which are all listed in the Vietnam Red Data Book and IUCN Red List.

3) **Phu Canh Nature Reserve** was established in 2001 with a total area of 5,304 ha. The NR is located in Da Bac district, in the north-west of Hoa Binh Province. The site is centred on Mount Phu Canh, a 1,430 m mountain to the north of the Black River.

The NR supports a significant area of lower montane evergreen forest some which still retains primary forest status with many kinds of precious and rare fauna and flora species, endemic to the northwest region of Vietnam. Initial surveys show that the flora species composition includes different types of timber trees which are of high value to various aspects of the national economy. According to previous surveys, the NR contains up to 188 flora species of 81 families. Many of them are listed in the Vietnam Red Data Book such as Fokienia hodginsii, Parashorea chinensis, Podocarpus fleurgi. Initial surveys at the time of the establishment of the NR also recorded 23 mammal species of 6 orders, 21 bird species of 7 orders, 7 reptile/amphibian species of 3 families. Many species are listed in the Vietnam Red Data Book such as Asiatic black bear Ursus thibetanus, Sumatran Serow Capricornis sumatraensis, Pygmy Loris N. pygmaeus, Stump-tailed macaque Macaca arctoides, Chinese cobra Naja atra, King cobra Ophiophagus hannah.

Besides the rich and diverse fauna and flora species, Phu Canh NR is the catchment area of some major springs that supply water for agricultural production and living support to people in the NR area and adjacent communes.

Project Protected Area Sites in Son La Province

1) **Copia Nature Reserve** was established in 2002 with a total area of 14,728 ha and is located in Thuan Chau District in the north of Son La Province. The NR is comprised of mixed broadleaf forest, conifers, and degraded sub-montane forest (distributed at elevations between 1700-1821 meters; closed forest leaves evergreen monsoon broadleaf subtropical (elevations between 800-1700 m), secondary forests, high grasslands and shrub pine plantation.

   609 higher plant species have been identified at the site including 21 rare species in the Red Data Book of Vietnam 2007 (EN level 5 species, 16 species level VU). Meanwhile, surveys identified 65 species of mammals, amphibians and reptiles, of which 17 are listed in the Vietnam Red Book 2007 (EN - 7 species, VU - 8 species, CR - one species, LR - 1 species). In terms of avifauna, 184 birds have been identified including 20 rare bird species in the Red Data Book of Vietnam in 2007 with six endemic subspecies. For herpetological fauna 22 amphibian species and 36 reptiles were identified. 13 species are listed in the Red Data Book of Vietnam in 2007.

2) **Xuan Nha Nature Reserve** was established in 1986 with a total area of 22,943 ha located in Moc Chau District. The western boundary forms part of the border with Lao PDR. The Nature Reserve is difficult to access due to fragmented terrain and steep slopes; the highest peak in the Nature Reserve is Pha Luong, with a height of

1,969 m a.s.l. These conditions have created the unique and diversified flora and fauna characteristic of ecosystems of Northwest upland regions of Vietnam.

Ecosystem and biodiversity studies and surveys have recently show that the NR is very rich in terms of nationally and globally important biodiversity. According to survey data gathered in 2007, the NR contains at least 357 vascular plant species, belonging to 633 genera or 180 families of six flora phylum, including 80 species which are listed in Vietnam's Red Data Book. The current fauna comprises of 345 species, belonging to the four classes (i.e., mammals, birds, reptiles, and amphibians).

Xuan Nha holds populations of many endangered fauna and flora, which are listed within the Vietnam Red Book. Regarding flora in the NR, there includes *Fokensia hodginsi, Madhuca pasquieri*, and *Aquilaria crassna*, and others. Regarding fauna in the NR, these include Gaur *Bos gaurus*, Sumatran Serow *Naemorhedus sumatraensis*, Asiatic black bear *Ursus thibetanus, Malayan sun bear Ursus malayanus,* Pig-tailed macaque *Macaca nemestrin*a and others.

Project Protected Area Sites in Dien Bien Province

1) **Muong Phang Nature Reserve** was established in 1986 as a cultural and historical site with 1,000 ha. The site has been expanded in recent years and now has a total area of 2,403 ha, although most of this apparently is still on land allocated to households. Work is ongoing to further expand the site including through incorporation of the protection forest area of Pa Khoang.

   There is limited available information on the biodiversity values of Muong Phang, however they can be assumed to be fairly low since almost all of the forest was cleared. The site has recovered to some extent and the potential expanded area of Pa Khoang also supports good planted forest.

I.2.4.2 Target Social Groups

The ESMF will be applicable to all communities and peoples within the project area and it will focus on ensuring that particular vulnerable groups are adequately consulted in site-level project and land use planning, are specifically included as beneficiaries, receive appropriate benefits, actively participate during implementation, and that there are mechanisms to address a project-related grievances. The table below indicates the groups the ESMF is aimed at protecting, although it should be noted that an individual or household may fall into more than one of the categories below.

Table I.2.1: ESMF Key Social Groups

Group	Description/Rationale
1 Poor/Below Near Poor Households	Poor households tend to be more dependent on forest resources and are thus disproportionately impacted by forest protection and development activities. For various reasons they may also be excluded from decision-making processes and equitable opportunities to benefit from development interventions. In Vietnam, there is also a 'near-poor' category of household socio-economic status. Such households should also be considered vulnerable as many, although better off than the poor, remain in a precarious position and can easily slip back into poverty. Some of these households were formerly categorized as poor but have become 'near poor' following a change in the way the GoV defines and calculates poverty.
2. Landless	The landless are often highly dependent on forest resources for their daily subsistence needs and as a safety net in times of duress. Development interventions can also often neglect this disadvantaged group as investments target farmers who have land and assets.

Group	Description/Rationale
	In NW Vietnam, many upland ethnic minority farmers have still not been formally granted land rights for agricultural, forest and settlement land. Without any available alternatives, the majority will continue to clear land and cultivate 'illegally' but the lack of formal land rights adversely impacts their livelihoods in a number of ways, not least that without a LUC, farmers are not eligible for preferential/subsidized credit. Many of the landless therefore become trapped in a cycle of debt and are effectively indentured to informal moneylenders who charge extortionate interest rates.
3. Ethnic Minorities	Ethnic minorities in Vietnam share many of the same or similar characteristics as 'indigenous peoples as defined by the World Bank and other major multilateral development agencies. They are characterized by having their own distinctive cultural and spiritual beliefs, practices and institutions, they have their own languages, they often inhabit specific more geographically remote or isolated areas and agro-ecological zones and are highly dependent on forest lands and natural resources in their daily livelihoods. Ethnic minorities in the mountainous NW region specifically, are amongst the poorest and most vulnerable groups in the country. Ethnic minorities comprise the overwhelming majority of the population in Vietnam's NW provinces and especially in the remote forest areas. The major ethnic minority groups in the region are Thai, Muong, H'mong, and Dao. It is noted that certain ethnic minority groups are poorer and more vulnerable than others, particularly those groups which tend to reside in the highest and most remote areas such as the H'mong and to a slightly lesser extent the Dao. However, this is not always true and it should also be noted that there are numerous sub-groups (e.g. Black/White Thai, Black/Blue/White/Flower H'mong, Red Dzao etc) again with their own slight distinctions. Many of the mountainous groups traditionally practice shifting cultivation although many communities' agricultural practices are becoming more sedentary as land availability, conflict and pressure becomes increasingly an issue.
4. Women and Female Headed Households (FHH)	In traditional patriarchal ethnic minority societies women are often excluded by socio-cultural norms and practices from decision-making processes and development interventions do not meet their needs. In NW Vietnam, upland ethnic minority women are often further disadvantaged due to high girl drop-out rates from formal education (earlier than boys) and as a consequence their Vietnamese language ability is weaker affecting their ability and confidence to participate effectively in community meetings. Women also play a specific and differentiated role in terms of agricultural production and forest management within different ethnic minority household divisions of labour (e.g. sowing, tending/weeding, marketing/selling produce, collection of NTFPs, craft production). FHH are a particularly vulnerable sub-group with a typically limited asset base and high levels of forest dependency

Source: JICA Preparatory Survey Team (2016)

The project will be implemented in the Northwest. The overwhelming majority (80%) of the population in this sub-region are from ethnic minority groups. This figure would be even higher, likely well-over 90% with respect to the affected populations at the project target sites. Given the particular concern over ethnic minorities (as indigenous peoples in the Vietnam context), and the fact that this ESMF intends to integrate the substantive elements of an ethnic minority development framework, further information on these groups is presented as follows.

Table I.2.2 below presents data on the ethnic composition of populations in the four target provinces.

Table I.2.2: Ethnic Minority Populations in the Target Provinces

Province	Ethnic Minorities (EM)	Total Population	EM Population	EM (%)
TOTAL	Major groups are: Thai, Hmong, Muong, Dao	**2,722,820**	**2,178,098**	**80**
Dien Bien	32 groups, major groups are Thai, Hmong, Kho Mu, Dao, Lao, Khang	**491,046**	**399,984**	**81**
	Thai		186,270	38
	Hmong		170,648	35
	Kho Mu		16200	3
	Dao		5,251	1
	Lao		4,564	1
	Khang		4,220	1
Son La	40 groups, major groups are Thai, Hmong, Muong, Xinh mun, Dao, Kho Mu, Khang, La Ha	**1,076,055**	**886,594**	**82**
	Thai		572,441	53
	Hmong		157,253	15
	Muong		81,502	8
	Xinh mun		21,288	2
	Dao		19,013	2
	Kho Mu		12,576	1
	Khang		8,582	1
	La Ha		8,107	1
Lai Chau	35 groups, major groups are: Thai, Hmong, Dao, Ha Nhi, Giay, La Hu, Kho Mu, Lao, Lu, Mang	**370,502**	**313,872**	**85**
	Thai		119,805	32
	Hmong		83,324	22
	Dao		48,745	13
	Ha Nhi		13,752	4
	Giay		11,334	3
	La Hu		9,600	3
	Kho Mu		6,102	2
	Lao		5,760	2
	Lu		5,487	1
	Mang		3,631	1
Hoa Binh	32 groups, major groups are: Muong, Thai, Tay, Dao, Hmong	**785,217**	**577,648**	**74**
	Muong		501,956	64
	Thai		31,386	4
	Tay		23,089	3
	Dao		15,233	2
	Hmong		5,296	1

Source: Compiled by JICA Preparatory Survey Team based on GSO Statistics

I.2.5 Scope of the ESMF

The ESMF is applicable to all project components and their associated activities in all project provinces and at all project sites. As an integrated ESMF it is comprised of several elements covering different environmental and social safeguards requirements, including:

1) **Negative Checklist:** Eliminates activities and/or provides conditions so as to ensure the scope and scale of project impacts do not exceed that of its categorisation level i.e. Category B)

2) **Environmental Management and Monitoring Procedures:** Provides guidance for meeting environmental planning requirements for management and mitigation of small-scale infrastructure sub-projects.
3) **Consultation and Participation Guidelines:** Provides guidance for free, prior and informed consultation (FPIC) processes, stakeholder engagement and participation, grievance redress and serves to meet ethnic minority development planning requirements.

The ESMF notes in its discussion of environmental and social considerations that there are certain planned activities that were initially proposed within the scope of the project, which have potentially significant impacts on ethnic minority land claims/rights and have subsequently been removed from the loan project design during the preparatory survey. However, the activities are ongoing in any case and may be completed prior to the project loan implementation period or may continue during implementation with alternative (e.g. GoV) financing. It is proposed however that such activities are linked/related to the project, will be taking place in parallel to the intervention after Feasibility Survey (FS) stage and therefore JICA safeguards policies should be applicable. Thus, the scope of the ESMF goes beyond the loan financed project activities themselves and includes such linked actions.

The ESMF is also designed to consider the fact that the project is also being developed as a contribution to REDD+ actions in the four target provinces. As such, Vietnam is in the process of developing its national mechanism or programme for REDD+ compliant with the UNFCCC text on REDD+, including the text on REDD+ safeguards. Whilst reporting on how the safeguards are addressed and respected is only at the national level, it will be necessary to have in place measures at the sub-national levels to implement or operationalise the safeguards. It is not presently clear how Vietnam will do this and what may be future sub-national safeguards requirements. However, this ESMF does consider the international REDD+ safeguards requirements in its design, and through the implementation of the proposed measures and procedures would also aim to meet the environmental and social safeguards requirements of the UNFCCC, especially since they are not inconsistent with JICA's own safeguards policies.

I.3 Existing Environmental and Social Management Systems

The following section focuses on the existing environmental and social management systems in Vietnam and examines the potential for implementing the project in a manner consistent with the JICA Guidelines. As such, an overview of the environmental and social legal framework is presented, institutional arrangements processes and procedures for its implementation, and highlighting where there may be areas of concern (i.e. gaps vis a vis the JICA guidelines).

I.3.1 Environmental Management System

I.3.1.1 Relevant Environmental Policies, Laws and Regulations

The table below identifies the main environmental safeguards policies, laws and regulations relevant to the types of activities that have been proposed under the project.

Table I.3.1: List of Relevant Environmental Policies, Laws and Regulations

	Policy/Law	Relevance and Main Provisions
1.	**Environmental Assessment and Monitoring**	Relevant to project activities which may require environmental clearance (e.g. especially infrastructure development activities)
a.	Law on Environmental Protection No. 55/2014/QH13 issued by the GoV	Regulates protection of the environment
b.	Decree No. 18/2015/ND-CP issued by the GoV	Implements environmental protection planning, Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA) and Environmental Protection Plans (EPP)
c.	Circular No. 27/2015/TT-BTNMT issued by MoNRE	Details a number of articles of Decree 18/2015/ND-CP on SEA, EIA and Environmental Protection Commitments.
d.	Circular No. 09/2014/TT-BNNPTNT issued by MARD	Regulates the implementation of SEA, EIA in relation to activities of MARD
2.	**Forest Protection and REDD+**	The project is focused on forest protection and development activities, including as a contribution to REDD+ implementation in the target provinces.
a.	Forest Sector Development Strategy 2006-2020, approved by PM Decision No. 18/2007/QD-TTg	Provides overall strategic orientation for the forestry sector in Vietnam with specific economic, social and environmental objectives.
b.	National REDD+ Action Plan approved by PM Decision 799/QD-TTg	Outlines a programme of work for the development of REDD+ in Vietnam
c.	Law on Forest Protection and Development No. 29/2004/QH11 issued by the Government	Provides for the management, protection, development and use of forests and forest owners' rights and obligations
d.	Decree No. 23/2006/ND-CP	Provides for forest assignment, planning; lease/recovery, change of forest use purposes and exchange; recognition, registration, sub-lease, capital contributions and forest use rights or ownership of planted production forests; inventory and monitoring of changes in forest resources; organisation of forest management, protection, development and use.
e.	Decree 186/2006/ND-CP	Covering regulations on forest management
3.	**Biodiversity Conservation and Protected Areas**	The project includes target sites which are protected areas and/or important sites for biodiversity conservation
a.	National Biodiversity Strategy toward 2020 and Vision up to 2030, approved by PM Decision No. 250/QD-TTg	Outlines key strategies to improve the protection, management and monitoring of biodiversity in Vietnam.
b.	Law on Biodiversity No. 20/2008/QH12	Regulates biodiversity
c.	Decree No. 65/2010/ND-CP	Detailing and guiding the implementation of a number of articles of the Law on Biodiversity
d.	Decree No. 117/2010 ND-CP of the GoV	Guides organisation and management of Special Use Forests

Source: JICA Preparatory Survey Team (2016)

The existing environmental safeguard policies, laws and regulations in Vietnam are basically consistent with international standards. In particular, the recently revised LEP 2014 has significantly improved and closed the gap in terms of Environmental Management and Monitoring procedures. As such, there are not many gaps identified between JICA Guidelines for Environmental and Social Considerations. However, a key gap in the legislation which is identified considering that the project is also intended to contribute to the implementation of REDD+ in the target provinces is that Vietnamese legislation does not prohibit the conversion of natural forest, which is a very clear and explicit requirement in the implementation of REDD+ under UNFCCC (Cancun Safeguard e). Therefore, it will be necessary to insert additional safeguard measures into this ESMF to ensure that no activity at the target sites leads to conversion of natural forest.

The table below identifies and analyses gaps between the JICA Guidelines and the existing legal framework for EIA in Vietnam and proposes measures to address them.

Table I.3.2: Analysis of Vietnam's EIA Framework against JICA Guidelines

Content	JICA Guidelines (2010)[3]	Vietnam's Framework for EIA[4]	Measure to fill the gap
Principles	1. Potential project environmental impacts must be assessed and examined in the earliest possible planning stage. Alternatives or mitigation measures must be examined and incorporated into the project plan. 2. Such examinations must must be conducted in close harmony with the economic, financial, institutional, social, and technical analyses of projects. 3. The findings must include alternatives and mitigation measures. 4. For projects that have a particularly high potential for adverse impacts or that are highly contentious, a committee of experts may be formed so that JICA may seek their opinions, in order to increase accountability.	1. Environmental impacts of projects are assessed and examined before approval. Alternatives/ mitigation measures are included and incorporated. 2. EIA requires detailed assessment of possible environmental impacts including environmental components and socio-economic elements to be impacted by the project. Vietnamese legislation is criticised for prescribing EIA too late in the planning process 3. EIA must include specific measures to minimize bad environmental impacts, prevent and respond to environmental incidents and commitments to take environmental protection measures during project construction and operation. 4. EIA reports shall be appraised by appraisal councils formed of appropriate experts as required and as determined by the relevant (depending on project categorisation).	1. No significant gap between the JICA Guidelines and Vietnam's EIA legislation is detected. 2. The inclusion of environmental and social considerations during the preparatory survey was in line with both guidelines so that any potential environmental and social issues could be addressed in the project planning process.
Examination of Measures	1. Multiple alternatives must be examined in order to avoid or minimize adverse impacts and to choose better project options in terms of environmental and social considerations. 2. Appropriate follow-up plans and systems, such	1. Alternatives are not compulsory in the environmental assessment procedure. 2. Environmental Management Plans are required.	1. Alternatives at the site-level including a zero option have been considered in the design and as part of the environmental and social considerations. 2. Environmental management and monitoring plans proposed in this ESMF shall be

[3] The full terms have been abridged and edited to keep the table concise
[4] Primarily the Law on Environmental Protection (2014) & Decree 18/2015

Content	JICA Guidelines (2010)[3]	Vietnam's Framework for EIA[4]	Measure to fill the gap
	as monitoring plans and environmental management plans, must be prepared; the costs of implementing such plans and systems, and the financial methods to fund such costs, must be determined.		implemented accordingly.
Scope of Impacts to be assessed:	1. The impacts to be assessed include: impacts on i) the natural environment, that are transmitted through air, water, soil, waste, accidents, water usage, climate change, ecosystems, fauna and flora, including trans-boundary or global scale impacts; ii) social impacts, including involuntary resettlement, employment and local livelihoods, utilization of land and resources, social institutions such as social capital and local decision-making institutions, existing social infrastructures and services, vulnerable social groups (e.g. poor and indigenous peoples), equality of benefits and losses and equality in the development process, gender, children's rights, cultural heritage, local conflicts of interest, infectious diseases, and working conditions.	1. Vietnamese legislation does not specify the scope of impacts to be assessed. The LEP broadly indicates that environmental and socio-economic elements are to be considered. 2. In general, the following social impacts are not properly considered: impacts to local economy (employment, livelihood, utilization of land, etc.), local resources, social institutions, local decision-making institutions, vulnerable social groups (the poor, indigenous peoples, etc.), equality of benefits and losses, equality in the development process, gender, children's rights, and local conflicts of interest.	1. A full range of potential impacts as indicated in the JICA Guidelines were first assessed and considered. 2. Among them, those which identified as likely or possible impacts were further assessed for scoping. 3. The extents of possible impacts were assessed and the necessary measures/interventions to either avoid or minimize the adverse impacts were designed and incorporated in the project plan.
Compliance with Laws, Standards and Plans	1. Projects must comply with the laws, ordinances, and standards related to environmental and social considerations established by the governments that have jurisdiction over project sites. 2. Projects must, in principle, be undertaken outside of protected areas.	1. All projects must comply with the relevant policies, laws and ordinances established by national and local governments.	1. There is no significant gap. 2. The project is in accordance with national and provincial/local policy objectives and priorities. 3. In this case the project will be implemented in certain designated protected areas but the objective is to promote forest protection and restoration at these sites, and will not include any adverse environmental impacts.

Content	JICA Guidelines (2010)[3]	Vietnam's Framework for EIA[4]	Measure to fill the gap
Social Acceptability	1. Projects must be adequately coordinated so that they are accepted in a manner that is socially appropriate to context. 1. Appropriate consideration must be given to vulnerable social groups, such as women, children, the elderly, the poor, and ethnic minorities, all members of which are susceptible to environmental and social impacts and may have little access to decision-making processes within society.	1. Under LEP and implementing Decree 18/2005, provisions are made for the appraisal of projects to ensure their appropriateness considering environmental and socio-economic aspects. Disclosure and consultation with affected communities and local stakeholders is also required as part of the process. 2. As above, there are no specific requirements for special consideration of vulnerable social groups in Vietnamese EIA legislation.	1. Initial information disclosure was conducted during the consultation meetings held by the preparatory survey team. 2. The project will require an EIA to be appraised by MoNRE. The law requires public disclosure of this report at the PPCs. 3. In addition, the ESMF itself as well as the Consultation and Participation Guidelines developed as part of this ESMF aim to ensure that site-level planning and implementation includes special considerations for vulnerable groups. These guidelines include further disclosure and consultation at local levels prior to implementation of activities; hence, CPMB/MARD and PPMBs/DARDs shall follow the ESMF in general and CPGs (Consultation and Participation Guidelines) in specific to address social issues in an appropriate manner.
Ecosystems and Biota	1. Projects must not involve significant conversion or degradation of critical natural habitats and forests. 2. Illegal logging of forests must be avoided.	1. Vietnamese EIA legislation as well as biodiversity and forest legislation also prohibits significant conversion of critical natural habitats and forests. However, conversion of natural forest is still possible under Vietnamese law.	1. Since this project also aims to contribute to REDD+ implementation, any conversion of natural forest cannot be accepted. Hence, any activities that would cause clearance or conversion of forests in special use forests were eliminated. The activities can be further controlled and eliminated by using the Negative Checklist developed in the ESMF (Annex-A).
Involuntary Resettlement	1. Involuntary resettlement and loss of means of livelihood are to be avoided by exploring all viable alternatives. 2. Affected persons must be sufficiently	1. Involuntary resettlement is also avoided wherever possible for development projects in Vietnam. Issues on land acquisition, compensation,	1. The survey team has carefully considered the issue of involuntary resettlement. This ESMF includes a summary description of potential involuntary resettlement

Content	JICA Guidelines (2010)[3]	Vietnam's Framework for EIA[4]	Measure to fill the gap
	compensated and supported by project proponents etc. in a timely manner. 3. Appropriate participation by affected people and their communities must be promoted in the planning, implementation, and monitoring of resettlement action plans and measures to prevent the loss of their means of livelihood. In addition, appropriate and accessible grievance mechanisms must be established. 4. For projects that will result in large-scale involuntary resettlement, resettlement action plans must be prepared and made available to the public.	resettlement, etc. are regulated by the Land Law (2013) If a development project needs to acquire land, then this law and implementing regulations are applied, an inventory-of-loss (IOL) will be carried out, and people who lose lands, properties, means of livelihood, etc. will be compensated and/or supported in relocation and resettlement. The Land Law also includes mechanisms for the redress of grievances. 2. However, it needs further efforts to improve legal framework on involuntary resettlement and strengthen capacity of local agencies responsible for planning and implementing the livelihood restoration plan.	related issues. 2. There will be no physical relocation nor formal land acquisition under this project. 3. The project will not engage in forest land allocation. It is also recommended that ongoing or proposed land acquisition for certain FMBs funded by the GoV is halted or the sites be removed from the project. 4. At other sites where project activities such as afforestation could conflict with areas of land customarily or traditionally used by upland ethnic groups but where they do not have formal land rights, village-level consultations and participatory discussions based on the concept of FPIC must be conducted. These activities shall be carried out in a proper and timely manner to avoid and mitigate potential losses of access to assets and livelihoods.
Indigenous Peoples (IPs)	1. Any adverse impacts that a project may have on IPs are to be avoided when feasible by exploring all viable alternatives. 2. When projects may have adverse impacts on IPs, all of their rights in relation to land and resources must be respected in accordance with the spirit of relevant international declarations, including UNDRIP – FPIC is required. 3. Measures for the affected IPs must be prepared as an IP plan and must be made public in compliance with the relevant laws and ordinances of the host	1. The term IP is not used with respect to any group of peoples in Vietnam. However, it is accepted that ethnic minority (EM) groups share many similar characteristics with those of IPs. However, EMs nor anyone else in Vietnam have collective rights over lands and territories. 2. As mentioned, EIA law does not include special provisions for vulnerable groups. However, the Constitution does respect many relevant IP/EM rights (self-determination, non-discrimination), and the GoV implements a number of programs	1. EMs comprise the majority of the peoples to be affected by the project. Therefore, ethnic minorities and their traditional ways of life has been strongly considered in designing the project as well as in the development of appropriate safeguard measures to ensure their consultation and participation, and that they receive culturally-appropriate benefits. 2. This ESMF intends to integrate EM considerations throughout and through the Consultation and Participation Guidelines in particular aims to ensure that indigenous peoples planning requirements are

Content	JICA Guidelines (2010)[3]	Vietnam's Framework for EIA[4]	Measure to fill the gap
	country.	aimed at supporting such groups.	met.
Monitoring	1. Project proponents etc. should make efforts to make the results of the monitoring process available to local project stakeholders	1. There is no provision on the project owner's obligation to publicize results of monitoring process even though the EMP disclosure is mandatory after completion of EIA approval	1. The monitoring and reporting plan is included in the ESMF. Such a plan shall be implemented accordingly.

Source: JICA Preparatory Survey Team (2016)

I.3.1.2 Institutional Arrangements for Environmental Planning and Management

Environmental Management and Monitoring

The Law on Environmental Protection (LEP) clearly designates the Ministry of Natural Resources and Environment (MoNRE) as the lead government agency responsible for defining Environmental Management and Monitoring procedures in the country. The LEP also states that MoNRE shall be the government agency responsible for the appraisal of SEAs of national or regional programmes and strategies, provincial and sectoral development and land use plans as well as EIAs of projects of national importance and/or having significant environmental impacts (e.g. large scale, affecting national parks, major industrial zones etc).

For provincial-scale projects, the LEP and subsidiary legislation clearly outlines the institutional arrangements and procedures for the assessment, appraisal and monitoring of projects with impacts on the environment. The LEP sets forth that project proponents must submit an EIA report prepared by themselves or by consultants. The contents of the report are detailed in the LEP and subsidiary legislation. The LEP also stipulates that the EIA is then appraised by an appraisal committee which is formed by the Environmental Protection Division (EPD) under the Provincial Department of Natural Resources and the Environment (DONRE).

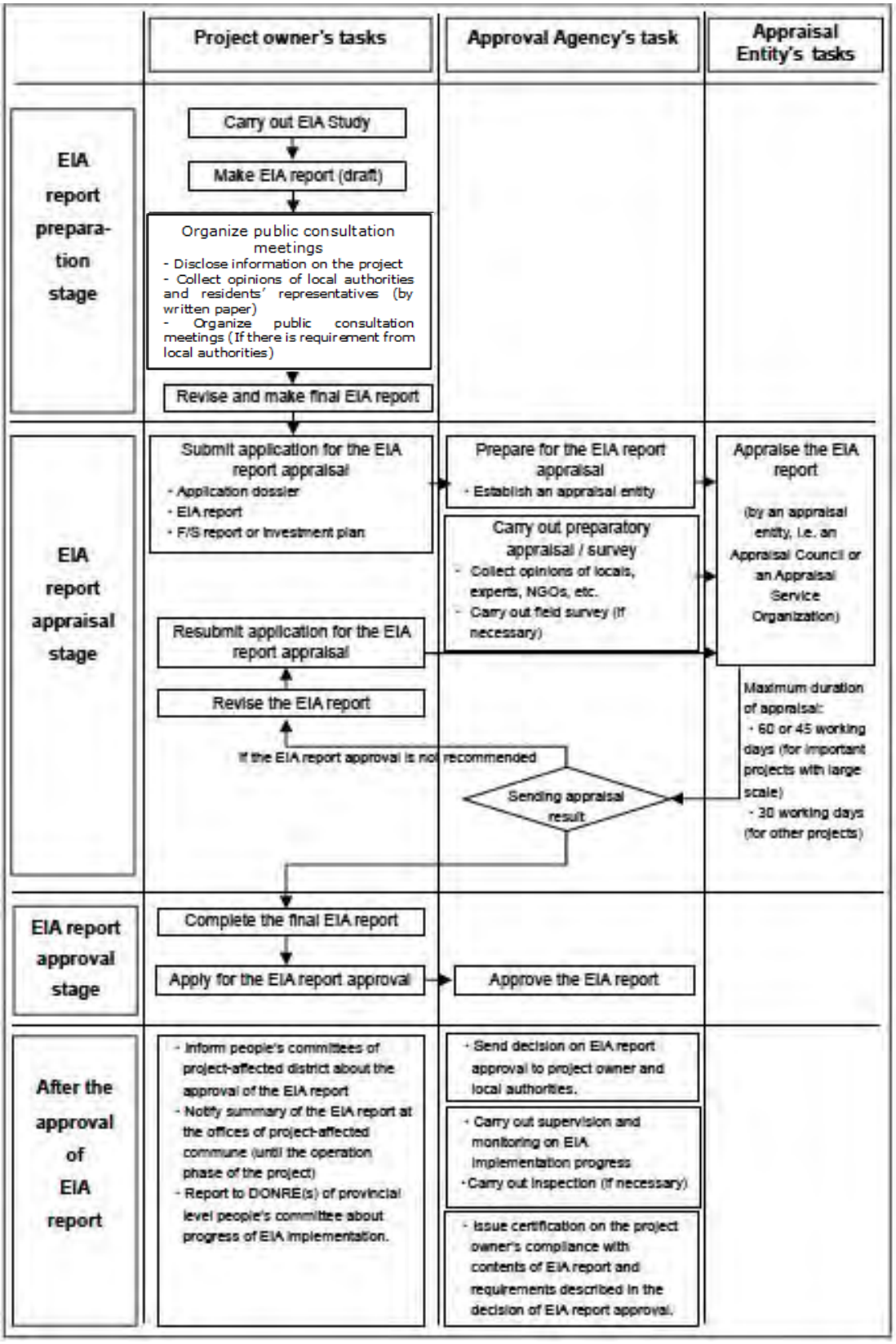
For even more small-scale projects, the LEP also stipulates approval procedures for Environmental Protection Plans (EPPs) i.e. projects not requiring EIA but still requiring environmental clearance; (1) The environment protection authority of province (DONRE) shall approve EPPs (for the projects not be listed in the annex 5.1 of Circular 27/2015 specifying 34 types of project) and (2) The District People's Committees (DPC) of district shall approve environment protection plans (for project not be listed in annex 5.1 of circular 27/2015 and in annex 4 of decree 18/2015). It should take 10 working days from the date on which the satisfactory application is received regarding projects to complete the approval of PPC/DONRE and DPCs.

For this project, following the experience of Project for Restoration and Sustainable Management of Protection Forest (JICA 2), it is confirmed that an EIA is required for the entire project. MARD has plans to hire a qualified consultant to prepare the EIA report in parallel with the FS preparation right after the project concept will be approved by the PM. MoNRE will be responsible for establishing the appraisal council for EIA report despite the fact that MARD is also allowed to organize the appraisal council for EIA report.

If the subprojects have not identified and confirmed with scope/scale and location by the approving the FS studies. The EIA should be included the guideline with negative checklist

for screening to avoid/ remove the sensitive subproject type and scope. In addition to that, the capacity building programme for the staffs of PPMB/PFMBs should be developed in terms of environmental and social consideration as well as the monitoring and reporting.

The diagram below illustrates EIA procedures following LEP, and which will be applicable to the proposed project.



Source: JICA Preparatory Survey Team (2016)

Figure I.3.1: EIA appraisal procedures

Biodiversity Conservation and Forest Protection

In terms of biodiversity conservation, planning and monitoring, at the national level MoNRE is also designated as the responsible agency and is the focal point for reporting to the Convention on Biological Diversity (CBD) Secretariat for example. At the provincial levels, some provinces now have sufficient capacity and resources under DoNRE to have one or two people responsible for the development and implementation of provincial level biodiversity strategies and action plans (PBSAPs). However, such plans are extremely limited in scope, do not even exist in all provinces and monitoring is practically non-existent.

Moreover, the reality is that although MoNRE is the focal agency for biodiversity conservation planning and monitoring, much of the country's biodiversity of course is found within forests and protected areas which are managed by MARD (e.g. for certain national parks), DARD/FPDs in the provinces and FMBs (especially SUFMBs) at site levels. Forest Protection and Development Law (FPDL, 2004) as well as other subsidiary legislation defines how forests are protected, developed and managed. It stipulates the forest owners and their rights and responsibilities. Institutional arrangements are clearly stipulated within the laws for the management of forests and forest resources from the national level down to the household level. FPDL as well as other key pieces of forest legislation e.g. Decisions 186 and 117 determine what can and can't be done inside given types or categories of forest. As such the implementation of these laws are key safeguards which protect forests and biodiversity. At the grassroots levels enforcement of these laws is generally the responsibility of FPD staff (commune, district and provincial levels) and the staff of site FMBs under DARD, as a responsibility which is delegated by PPCs (in some cases e.g. larger, more important national parks the PPC takes a more direct role in management).

Circular 78/2011 is important in the context of this project because (among other things) it defines the process for SUF planning, whereby a given SUFMB will prepare a plan for approval by the PPC, who will in turn request the FPD or SubDoF (in provinces where the merge has not yet been completed) to review the plan. Based on their recommendations the plan will be approved. If the FMB has plans which include activities or sub-projects which may require some form of environmental clearance (e.g. forest roads or other infrastructure) then the above described environmental clearance process is followed. However, in this case if a project-level EIA is conducted, it may not be necessary for such procedures to be followed each time but the mitigation measures specified in the EIA report will need to be followed.

I.3.1.3 Environmental Management Capacity and Gaps

Environmental Assessment and Monitoring

Vietnam's legal framework for Environmental Management and Monitoring is relatively sound as discussed above. In terms of implementation however, there are some shortfalls or weaknesses which have been identified in general, as well as based on assessments carried out by the preparatory survey team in Hoa Binh and Dien Bien as part of the preparatory survey. Overall, it was observed that, at provincial level, DoNRE strictly follow the central government legislation on environmental control and protection.

The Environment Protection Division (EPD) under DoNRE is in charge of EIA review and appraisal. It was learned that, the capacity of EPD is moderately adequate with environment and related background. At the district level, the Natural Resource and Environment Office

(NREO) under the DPC is responsible for tasks such as reviewing the EPP. NREO staff have environmental related background.

Several weaknesses in implementation of the environmental management system at the provincial and district level were identified during the field assessments;

- Technical capacity: Even the staff of EPD has environmental background, the technical capacity should be promoted by specific guidance and on job training. It was informed that, the staff has not been received these kind of training, particular some typical project relating to biodiversity and ecosystem assessment.
- Human resources: Currently EPDs and NREO has not enough staff to address the allocated mandates. Particularly, the NREO has normally around 4-5 staff only, but have various responsibilities beyond environmental appraisal and compliance monitoring (environment, land, mineral resource, climate change etc.)
- EIA Appraisal Council: the member of EIA appraisal council is normally the professional staff from other line departments (DARD, DPI, DOC, DOH) rather than the professional experts who are from central cities. In addition to that, for the project relating to forestry sector, FPD has not been invited or consulted during the EIA appraisal process (including for dams and other infrastructure to be constructed inside forest areas).
- Application of EIA for forest plans: EIA or other environmental clearance procedures are rarely implemented with respect to site-level forest plans. Although most of the activities are generally environmentally positive or benign, in some cases the plans do involve some development of infrastructure. Therefore, it is recommended for project interventions to include certain simple procedures as a mitigation measure for this project to ensure the size/scope of sub-projects is screened and that projects are assessed and monitored to ensure minimal environmental impact.
- Environmental monitoring: The monitoring on environmental compliance is the big challenges of provincial and district levels. It was informed that the budget for environmental monitoring is limited and making it very difficult to monitor the environmental compliance during the project implementation post EIA appraisal process

Biodiversity Conservation and Forest Protection

Vietnam has a relatively well-developed legal framework for biodiversity conservation and forest protection (notwithstanding some contradictions) but effective conservation and forest protection on the ground is constrained by a number of factors as documented in various reports[5], including:

- Limited financial resources: Especially provincially-funded nature reserves such as those supported by this project, have limited funds available for implementing conservation actions and measures.

[5] de Queiroz, JS, Griswold, D, Nguyen, DT and Hall, P. 2013. *Vietnam Tropical Forest and Biodiversity Assessment*. Technical Report for United States Agency for International Development.
MoNRE. 2014. *Vietnam's Fifth National Report to the United Nations Convention on Biological Diversity*. Hanoi.
ICEM. 2003. *Vietnam National Report on Protected Areas and Development. Review of Protected Areas and Development in the Lower Mekong River Region.* Indooroopilly, Queensland.

- Limited human resources: Many FMBs complain of having insufficient staff to effectively patrol and manage their area of responsibility.
- Limited capacity: Although capacity has improved to some extent in recent years, overall there has been a decentralisation of management responsibility to PF and SUFs whilst the sites have very limited management skills.
- Weak and fragmented law enforcement.
- Weak inter-sectoral coordination between agencies.
- Weak implementation, monitoring and enforcement of EIA regulations

I.3.2 Social Management Systems

I.3.2.1 Relevant Environmental Policies, Laws and Regulations

An important concern of JICA is that development projects are implemented with the full and effective participation of local communities, with special attention paid to vulnerable groups such as the poor, landless/land poor, indigenous peoples (IPs) (or ethnic minorities in Vietnam) and women. Interventions should also respect the rights of local communities and indigenous peoples (also consistent with Cancun Safeguards c and d). Such concerns are typically more serious when they involve large scale infrastructure investments requiring the physical displacement and involuntary resettlement of peoples and significant alterations of ecosystems and landscapes customarily used by local communities and ethnic minorities in their economic, social and spiritual lives. However, they remain relevant for interventions in the forestry sector where strengthened conservation and activities aimed at forest restoration in protection forests and SUFs may have consequences for rural poor communities that are dependent on forests for their livelihoods or lands customarily used for agricultural production that are classed as forest lands by the State.

Conservation and afforestation measures may thus exclude communities from the lands and forests on which they depend for their day to day livelihoods. Such activities where they restrict practices or change existing land uses can lead to negative impacts on livelihoods (reduce incomes, increased food insecurity and vulnerability) through loss of access, ownership or use rights, and increased conflicts on forest lands. Therefore, a primary social consideration is whether the communities themselves are adequately informed about proposed measures, whether there is adequate consultation and participation and consideration of local communities' livelihoods and rights in planning and implementation of site-level interventions.

The table below identifies some of the main relevant policies, laws and regulations for the types of activities that have been proposed under the project.

Table I.3.3: List of Relevant Social Policies, Laws and Regulations

Policy/Law	Main Provisions and Relevance
Land and Forest Tenure Rights	
Land Law No. 45/2013/QH13	Prescribes the regime of land ownership, powers and responsibilities of the State in representing the entire-people owner of land and uniformly managing land, the regime of land management and use, the rights and obligations of land users involving land
Forest Sector Development Strategy	Provides overall strategic orientation for the forestry sector

Policy/Law	Main Provisions and Relevance
2006-2020, approved by PM Decision No. 18/2007/QD-TTg	with specific economic, social and environmental objectives.
Law on Forest Protection and Development No. 29/2004/QH11	Provides for the management, protection, development and use of forests and forest owners' rights and obligations
PM Decision 178/2001/QD-TTg	On benefit rights, responsibilities of households/individuals who are allocated, contracted and leased forest land.
Public Consultation	
Law on Access to Information No. 2016/QH13	Provides for the right to access to information of citizens; principles, orders, procedures of enforcement of the right to access to information; obligations and responsibilities of state agencies in ensuring the right to access to information of citizens, and rights and obligations of citizens in implementation of the right to access to information.
Ordinance on the Exercise of Democracy in Communes, Wards and Townships 34/2007/PL-UBTVQH11	Ensures the people's rights to know, to contribute opinions, to decide, to exercise and supervise the exercise of democracy at communal level
Decree 26/2006	
Good Governance	
Anti-Corruption Law No. 55/2005/QH11	Provides for the prevention, detection and handling of persons who commit corrupt acts and the responsibilities of agencies, organisations, units and individuals in corruption prevention and combat.
Gender	
Law on Gender Equality No.73/2006/QH11	Provides for principles of gender equality in all fields of social and family life, measures ensuring gender equality, responsibilities of agencies, organizations, families, individuals in exercising gender equality
Grievance Mediation and Redress	
Law on Complaints and Denunciations No. 02/2011/QH13	Ensures that complaints and/or denunciations are made and settled lawfully, contributing to the promotion of democracy, the enhancement of socialist legal system, and the protection of the interests of the State as well as the legitimate rights and interests of citizens, agencies and organizations
Grassroots Mediation Act (2013) Decree 15/2014 / ND-CP and Joint Resolution No. 01/2014 / NQLT / CP-UBTUMTTQVN of GoV	Provides a legal basis for grievance/dispute resolution through a neutral mediator at grassroots levels (i.e. village level).

Source: JICA Preparatory Survey Team (2016)

Vietnam's Constitution already includes provisions which recognise and acknowledge many basic human rights of local communities and ethnic minorities (including rights to non-discrimination, self-determination, cultural rights, traditional knowledge etc). Communities and ethnic minorities do not have collective land rights and/or rights over territories.

The policy and legal framework for human rights and social protection has also been improved considerably in recent years, to now include provisions to ensure better access to information, public consultation and participation, more accountable and transparent governance (anti-corruption), improved democracy at grassroots and grievance redress. A key

concern however is that although several policies and laws stress the importance of public consultation and stakeholder participation in general, there is a lack of detailed or specific provisions that regulate and operationalise full and effective participation. This is particularly the case in the forestry sector where implementing legislation on site-level forest planning6 does not include any reference to consultation and/or participation in the process. This means that consultation, participation and inclusion in forest planning is ad hoc, unsystematic and where it does occur is more akin to promulgation (once funds have been obtained) rather than prior and informed consultation and participation. This ESMF will provide measures to address this gap through consultation and participation guidelines.

I.3.2.2 Institutional Arrangements for Social Protection in Relation to Forest Sector Interventions

Institutional arrangements for social protection are somewhat more dispersed in consideration of the range of potential social issues. Also, social protections in many cases uphold human rights which are relevant across different sectors and thus the protection of such human rights is to be held across numerous institutions and depending on context. For example, it is not the responsibility of one agency to provide transparent access to information or ensure gender equality but rather these principles must be mainstreamed into society and public sector service delivery. Given that this project focuses primarily on forest protection and development, it is within this context that institutional arrangements for social protection are considered here.

In the context of the proposed project most social issues and protection are managed through the institutions responsible for forest management i.e. MARD at the national level is responsible for overall strategic directions in the forest sector and legal/policy development including the consideration of social aspects in forest protection and development. The national policies and laws are interpreted and implemented in the provinces by DARDs (at the request of PPCs), FPD at provincial, district and commune levels, as well as site-level FMBs (and other forest owners).

The FMBs are therefore primarily responsible (together with CPC/DPCs and related frontline local GoV agencies) for the operationalisation of many of the social safeguards in terms of providing information appropriately, ensuring adequate consultation and participation in forest allocation and planning, the inclusion of vulnerable groups such as ethnic minorities and women in planning and implementation and the equitable distribution of benefits associated with site-level project interventions.

The institutional procedures and responsibilities for site-level forest planning are laid out in Decree 23/2006 and Circular 78/2011 i.e. that forest owners such as FMBs submit their plans to the PPC for approval. The PPC will do so after review from Provincial FPD/DoF, and assuming that proposed activities are consistent with the Provincial FPDP and are generally based on standard designs and cost norms. During the field survey in Dien Bien and Hoa Binh the relevant agencies confirmed that this is the process followed in these provinces with no provincial variations in approach.

Other agencies are also involved however in different social safeguard aspects or issues. For example, MoNRE is the designated agency responsible for land administration, which

[6] E.g. Decree 23/2006 and Circular 78/2011

includes forest land and its allocation, which is carried out in the provinces through DoNREs and in the field through cadastral officers and other staff of DPC/CPCs.

Another example is general complaints, disputes and grievances which could relate to forestry/forest sector issues such as disputes over receipt of PFES payments for instance, which would be handled through the inspection department of the CPC who will open a dossier and investigate the claim. If the issue cannot be resolved at that level, the case can go up to the district, provincial and in theory even the national level. Disputes over land are however handled under a different mechanism and grievances need to be registered with special committees established at CPC level.

I.3.2.3 Social Protection Management Capacity and Gaps

A basic assessment was conducted by the preparatory survey team in two of the project provinces (Hoa Binh and Dien Bien). The assessment focused primarily on the capacity of the FMBs and related agencies responsible for forest protection and development activities to address and respect key social safeguards, especially consultation and participation in forest allocation, site-level forest planning and inclusivity in implementation of sub-projects (e.g. afforestation, ANR, forest protection, small-scale construction projects etc.) and it is believed that the situation is relatively heterogeneous across the project's target area.

As discussed above, there are no specific consultation and participation requirements for site-level planning of PFs/SUFs. In reality and confirmed through interviews in Hoa Binh and Dien Bien, FMBs prepare plans by themselves or with the support of consultants, requesting investment from the PPC. The PPC will then delegate FPD or Sub-DOF to appraise the plan. The plan is subsequently revised and submitted for approval. Circular 78/2011 provides very detailed guidance on this process for SUFs, including number of days allocated for each step in the process and the role of different State agencies but at no point does it include any requirements for consultation with local stakeholders. Typically, information dissemination to communities may occur once the plan has been approved. This means there is little room for negotiation because the budget has already been approved for particular activities against pre-defined cost norms and standard designs. The process is good enough for practical silvicultural activities but from a social perspective there may be problems due to inadequate prior information and community appreciation or interest in the measures. In this sense, there is a 'gap' between the intentions of the safeguards principles, policies and laws and the reality of implementation as what 'consultation' does take place in the existing system is actually more like 'promulgation' of the plan which has already been approved. For this reason, under the project it is necessary to include a free, prior and informed consultation (FPIC) process, which should involve a number of steps including participatory mapping and clear spatial definition of rights and responsibilities, before broad community support is finally verified through conservation agreements.

Similarly, in implementation of activities due to the hierarchical structure and need to implement activities towards higher level instructions and targets, local people are contracted as labour for reforestation for example, but they typically have little say in the management of the activity. Although there have been efforts in recent years to promote co-management at certain sites in the project provinces e.g. under KfW 7 in Hoa Binh and Son La as well as several SUF sites receiving grants from the Vietnam Conservation Fund. However, they remain pilot projects rather than approaches which are embedded in the existing system.

Forest sector staff are not in general well-trained on aspects related to consultation, participation, safeguards and co-management. Unlike silvicultural and technical aspects such

as forests stand design planning it is not part of the standard curricula and there is no member of staff at any level with a designated community engagement (or similar) role within FPD/DoF or at site levels. For this reason, it is likely that it may be proposed to address these gaps within the framework of the ESMF and associated capacity-building under the JICA 3 loan project. Such capacity building will also be relevant in the context of implementing REDD+ activities and meeting the Cancun safeguard requirements

I.4. Environmental and Social Considerations and Potential Impacts

I.4.1 Environmental Considerations and Potential Impacts

I.4.1.1 Environmental Considerations

JICA guidelines indicate that a wide range of environmental considerations should be taken into account. Initial scoping identified the following impacts on the natural environment to be assessed:

- Climate Change
- Ecosystems (especially landscapes and sites of importance to biodiversity conservation and protected areas)
- Biodiversity (fauna and flora)
- Air, Water, Waste and Soils (resulting from infrastructure activities)

Appendix-B (1) shows the results of initial environmental screening and assessment by using the environmental checklists given by the JICA Environmental and Social Consideration Guidelines. Two types of checklists, forestry development and infrastructure development which is an integration of those for road, irrigation, and water supply, were used for the purpose. As shown in the checklists, a wide range of environmental and social potential impacts were assessed and considered for initial assessment. Moreover, the extents of the potential environmental and social risks were assessed and evaluated by using the environmental scoping matrixes shown in **Appendix-B (2)**. Likewise, the environmental scoping was carried out separately for forestry development and infrastructure development.

I.4.1.2 Assessment of Potential Environmental Impacts

Positive Environmental Impacts

The project is primarily focused on forest development, protection and restoration and therefore the associated activities are expected to present various environmental benefits, including;

- Climate change mitigation through reduced emissions from deforestation and forest degradation
- Enhanced carbon stocks and sequestration from afforestation, ANR and forest protection activities
- The regeneration of natural or buffering/connecting forest habitats offering opportunities for wild populations of species of fauna/flora to establish, recover etc.
- Enhanced protection of protected areas and species and habitats of conservation significance

- Improved ecosystem services such as watershed protection, protection of soils, regulation of hydrological flows etc.
- Reduced unsustainable utilisation of forest resources through support for biogas/improved cookstoves and investments in alternative livelihoods and income generating opportunities

Negative Environmental Impacts

Table I.4.1 overleaf presents potential environmental impacts or risks associated with each project component identified during the course of the survey through expert assessment as well as participatory consultation. Note that the table only includes implementation components as there are no significant environmental impacts associated with project management, monitoring and evaluation and technical assistance components.

Mitigation measures specific to the project components and activities are also indicated and these measures will be implemented through the ESMF and its constituent elements. More details of mitigation measures against potential environmental risks associated with the silviculture and small scale rural infrastructure are described in **Section I.6.3**.

Table I.4.1: Potential Negative Environmental Impacts and Mitigation Measures

Component	Activities	Potential Environmental Issues	Scoping	Possible Mitigation Measures
1. Survey and Detailed Planning	1.1 Purchase of high resolution satellite images 1.2 Participatory land use planning (including development of land use and forest maps for forest management) 1.3 Demarcation of boundaries of target areas (perimeter surveys) 1.4 Baseline surveys at target sites/communes. 1.5 Detailed designs of forest development, silviculture and small-scale rural infrastructure development	• Inaccurate or inappropriate land use zoning could lead to negative impacts on forests and wildlife • Lack of environmental considerations in the design of forest development, silviculture and small-scale rural infrastructure could lead to negative environmental impacts e.g. selection of exotic species for afforestation may have negative impacts on biodiversity, or minor effects of small-scale infrastructure (e.g. air and water pollution, minor land/forest clearance)	Low Low	• Verify afforestation and ANR sites in the field to confirm appropriateness. • Eliminate activities (e.g. no conversion of natural forest, no conversion of any protection/SUF forest >5 ha, roads <50 km etc. – see Negative Checklist). • Do not use non-native species for Afforestation/ANR in special use forests (see Negative Checklist). • Use native species in principle or at least mixed stand designs (mainly native species) approved by MARD for Afforestation/ANR in protection forests.
2. Protection and improvement of critical watershed forest	2.1 Afforestation 2.2 Assisted Natural Regeneration 2.3 Forest Protection 2.4 Introduction of benefit sharing mechanism and collaborative management	• Use of exotic species in afforestation and/or assisted natural regeneration could have negative impacts on biodiversity	Low	• Select severely degraded forests/bushes or bare or glass lands for afforestation (see Negative Checklist). • Use native species or at least mixed stand designs approved by MARD for Afforestation/ANR in protection foresst. • Do not use non-native species in special use forests
3. Development of silviculture infrastructure	3.1 Watch tower 3.2 Nursery 3.3 Motor bike roads 3.4 Forest fire prevention line 3.5 Forest guard station	• Construction of new motorbike roads could cause forest/tree loss, damage habitats, split populations of certain species (e.g. primates) • Construction/upgrading of motorbike roads could facilitate extraction of forest resources and negatively impact forest cover and ecosystems • Minor small scale /temporary/reversible environmental impacts on air/dust, water sources, chemicals/pollutants, noise, waste disposal during the construction of watchtowers, nurseries, checkpoints,	Low Low Low	• Do not convert natural forests for silviculture infrastructure (see Negative Checklist). • Do not implement any construction works in special use forests (see Negative Checklist). • Construct/upgrade forestry/motorbike roads which do not cause forest clearance more than 5 hain protection forest (see Negative Checklist). • Place the primary focus of road upgrading on upgrading– no new roads (see Negative Checklist). • Apply ECOP into the bidding document of the contractors who then will be responsible for mitigation measures during the

Component	Activities	Potential Environmental Issues	Scoping	Possible Mitigation Measures
		guard stations		construction phase (refer to the **Appendix-C**).
4. Improvement of small-scale rural infrastructure	4.1 Rural road construction/improvement 4.2 Small-scale irrigation system construction/upgrade 4.3 Rural water supply system construction/upgrade	• Minor environmental impacts in construction of small-scale infrastructure (temporary/reversible impacts e.g. on air/dust, water sources, chemicals/pollutants used in construction, noise, tree removal, minor damage to habitats, waste disposal etc.)	Low	• Focus on upgrading/restoring existing infrastructure – avoid new infrastructure • Do not exceed scale/size for District EPP clearance (see Negative Checklist). • Apply ECOP into the bidding document of the contractors who then will be responsible for mitigation measures during the construction phase,
5. Support for livelihood improvement (including technical trainings, model implementation support and marketing)	5.1 Fuel-saving models; a) Biogas; b) Improved cookstoves 5.2 Alternative income generating models: a) Vegetable garden and fruit trees; b) Fodder grass; c) Apiculture (beekeeping) model; d) Contract farming (business-matching and quality improvement through TA) 5.3 Market assessment 5.4 Forestry/Agroforestry models: Fruit trees, spices, bamboo, rattan, (mixed planting on forest land) 5.5 Technical trainings on Sloping Agricultural Land Techniques (SALT)	• Promotion of contract farming (likely products will be maize, cassava, tea, coffee, rubber) could encourage deforestation • Development of certain cash crop/ NTFP models could enhance illegal and unsustainable extraction or deleterious impacts on forest understorey • Ecological impacts from cassava and maize production (on soils) and processing from waste in processing (on water sources)	Low Low Low	• Select potential livelihood activities to ensure appropriateness (see TA Guidance) • Develop agriculture and livelihood models which can improve productivity or profitability of the exiting practices to prevent agricultural expansion and deforestation. • Provide guidelines for NTFP/cash crop models to employ quotas and environmentally-friendly/sustainable production techniques (see TA Guidance).
6. Prevention of forest fires	6.1 Provision of fire preventive equipment 6.2 Conduct of fire drills	No significant environmental issues foreseen	-	-
7. Project Management	7.1 Awareness raising and information dissemination to local communities and local government units	No significant environmental issues foreseen	-	-

Key environmental risks are highlighted and described in further detail as follows:

1) **Habitat Disturbance and Biodiversity Loss from Inappropriate Afforestation/Assisted Natural Regeneration (ANR) Techniques:**
   Habitat disturbance and biodiversity loss are important environmental considerations in this project due to the ecological significance of the project landscape as a whole, as well as, in particular, the specific protected areas identified as the project sites. Whilst ecological considerations are not confined to protected areas, several of the protected area sites in the proposed project area have been designated on the basis that they support populations of nationally and globally threatened fauna and flora.
   The inappropriate design and implementation of afforestation activities could have deleterious impacts on habitats and biodiversity. This can occur particularly when exotic or timber species are planted on natural non-forest habitats. In general, natural regeneration should always be preferential, followed by planting with indigenous species. Afforestation should be reserved for only bare or severely degraded forest lands. It is also suggested that PPMBs should follow the proposed designs of afforestation, namely i) mix plantation of native species (dominant species) and economic/fast growing species (subordinate species) in protection forests and ii) mix plantation of several types of native species in special use forests when making the detailed designs of the respective target areas.
2) **Habitat Loss, Disturbance, Biodiversity Loss and Other Potential Negative Impacts from Road Construction in Forest Areas**
   i) **Habitat loss and disturbance** due to the clearance of trees and forests for the road alignment.
   ii) **Construction phase impacts** may include (especially in upland areas where the road design necessarily requires compacting of slopes) deposition of earth into water streams, potential chemical spills, air and noise pollution (which may disturb resident wildlife).
   iii) In the longer term, **roads may also split wildlife populations** with disastrous consequences for sub-populations, gene pools and even species given rapid biodiversity decline in northern Vietnamese forests (as has been the case with many of Vietnam's highly endangered primates). Another **long term impact of roads is that they may facilitate the removal of wildlife and in general disturb forest ecosystems**. For this reason, construction of new roads in forest areas should be carefully considered in general as an activity for this project, but eliminated especially in SUF areas. Due care should be taken to ensure that any road upgrading does not involve any clearance of natural forest and should not exceed 5 ha of forest clearance in other types of forests as this would lead national level clearance in protection forests per Decree No. 18/2015.
3) **Various minor, small scale and temporary environmental impacts associated with Small-scale Rural Infrastructure**

   Again, in general small-scale rural infrastructure investments should be focused on upgrading existing infrastructure rather than constructing new facilities. Minor environmental impacts associated with such sub-projects may include deposition of earth into water streams, potential chemical spills, air and noise pollution.

4) Potential minor, small-scale environmental impacts associated with livelihood support activities:

Certain livelihood support models could have certain likely relatively minor environmental impacts associated with them. For example, agricultural models may involve the use of fertilizers and pesticides, excessive water consumption or some pollution during processing. Such deleterious impacts should be managed and mitigated through technical guidance on sustainable production methods during implementation.

I.4.2 Social Considerations and Potential Impacts

I.4.2.1 Social Considerations

JICA guidelines indicate that a wide range of social considerations should be taken into account. Initial scoping identified the following social impacts to be assessed:

- Involuntary resettlement and land acquisition
- Poverty, vulnerability and loss of livelihoods
- Ethnic Minorities
- Gender

I.4.2.2 Assessment of Potential Social Impacts

Positive Social Impacts

Whilst the project's primary objective is forest development, protection and restoration, the project is also expected to provide a number of social co-benefits, including;

- Improved physical capital for rural poor communities through upgraded community infrastructure;
- Improved financial capital through employment and income opportunities from forest protection activities;
- Improved livelihood opportunities through project support for alternative income generating activities; and
- Improved natural capital through improved ecosystem services.

Negative Social Impacts

Table I.4.2 overleaf presents potential social impacts or risks associated with each project component identified during the course of the survey through expert assessment as well as participatory consultation. Note that the table only includes implementation components as there are no social impacts associated with project management, monitoring and evaluation and technical assistance components.

Overall, social considerations are of greater concern than environmental issues. As shown in Chapter 1 of the Part I of the Final Report, the mountainous North-west project area is inhabited by a diverse variety of ethnic minority communities and groups who comprise the majority of project affected households. There are a range of potentially significant social safeguard issues linked to their land and forest tenure rights and impacts on the livelihoods of such peoples, many of whom are amongst the poorest and most vulnerable in Vietnam and dependent on forest lands and resources.

Table I.4.2: Potential Negative Social Impacts and Mitigation Measures

Component	Activities	Potential Social Issues	Scoping	Possible Mitigation Measures
1. Survey and Detailed Planning	1.1 Purchase of high resolution satellite images 1.2 Participatory land use planning (including development of land use and forest maps for forest management) 1.3 Demarcation of boundaries of target areas (perimeter surveys) 1.4 Baseline surveys at target sites/communes. 1.5 Detailed designs of forest development, silviculture and small-scale rural infrastructure development	• Involuntary Resettlement/Land Acquisition: Formal acquisition of (agricultural or forest) unallocated lands by PFMBs (not funded by project but parallel to project in same sites). • Involuntary Resettlement/Loss of Access to Productive Assets and Loss of Livelihoods: Use of lands by the project for afforestation/ANR or other activities which are claimed or customarily used by ethnic minority communities or households • Land use conflict (between households, between communities or between communities and forest management boards): Any conflict over lands as a result of land use planning, particularly where it reinforces inequitable distribution of land/resource access. • Inequitable distribution of benefits based on forest land tenure arrangements.	Low Low Low Low	• Do not implement any activities which cause: - physical relocation/resettlement; - ormal land acquisition at project sites, even where financed by GoV i.e. remove site from project; and - involuntary resettlement/loss of livelihoods or access to productive assets. • Conduct a process of FPIC including participatory land use planning and verification of support for the land use arrangements for selection of the project areas without any conflict with local communities (see Consultation and Participation Guidelines). • Select communities/households through accountable and transparent beneficiary selection process and equitable benefit-sharing mechanism (see Consultation and Participation Guidelines).
2. Protection and improvement of critical watershed forest	2.1 Afforestation 2.2 Assisted Natural Regeneration 2.3 Forest Protection 2.4 Introduction of benefit sharing mechanism and collaborative management	• Afforestation on lands needed by households for agricultural production could affect livelihoods, reduce incomes, food security, increase vulnerability etc.	Low	• Mitigate and avoid any social risks through Consultation and Participation Guidelines (see 1 above).
3. Development of silviculture infrastructure	3.1 Watch tower 3.2 Nursery 3.3 Motor bike roads 3.4 Forest fire prevention line 3.5 Forest guard station	• Land acquisition associated with road construction	Low	• No land acquisition - use existing routes or new routs where land acquisition is not required (see Negative Checklist) or only small areas of voluntary land acquisition on the communities' initiatives take place (see Consultation and Participation Guidelines).

Component	Activities	Potential Social Issues	Scoping	Possible Mitigation Measures
4. Improvement of small-scale rural infrastructure	4.1 Rural road construction/improvement 4.2 Small-scale irrigation system construction/upgrade 4.3 Rural water supply system construction/upgrade	• Land acquisition associated with rural infrastructure • Small-scale infrastructure benefits elites or non-equitable receipt of benefits among community	Low Low	• No land acquisition - upgrade existing infrastructure or ensure route which does not require land acquisition (see Negative Checklist) or small areas of voluntary land acquisition on the communities' initiatives.
5. Support for livelihood improvement (including technical trainings, model implementation support and marketing)	5.1 Fuel-saving models; a) Biogas; b) Improved cookstoves 5.2 Alternative income generating models: a) Vegetable garden and fruit trees; b) Fodder grass; c) Apiculture (beekeeping) model; d) Contract farming (business-matching and quality improvement through TA) 5.3 Market assessment 5.4 Forestry/Agroforestry models: Fruit trees, spices, bamboo, rattan, (mixed planting on forest land) 5.5 Technical trainings on Sloping Agricultural Land Techniques (SALT)	• Inequitable selection of beneficiaries • Exclusion of vulnerable groups from project activities and benefits	Low Low	• Identify specific activities for marginalized groups such as landless, poor households, female headed households, women etc. in site level plans. • Specify minimum quotas for the selection of women as beneficiaries (e.g. 50% poor/near poor and 30% women) of livelihood development activities – see Consultation and Participation Guidelines.
6. Prevention of forest fires	6.1 Provision of fire preventive equipment 6.2 Conduct of fire drills	No significant social issues foreseen		-
7. Project Management	7.1 Awareness raising and information dissemination to local communities and local government units	• An over-emphasis on improved forest law enforcement capacity could lead to worsening relationships between communities and forest management boards/forest protection authorities.	Low	• Place the focus of capacity building and training on social aspects of forestry, co-management etc. (see Capacity development for ESMF).

Source: JICA Preparatory Survey Team (2016)

Key social risks are highlighted and described in further detail as follows:

1. Involuntary resettlement and acquisition of ethnic minority lands

The term 'involuntary resettlement' is understood to refer to the following:

- Physical relocation
- Loss of assets or access to assets (including land – land acquisition)
- Loss of income sources or livelihoods
- Restricted access protected areas resulting in adverse impacts on livelihoods

Each of these aspects of involuntary resettlement is addressed in turn with respect to information gathered during the preparatory survey.

a) Physical relocation

Firstly, it should be stated that t**he project will not involve any physical relocation of households**.

b) Loss of assets or access to assets (including land – land acquisition)

This aspect of involuntary resettlement in the proposed project refers to two land acquisition situations:

- Loss of productive land where the household has an existing legal/formal land right
- Loss of productive land where the household has no existing/formal land right

The land and forest land tenure situation in North-west Vietnam is extremely complicated, sensitive, and there are many 'grey' areas. Although the survey team has done its best to try to understand the various situations in the project area, it was difficult for the team to grasp a clear picture of the land tenure issues (including customary use) in the project areas due to time constraints of the survey, the large number of sites and the complexity of the situation at many sites. More detailed and in-depth surveys are required for clear understanding of these issues as the project is further developed.

i) Loss of productive land where the household has an existing legal/formal land right

The most serious safeguard issue for the project is the potential scenario that lands that are at some stage in the process of formal allocation to households or communities; are allocated or re-allocated to FMBs supported by the project.

The original project proposal tentatively indicated or suggested that forest land allocation (FLA) would be an activity or potential activity within component (forest inventory and planning). It was recommended that this activity be removed from the loan project design at an early stage in the preparatory survey (see Interim Report) for a variety of reasons, not least that such activities are long, arduous, difficult to implement, expensive etc, but also due to social considerations and the potential for ethnic minority land acquisition, which a) is to be avoided where feasible according to JICA guidelines and b) would likely mean that the project would have to be re-categorised as Category A. Hence, the project plan proposed by the preparatory survey team does not include the activities relating to forest land allocation, if anything, a series of close consultations with local communities, which are necessary for implementation of the project in the areas allocated to local communities, are proposed. This recommendation stands and is re-iterated here: The loan project should not finance any forest land allocation (or re-allocation)

However, it is essential to note in this report that processes of FLA might be in progress in the project provinces anyway, which are to some extent influenced by the project (to be selected as the project areas) though they are not directly linked with project activities. Thus, according to our judgement, FLA should therefore be considered in the context of JICA guidelines, even if the land allocation would be completed prior to the start of the loan implementation period. This however is the first grey area i.e. the JICA guidelines are not explicit in how such situations (where there are actions which are linked and/or relevant to implementation of the loan project, but are not to be financed by the loan project) are to be treated, nor any clear guidance on at what point linked actions/measures must be completed prior to loan implementation for them not to necessitate the application of the JICA safeguard policies.

To provide more specific context, in the project provinces, there are several FMBs that are or may be currently in the process of accumulating lands, particularly in Dien Bien province (e.g. Dien Bien, Tuan Giao, Muong Cha PFMBs and Muong Phang SUFMB). FLA to FMBs is being pursued for more effective management and control of the forests, facilitation of distribution of PFES funds and, in part, participation in the proposed JICA loan project. In protection forests, one of the primary reasons for promotion of FLA is the existing MARD regulation on the management of protection forests, which clearly state that PFMB should have more than 5,000 ha of allocated protection forests to be officially registered. The extent to which the project has affected their motivation is not fully clear, but there might be a possibility that the project might have enhanced DARDs' interest in FLA to FMBs as one of the criteria for the first selection of the target sites was the official allocation to FMBs.

Next, in terms of this being a project safeguard issue, it is necessary to consider the status of lands to be (re)allocated to PFMBs. Here too the situation is far from clear. Considerable efforts have been made by the survey team to confirm and re-verify data due to conflicting information provided by different stakeholders (including the DARDs themselves). Situations appear to be extremely confusing in the field and land conflict appears to be an issue at many sites. Below, we present analysis of some of the information we have received regarding some of the project sites.

Hoa Binh Province:

i) **Song Da PF:** Song Da PFMB has a relatively large area in total but it is all reportedly allocated to households and none allocated to the PFMB. There is no plan to re-allocate the land to the PFMB and hence formal land acquisition is not assessed to be a problem at this site. Box below provides some further analysis of forest tenure issues in this site based on grassroots consultations carried out by the national environmental specialist.

Box: *Consultation in Na Loc village, Dong Chum commune, Da Bac district, Hoa Binh province*

Background: Na Loc village is one of 10 village of Dong Chum commune, one of the most difficult commune in Vietnam with 57% of poor household. There are 5,612 ha of natural land area including 4,841ha of forest land area. The ethnic minorities are mostly Tay and Muong group. Currently, the Song Da PFMB has contracted with local people to carry out their annual reforestation plans as well as the national programmes like 661 and 327 previously. Song Da PFMB has assigned a field officer in every commune to work with local authorities as well as individual households by supporting them on reforestation planning, seedling, PFES payment, and other technical assistance.

Safeguard issue: The forestland area was allocated to local people by Decree 02/02/1994/NĐ-CP before the establishment of the Song Da PFMB. After that, under the Decision 672/2006/QĐ-TTg dated 26/4/2006, Hoa Binh DONRE has reviewed the previous allocation to allocate, re-allocate the land use right for organizations, individuals and households. These allocations have created the difference of boundaries, locations to the allocated parties. As reported, Song Da PFMB has contracted with local people to implement

their approved annual plan on reforestation, afforestation. It is observed that there is no conflict between Song Da PFMB and local people except complaining on the low support on both reforestation and protection. In addition, the households in Na Loc village are aware of the growing importance of the forest in term of economic and environment value throughout the years and ready to participate into the project

Recommendation for project implementation: Meaningful consultation with full and effective participation of the local people is crucial not only for site level planning but also for implementation of the project. During FPIC, safeguards issue will be identified once project plans become clearer and addressed in timely manner. In addition to that, the site level planning should not only be implemented in paper but also based on the field work with participation of both FMBs, DONRE and local people. To do that, the resource in term of human, capital and time should be adequately allocated.

ii) **Ngoc Son – Ngo Luong SUF:** Ngoc Son – Ngo Luong was established as a Nature Reserve in 2004. However, a substantial proportion of the land inside the reserve is allocated (with LUCs) to local households, including settlement, agriculture and forest land. The tenure situation is complicated and there appear to be conflicting reports as well as conflicts on the ground. Post-designation as a NR all the forestland allocated as production forest (approx. 2,000 ha) with LUC to households was re-classified as SUF and re-allocated to the SUFMB, meanwhile agricultural land was not re-allocated and constitutes about 15% of the NR area[7]. Currently, the NR reserve area stands at 19,254 ha, of which 16,800ha is forest land. This suggests a historical conflict and a previous involuntarily resettlement issue but that the situation is now clear. However, another report[8] utilises land allocation data from DoNRE illustrating that in fact some 9,927 ha had been allocated to households between 1998-2002 under the land allocation policy of Decree 01/1995, and remains under conflict.

   Moreover, since 2014, the authorities are also trying to secure the re-allocation of some lands currently allocated to households inside the protected area boundary to the SUFMB in return for new cultivation areas for households in the buffer zone. This is a long and difficult process and is still ongoing. It is unclear whether these would also be the same lands slated for 'forest development' under the project but if so this is a potential land acquisition and resettlement issue. Further and more detailed assessment is required at the site level.

iii) **Phu Canh SUF:** Phu Canh was established as a Nature Reserve in 2001. However, a proportion (over 500ha) of the land inside the reserve is allocated (with LUCs) to local households, including settlement, agriculture and forest land before the establishment of Phu Canh SUF by Decree 02/1994/NĐ-CP. To resolve this conflict, the authorities has re-allocated around 395 ha forest area which are poor, degraded and low biodiversity value to local people. However, there are still 160ha area of production and forest land area has not been addressed. There are thus some existing forest land conflict issues at Phu Canh, however there is no plan to expand the protected area or acquire more land formally owned by local households.

Son La Province:

[7] Do, AT & Bui, MH. 2008. *Survey Report on Land Use and Forest Use at Ngoc Son – Ngo Luong*. Survey report for the Community-based Conservation and Ecotourism in Ngoc Son – Ngo Luong Project. Fauna and Flora International – Indochina Programme and Vietnam Forestry University.

[8] Nguyen, HV & Nguyen VD, 2015. Conflicts on Land-use Rights: Challenges for planning and managing special use forest in Vietnam. PanNature, Forland, Corenarm and Crd.

i) **Quynh Nhai PF:** Quynh Nhai PFMB has not even been legally established yet although it is assumed that it will be established with a land area of 9,163 ha (7,758 ha of existing forest), the same area currently assigned to Quynh Nhai Forest Protection Station (FPS). In the data initially provided by Son La DARD, this land was apparently allocated to local households, however follow-up with the Quynh Nhai FPS indicated that in fact the land had not been allocated to households yet and thus the legal 'owner' is the CPC i.e. the land is unallocated. It is not clear whether or to what extent there have been any surveys or efforts to begin the process of formally allocating lands to households in this area or not. However, apparently to date roughly 2,700 ha has been allocated to Quynh Nhai PFMB, which indicates that FLA processes are ongoing. Realistically, the process of allocating such a large area of forest land to the PFMB is extremely complicated, will take a long time and will be fraught with challenges in an area which is populated by upland ethnic minority groups that have been cultivating the area for a long time. If the land is indeed unallocated then allocation to the FMB, in spite of it's challenges would not be an issue in terms of formal land acquisition. Further and more detailed assessment is required at the site level.

Dien Bien Province:

Dien Bien province has issued a decision advocating for FLA to households and communities (in line with national government policy). However, FLA has been implemented slowly and poorly. Outcomes of these efforts and the current status of both agricultural and FLA is extremely confusing and unclear. In truth, further and more detailed consideration of these issues is required. However, the team is able to draw attention to the following situations at the respective sites:

i) **Dien Bien District PF:** Dien Bien PFMB is effectively a former State Forest Enterprise (same headquarters and same staff). Like many SFEs, it was restructured and became a PFMB in 2008. The PFMB was established with an area of about 1,000 ha. However, this land area has absolutely no basis in reality, specific location is not provided and no LUC is available for this area. Instead, currently Dien Bien PFMB has some 1,300 ha allocated and according to interviews with PFMB, they expect to be re-allocated more in the coming year. However, in Muong Nha commune and possibly others within the planned area of Dien Bien PFMB, suggested to be supported by the project it appears (according to information from the livelihoods survey consultant) that LUCs or 'red books' have indeed been issued by District PCs to households for both agricultural and forest land. However, the certificates do not specify the location of the plots effectively rendering them legally meaningless/useless documents. This is a very grey area. It would seem that it would not be the fault of the household that they had been issued with substandard legal documents, thus they could have a reasonable rightful claim to the particular land parcels they were using or at least some form of legitimate right, and thus there is a potential formal land acquisition issue.

ii) **Tuan Giao PF:** In Tuan Giao, surveying for FLA apparently began in 2013, however no LUCs have been issued, despite the fact that the data initially provided by SubDOF Dien Bien indicates it has been allocated to households. In which case legally the land still belongs to the CPC (unallocated land). However, if the process of FLA to households or communities had been started, it would mean that ethnic minority households/communities were being deprived of lands which although never formally allocated to them, had in fact been effectively 'promised' to them and they had begun assisting with the survey work to identify land parcels and plots (needs to be confirmed).

Another grey area, however again it would appear that local people would have a legitimate claim over the lands and that such FLA to the PFMB would be a formal land acquisition issue.

Another layer of confusion relates to recent surveys which have attempted to define which areas of 'forest' (not land) are to be managed by which communities. The purpose here does not concern the allocation of land rights but rights to manage and protect particular areas of forest and hence the basis for distributing PFES payments. Forest management areas are determined on a community (village) basis. The areas awarded to the villages therefore do not correspond to the total forest land area (because some of the forest land does not have forest on it and PFES payments are only made per the area of actual forest). It seems this process has also not been completed and villages have also not been formally presented with forest protection and management rights as yet.

iii) **Muong Phang SUF:** Muong Phang is a small site at just 2,403 ha, with only 1,003 ha actually allocated to the MB, the majority is apparently allocated to households. There are plans to increase the area of Muong Phang to roughly 6,000 ha through incorporating different surrounding areas including adjacent Pa Khoang Lake PF as well as other lands currently used by villages in Muong Phang and Pa Khoang communes (land allocation status unknown but people are living there). The FLA (to Muong Phang SUF) process began in December 2014 in Pa Khoang and is still ongoing. SUF regulations on land use and access to forest lands and resources are even more restrictive than PF areas, and such protected area expansion could also be an involuntary resettlement and land acquisition issue. The project would not support SUF expansion activities themselves. It is noted that JICA has already supported some of the SUF expansion activities under SUSFORM-NOW[9].

Lai Chau Province:

The proposed PFMB sites in Lai Chau (Tan Uyen, Than Uyen and Sin Ho) are the clear legal forest owners. The PFMBs have large areas of land allocated and the areas are not allocated to households, meaning formal land acquisition is not an issue in Lai Chau.

ii) Loss of productive land where the household has no existing/formal land right

The project proposes a considerable area for afforestation and ANR. Much of this is proposed within the boundaries of lands formally allocated to PFMBs or SUFMBs. Therefore, in general the FMBs are the de jure forest owner and are the legal entity entitled to make land use decisions such as which areas are available for afforestation and ANR. However, in reality many of these FMB areas are interspersed with lands under cultivation or at various stages of recovery within traditional upland swidden-fallow cycle employed by the different ethnic groups resident in or adjacent to the FMB area. In some cases, land has been illegally converted by recent migrants or new households. In many cases however ethnic minority households may have 'reasonable' claims to land based on customary or traditional land tenure systems going back many generations, pre-dating the establishment of the FMB, or indeed the modern Vietnamese State itself but whose claims were never formally recognised. In this case a project decision to afforest an area of 'bare' or 'degraded' land may in fact, effectively be acquiring a given households productive agricultural land. In such areas with steep slopes and marginal soils, it is necessary to leave land fallow to recover before once

[9] http://www.jica.go.jp/project/english/vietnam/004/news/general/141124.html

again becoming productive. Thus, afforestation may lead to future restrictions on ethnic minority livelihoods and food insecurity. This issue is prevalent at all sites in the project area and in general throughout the mountainous Northwest sub-region.

Vietnamese law does not recognise customary claims to such lands. The JICA Guidelines are also not explicit about how such a situation is to be treated. It seems unrealistic for the project to contradict national policies and sovereignty, and even if it were to, there would be many questions emerging, such as on what basis or criteria would the land claims of shifting cultivators be recognised? and what evidence would be acceptable? Therefore, it is proposed that this situation is resolved through consultation, negotiation and detailed participatory land use planning during implementation. Where there is a clear conflict situation leading to a loss of de facto productive assets and livelihoods, such lands should be eliminated from afforestation/ANR plans. In this manner involuntary resettlement (including land acquisition) can be avoided.

Another issue relating to involuntary resettlement and loss of de facto access to productive assets was mentioned during the Hoa Binh Provincial Stakeholder Consultation Meeting. There is a provincial plan to re-categorise production forest land covered with natural forest in the Song Da catchment as protection forest. Production forests are also allocated to households. This re-classification could lead to a restriction of access to productive assets and a loss of livelihoods. The project will not support this provincial plan to re-classify natural forest as protection forest but there may be a cumulative impact on livelihoods due to restricted access to agricultural lands under the project (as a result of reforestation or ANR in PF).

c) Loss of income sources or livelihoods

The loss of land (both land that is formally owned by households and land which is used informally) will have a direct impact on livelihoods and income sources for rural upland poor ethnic minority households in the project area. Households are almost unanimously and almost entirely dependent on upland agriculture as their main source of income as well as means to meet their own subsistence needs. Thus, any loss of productive land could have significant impacts. However, those who are willing or agree to use their lands (either formally owned or informally used) are also expected to gain substantial income from the project activities and be able to have continuous income from forest resources as well as PFES even after the project under the collaborative management contracts with PFMBs/SUFMBs.

Furthermore, a set of measures effective for recovering the loss of income source or livelihoods should be examined and implemented as one of the project component; hence, it is considered that the sources of income or livelihood conditions of local communities, especially those participating in the project, could be enhanced over the course of the project.

d) Restricted access to protected areas resulting in adverse impacts on incomes and livelihoods

The project does include a number of protected area sites. At all sites there are local ethnic minority populations residing within and/or on the periphery of the protected area. Local people continue to cultivate (often illegally) within the protected area boundary and they are also dependent to varying degrees on the natural resources of the protected area. Although the project will invest in certain actions and measures to improve forest protection, it is not perceived that such actions will lead to significant additional restrictions on such local

communities beyond the issues already discussed above for households with agricultural lands inside the protected areas but which are not formally or legally allocated.

2. Exclusion from and/or or inequitable distribution of project benefits (and costs):

There is the danger that the same communes and villages are selected for reasons of convenience or ease of implementation and/or that project benefits are skewed towards those households that are already better off (e.g. they have larger land areas for cultivation), leaving behind those poorer or more vulnerable households or groups such as more vulnerable ethnic minority groups, ethnic minority women or female headed households. During stakeholder consultations in several sites, participants raised the issue of how particular sites, communities and households are selected as beneficiaries, noting that the project must select certain communes and villages to participate in the project and exclude others. Participants stressed the need for this process to be open, accountable and transparent. Similarly, at the intra-community level, the issue of specifically who participates in and benefits from the project should be handled in an open and transparent manner and that benefits should be distributed 'equitably'.

3. Full and Effective Consultation and Participation:

With the project focusing primarily on forest development and implemented through FMBs, there are concerns that the project could be implemented in a top-down manner by the FMBs with local communities merely providing labour.

Whilst initial stakeholder consultation was conducted as part of the preparatory survey, consultation needs to be maintained throughout the project, and there is also a need for greater consultation at grassroots level among local people. It will be especially important during the initial planning stages of site-level implementation as a means towards verifying community support for interventions, particularly regarding the location of afforestation and ANR at the sites.

Beyond consultation, the effective participation of local people in project activities is also important. To be effective this means engaging local people and communities in a meaningful way such that they become genuine stakeholders in contributing to forest protection and development and project implementation at the sites.

4. Gender Issues:

Gender is an important consideration with respect to forest protection and development activities in Vietnam. Men and women often have gendered divisions of labour in relation to management, protection and use of forests. As in many parts of rural Asia, women in the remote areas of the mountainous North-west sub-region are often excluded from participating in natural resource planning and decision-making as well as certain activities due to patriarchal tenure systems, male-dominated cultural beliefs as well as the lack of women in official forest management positions, in spite of the fact that women are involved in many aspects of forestry and are often knowledgeable about various aspects of forest management.

Another factor that is specifically relevant in remote, ethnic minority regions of mountainous NW Vietnam is the fact that typically girls spend less time in school and drop out of formal education at a younger age than boys. This combined with other restrictions in terms of female roles within the home and the community and their exposure to outside communities means that often ethnic minority women in this region do not have as strong a grasp of the Vietnamese language – this in turn limits awareness, knowledge and participation. It is important to actively involve women in forest planning and livelihood development activities.

I.5. Stakeholder Consultation

I.5.1 Rationale and Purpose of Stakeholder Consultation

The guidelines state that in principle JICA recognizes the importance of; developing and implementing environmental and social safeguards from an early stage in project planning, early information disclosure and meaningful stakeholder participation in project design and implementation. Thus, Site-level and Provincial Stakeholder Consultation Meetings were conducted during the preparatory survey in June-July 2016.

The project is classified as a Category B project meaning that according to the guidelines stakeholder meetings should be conducted 'when necessary' (rather than as a pre-determined requirement as per Category A projects). In this case, the Environmental and Social Safeguards Specialists deemed site-level consultation with local stakeholders to be good practice in line with the spirit of the JICA Guidelines and environmental and social principles and appropriate and necessary in consideration of the large number of ethnic minority (indigenous) peoples in the project area and associated potential social issues related to access to lands and resources and loss of livelihoods. The site-level stakeholder consultation meetings provided an opportunity to receive local comments and feedback on the appropriateness and feasibility of proposed project interventions as well as further relevant perspectives on social issues and impacts.

The site-level stakeholder consultation meetings were carried out by a National Consultant under the guidance and supervision of the International and National Environmental and Social Safeguards Specialists and the International Livelihoods Specialist.

The specific objectives of the meetings were as follows:

1) To disclose information on project activities to local stakeholders at an early stage in project preparation
2) To provide an opportunity for local stakeholders to provide comments and feedback on the appropriateness and feasibility of proposed activities and interventions
3) To invite local participation in the assessment of environmental and particularly social benefits and risks associated with the project
4) To confirm the willingness of local stakeholders to participate in the project

Comments and feedback from the stakeholder consultation process will be noted and will help to inform the final analysis and assessment of project-related environmental and social issues as well as measures intended to enhance benefits and mitigate risks (i.e. the Environmental and Social Management Framework).

I.5.2 Approach and Contents of the Stakeholder Consultation Meetings

Project Information Disclosure:

In the first session the Consultant presented information on the features of the proposed project including:

- Project Stage and Development Process
- Project Rationale and Objectives
- Size and Scope of the Project
- Geographical Coverage and Project Sites

- Project Approaches and Strategies
- Project Components and Activities

Time was provided for clarifications and questions. A project information brochure/hand-out was also provided to workshop participants.

Appropriateness/Feasibility Consultation:

In the second session, local stakeholder participants provide comments on the project components, activities and approaches/strategies and their appropriateness/feasibility in the local context. In the site-level consultation meetings this was done using a participatory group work approach. With time constraints local level stakeholders focused primarily on the feasibility of community development components. Meanwhile at provincial level comments and feedback were received in a plenary/roundtable format.

Assessment of Environmental and Social Benefits and Risks:

In the third session, a presentation on environmental and social considerations is made. Then local stakeholders are asked to identify/confirm potential environmental and (mainly) social risks associated with the project and suggest appropriate mitigation measures. In the site-level consultation meetings this was done using a participatory group work approach. With time constraints local level stakeholders focused mainly on social safeguards issues related to forest development components. Meanwhile at provincial level comments and feedback were received in a plenary/roundtable format.

Confirmation of willingness to participate:

At the end of the meeting, all participants are requested to complete a 'voting slip' . As representatives of their respective agencies and jurisdictions, participants confirm whether they are willing to participate in the project (or not).

I.5.3 Schedule of Meetings and Stakeholders Consulted

The table below summarises the main groups of stakeholders consulted during the site-level and provincial meetings. Full stakeholder participant lists are provided in the **Appendix-E** for each meeting in Provinces.

Given the scale and scope of the project, limited resources and the short period of the preparatory survey it was not possible to conduct detailed stakeholder consultation at local levels (across 4 provinces and potentially up to 98 communes). However, efforts were made to ensure a reasonable level of consultation took place for all potential sites in the project and to maximise the number of communes consulted. At this stage consultation was primarily with the FMBs and relevant local government agencies and mass organisations as representatives of their constituencies. To address the gender concern that women may not be consulted in project design or participate in implementation, efforts were made to where possible, include Women's Union representatives at the workshops at site and provincial levels. Similarly, many of the local government staff are also ethnic minority peoples themselves, however ethnic minority interests were also represented through the inclusion of staff from Ethnic Minority Councils at the provincial level consultations.

In addition, some grassroots consultations were also conducted at a limited number of sites by the national environmental specialist in an attempt to at least do some consultation at this level. Key informant interviews and focus group discussions were held with ethnic minority households including groups of ethnic minority women.

The full list of sites and communes selected for consultation is shown in the schedule below with the total number of participants were around 455 people.

Table I.5.1: Schedule of Stakeholder Consultation Meetings

Province	Location	Participants	No.
Dien Bien (24-29 June 2016)			***76***
	Office of Dien Bien DARD	Dien Bien DARD, Sub-Department of Forestry, Dien Bien DPC, Dien Bien DARD, Muong Cha DARD, Dien Bien Forest Ranger Station and Muong Cha Forest Ranger Station FMBs: Dien Bien PFMB, Muong Cha PFMB; Muong Phang SUF Staffs from communes: Muong Nha, Na Tong, Phu Luong and Muong Tung, Muong Phang and Pa Khoang. Mass organisations: Communes Women Unions (WU); Famers Unions (FU)	30
	Tuan Giao PFMB	Tuan Giao DPC, Tuan Giao Ranger Station FMB: Tuan Giao PFMB Staffs from communes: Ta Ma and Phinh Sang Mass organisations: WUs of Ta Ma, Phinh Sang ; FUs of Ta Ma and Phinh Sang	17
	Dien Bien provincial meeting in DARD	Provincial Gov. agencies: DARD, SubDoF, SubFPD, DARDs, DONRE, DONREs, Department of Ethnic minority, Dien Bien DPC, Tuan Giao DPC, Muong Cha DPC, DPI, Ranger stations FMBs: Dien Bien, Muong Cha and Tuan Giao, Muong Phang SUF Mass organisations: Provincial WU	29
Lai Châu (1 -6 July 2016)			***100***
	Sin Ho district's meeting room	Sin Ho DPC FMBs: Nam Ma PFMB, Nam Na PFMB: Staff from communes: Hong Thu, Nam Cuoi, Nam Han, Phang So Lin, Chan Nua, Pa Tan, Sa De Phan, TT. Sin Ho, Tua Sin Chai Mass organisations: WUs of communes	30
	Tan Uyen PFMB	Tan Uyen DPC FMB: Tan Uyen PFMB Staff from communes: Nam Can, Nam So, Ta Mit, Muong Khoa, Tan Uyen Mass organisations: WUs of communes	25
	Than Uyen DPC	Than Uyen DPC FMB: Than Uyen PFMB Staff from communes: Muong Mit, Pha Mu, Khoen On, Muong Than, Ta Gia Mass organisations: WUs of communes	25
	Lai Chau Provincial meeting in DARD	Provincial Gov. agencies: DARD, SubDoF, SubFPD, DARDs, DONRE, DONREs, Department of Ethnic minority, Sin Ho DPC, Tan Uyen DPC, Than Uyen DPC, DPI FMBs: Nam Ma, Nam Na, Tan Uyen, Than Uyen PFMBs Mass organisations: Provincial WU	20
Sơn La (29-June - 6 July 2016)			***127***
	Thuan Chau district	Thuan Chau DPC FMBs: Copia Natural Reserve MB, Thuan Chau PFMB Staff from communes: Chieng Bom, Co Ma, Long He, Ban Lam Muong Bam, Nam Lau Mass organisations: WUs of communes	36
	Quynh Nhai district	Quynh Nhai DPC FMBs: Quynh Nhai PFMB Staff from communes: Ca Nang, Mieng Chieng, Pac Ma, Pha Khinh, Muong Giang, Muong Sai Mass organisations: WUs of communes	31
	Van Ho district	Van Ho DPC FMBs: Xuan Nha Natural Reserve MB Commune staff: Chieng Xuan, Tan Son, Xuan Nha, Chieng Son	27

Province	Location	Participants	No.
		Mass organisations: WUs of communes	
	Son La Provincial meeting in DARD	Provincial Gov. agencies: DARD, SubDoF, SubFPD, DARDs, DONRE, Department of Ethnic minority, Thuan Chau DPC, Quynh Nhai DPC, Van Ho DPC FMBs: Thuan Chau PFMB, Quynh Nhai PFMB, Copia NR, Xuan Nha NR Mass organisations: Provincial WU, FU	33
Hoa Binh (21-27 June 2016)			***152***
	Phu Canh Natural Reserve office	Da Bac DPC, Da Bac Ranger station FMBs: Da River PFMB, Phu Canh NR, Staff from communes: Dong Chum, Tan Pheo, Dong Ruong, Doan Ket, Dong Nghe, Muong Chieng, Suoi Nanh, Tien phong, Vay Nua Mass organisations: WUs of communes	44
	Hang Kia Pa Co Nature Reserve office	Mai Chau DPC, Mai Chau Ranger station FMBs: Hang Kia-Pa Co NR, Staff from communes: Hang Kia, Pa Co, Tan Son, Ba Khan, Tan Mai, Trung Hoa, Ngoi Hoa Mass organisations: WUs of communes	39
	Ngoc Son-Ngo Luong Natural Reserve	Lac Son DPC, Lac Son, Tan Lac Ranger station, Tan Lac DPC FMBs: Da River PFMB, Phu Canh NR, Staff from communes: Ngoc Lau, Ngoc Son, Tan My, Tu Do, Ngo Luong, Nam Son, Bac Son Mass organisations: WUs of communes	39
	Hoa Binh provincial meeting in DARD	Provincial Gov. agencies: DARD, SubDoF, SubFPD, DARDs, DONRE, DONREs, Department of Ethnic minority FMBs: Da River PFMB, Hang Kia Pa Co Natural Reserve, Ngoc Son – Ngo Luong Natural Reserve, Phu Canh Natural Reserve Mass organisations: Provincial WU, FU	30
TOTAL			**455**

Source: JICA Preparatory Survey Team (2016)

I.5.4 Summary of Key Findings and Results

Comments and Feedback on Basic Project Design

Table I.5.2 below summarises comments and feedback on project objectives/design and component activities.

Table I.5.2: Comments and Feedback on Project Design

Project Component	Comments/Feedback	Site-level/Provincial workshop
General Project Design/Objectives	• Agree with project objectives • Project beneficiaries should be emphasized on people who are living in the forest area • Areas for project implementation in some communes of 4 provinces should be increased.	All site-level and provincial workshops
Information Dissemination & Extensions	• People should be clearly provided concise and clear information on benefits and duties of all stakeholders before project implementation • To co-operate with other projects and programs in information dissemination and extensions • Training in advance for village heads • Design different dissemination channels to fit different stakeholders (ethnic groups, women, the poor, farmers, province/ district/commune, village level, etc.)	All site-level and provincial workshops

Project Component	Comments/Feedback	Site-level/Provincial workshop
Forest Development Components		
Forest Inventory & Planning	• Forests boundaries demarcation is very important. Thus, suitable budget should be considered • Supports for establish village regulations on land use and forest utilization should implemented before other project activities • Participation of local people representatives; • Detail land map with territory lines provided to local villages • Provide maps with detail and clear forest boundaries for each commune in the project area.	All site-level and provincial workshops
Improving Watersheds	• Agree with the proposal of the project • Local people, whose cultivation areas are being brought into afforestation activity of the project, should be brought into trees plantation activities with payment for their working time. • Some communes (Nam Can, Lai Chau province, Dong Chum, Hoa Binh province) complained that their bare land areas were much wider than proposed area • Benefit allocation should be transparency and fair.	All site-level and provincial workshops
	• There are some people, who want that project should focus its activities on regeneration and afforestation only. Meanwhile, project should focus on protection of current existing forests and application of regeneration because these bare land are food crops cultivation local people. • Too many communes with small/limited area for forest development (e.g. Nam Cha commune in Sin Ho district, Lai Chau province), making it difficult for project management	Provincial workshop in Dien Bien and Lai Chau
Silvicultural Infrastructure	• Agree with the proposal of the project • Not very practical in Son La and Hoa Binh because of steep topography and scattered forest. • Hire local people to take part in the construction and management.	All site-level and provincial workshops
Forest Fire Control	• Agree with the proposal of the project • This component should emphasize on capacity-building and training for village protection teams • Allocated some village funds or increase forest protection fees for local communities	All site-level and provincial workshops
Community Development Components		
Small-scale Infrastructure	• Participants agree that determination of SSI for each village will be based on consultation in participatory land use planning stage. • All participants agree that SSI investment for repairing and upgrading the SSIs only • All participants prioritize the village road to other infrastructures except participants in Lai Chau which prioritize water reservoir and renovation of water supply system given that road construction has been invested from other budget.	All site-level and provincial workshops
Livelihood Improvement	• Vegetables cultivation, husbandry raising models and capacity building were ranked the most important livelihood activities. New high productivity crop seeds for maize; cow and pig; • Good cultivation models suitable with weather conditions, poor soil quality, high sloping land and ethnic groups should be built and transferred to the villages	All site-level and provincial workshops

Project Component	Comments/Feedback	Site-level/Provincial workshop
	• Plantation of medicinal plants in protection forests is also received greater agreement of the participants in Dien Bien, Lai Chau, Son La such as cardamom (Thảo qủa), Amomum Villosum (Sa nhân), Flower of Japanese (Hoa Hoè); • The project should help to find the market for outputs or assist establishing value chains. • Application of improved stoves is suitable with households with Tai ethnic group, but it does not suit households of H'mong ethnic group in Dien Bien and Lai Chau. Biogas utilization is suitable with better-off households and in low land areas only • Handicraft activities such as weaving, knitting are proposed to deliver to local women in Lai Chau.	

Source: JICA Preparatory Survey Team (2016)

Comments and Feedback on Environmental and Social Issues

Table I.5.3 below summarises comments and feedback on potential environmental and social issues/risks and mitigation measures. Because feedback/comments are too general due to unclear information of the project in terms of where, what scale, how, when project activities will be carried out, the gathered information are quite identical from site to site. However, most of stakeholder believe this project has positive impacts, and the negative impacts (if any) are just very minor and temporary.

Table I.5.3. Summary of comments and feedback on potential environmental and social issues/risks

Project Component	Comment/Feedback	Site/District
Information Dissemination & Extensions	• Information on areas, benefits and duties should be disseminated before project activity implementation • Concise, clear and in time for every project related partners so as no need to have many meetings to update information • Differences between the project policy and that of the province need to negotiate and inform local communities • Assure understandable for local people especially women and ethnic minority people	All site-level workshops
Forest Development Components		
Forest Inventory & Planning	• The following potential social risks are stated by the participants: Loss of rights to use land, Increment of conflicts over boundary between villages, and between households, conflicts over benefits given by the project activities may happened, reduction of land for food crop cultivation. • The solution they proposed was that the project managers should keep local villagers informed about the activity's plan and schedule, all results of inventory and planning must be discussed clearly in village meetings, and the consultation process should be conducted carefully.	All site-level workshops
Improving Watersheds	• Loss of right for logging of timber for housing • Poor households will be affected due to being unable to collect bamboo shoots, firewood for sale • Increased inequality between people in planned area (have their production land lost) and people outside planned area (do not lose production land)	All site-level workshops

Project Component	Comment/Feedback	Site/District
Silvicultural Infrastructure/ Forest Fire Control	• No potential social risk	All site-level and provincial workshops
Community Development Components		
Small-scale Infrastructure	• Social risk is small • Temporarily impacts on farming land • Temporary impact on access to the field;	All site-level and provincial workshops
Livelihood Improvement	• Increased inequality between project beneficiaries (who receive supports from the project) and people outside planned area (who do not receive any support from the project) • Favor concentration on some groups who have good relationships with local leaders; • Unstable market price for farming products may challenge the success of introduce crops	Site-level and provincial workshop

Source: JICA Preparatory Survey Team (2016)

In conclusion, all participants show their willingness to support the project and they all wish that activities of the project would be implemented as early as possible.

The results of consultation workshops show that the proposed project objectives and project components are suitable. Activities of all components are applicable. Among the proposed activities, livelihood development activities and SSI supports have received greater interests of the participants. It is agreed that all sustainable forest protection cannot be established without significant livelihood investments. Moreover, there is a need to find out types of supports, suitable supports mechanism, and cultivation models for livelihood development suitable with natural conditions and ethnic groups in each site.

In terms of social and environmental issues, there is an agreement that there are some social risks. These include loss of rights to use land, increment of conflicts over boundary, reduction of land for food crop cultivation, reduction of area for cattle grazing, loss of minor forests products and so on. However, it is said the possibilities for these social risks are at low level. This analysis is derived from perception that people still have enough land for cultivation, while they are going to receive livelihood development supports, income from their activities on forest protection and development and so forth. It is strongly recommended that there should be employed FPIC before/during project implementation to avoid any social and environmental risks (if any).

I.6. Environmental and Social Management Measures and Monitoring

I.6.1 Introduction

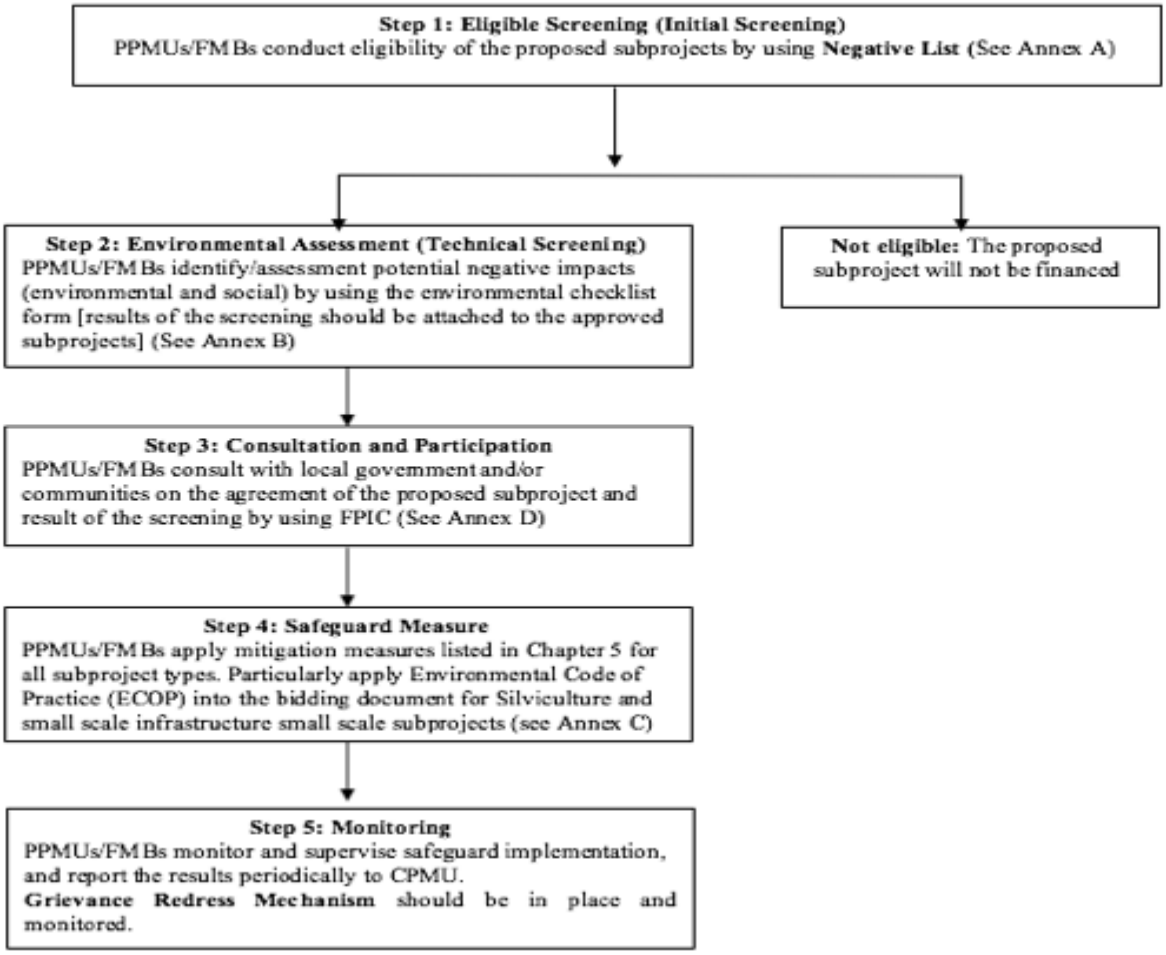
The Integrated ESMF is prepared to ensure that potential adverse environmental and social impacts associated with the project could be minimized in accordance with JICA's policies on environmental and social considerations in development projects, as well as Vietnam's own relevant policies, laws and regulations.

The ESMF aims to manage the potential adverse impacts by establishing a guide consisting of a set of relatively simple procedures and measures to facilitate adequate environmental and

social management, including risk management of environmental and social impacts, in relation to the activities to be financed by the project.

The Integrated ESMF is comprised of the following elements:

1) **Negative Checklist:** Eliminates activities and/or provides conditions so as to ensure the scope and scale of project impacts do not exceed that of it's categorisation level i.e. Category B)
2) **Environmental Management and Monitoring Procedures:** Provides guidance for meeting environmental planning requirements for management and mitigation of small-scale infrastructure sub-projects and monitoring
3) **Consultation and Participation Guidelines:** Provides guidance for free, prior and informed consultation (FPIC) processes, stakeholder engagement and participation and serves to meet the requirements for ethnic minority development planning



Source: JICA Preparatory Survey Team (2016)

Figure I.6.1. Schematic Flowchart for Safeguard Actions for Subprojects

I.6.2 Negative Checklist

The Negative Checklist eliminates activities and/or provides conditions so as to ensure the scope and scale of sub-project impacts do not exceed that of it's categorisation level i.e.

Category B, the negative checklist has been prepared (below and **Appendix-A**), and does not invite the requirement for further environmental clearance.

This first screening step is required for all proposed subprojects/activities to confirm the eligibility of subproject and/or activities to be financed by the Project. If proposed activities are listed in the negative list, it means that these proposed activities would not be financed by the Project. At this step, PPMUs/FMBs will be responsible for checking the proposed activities against negative checklist. The negative checklist eliminates sub-projects which involve the following activities or impacts:

Environmental Considerations

1. Conversion of natural forest
2. Conversion of >5ha of Protection Forest
3. Conversion of >50ha of any kind of forest
4. Road construction inside SUF core zones
5. Use of non-native species in afforestation/ANR activities in SUFs
6. Use of non-approved stand designs for afforestation/ANR activities in Protection Forests (should promote use of native species and encourage natural regeneration without enrichment)
7. Construction of roads of 50 km (class IV mountainous roads) or more
8. Construction of irrigation and water supply and drainage works for agricultural, forestry and fishery production in the area over 500 hectares
9. Construction of reservoirs with capacity/volume of 100,000 m^3 or more
10. Purchase and use of dangerous substances such as toxic chemicals, explosives, inflammable, prohibited pesticides and fertilizers
11. Other subprojects (with scope and scale) which lead to the requirement for national EIA clearance (according to Decree 18/2015).

Social Considerations

12. Involuntary resettlement
13. Land acquisition
14. Activities affecting physical cultural resources such as graves, temples, pagodas, churches, historical relics, archaeological sites, and other religious structures

I.6.3 Environmental Management and Monitoring Procedures

I.6.3.1 Scope of Application

Environmental Management and Monitoring Procedures (EMMP) will be applied in particular for the civil works/construction activities which may have negative environmental impacts. There are two kind of small civil works:

1) Silviculture infrastructure: Upgrade and construct silvicultural infrastructure, such as motorbike/forestry roads, watch towers, guard stations, fire break lines, and information boards, to enable forest owners to improve and manage forests, especially protection and special use forests, in a proper and sustainable manner.

2) Small-scale rural infrastructure: Improve small-scale rural infrastructure, such as village roads, communal irrigation systems, and water supply systems, which could increase productivity or profitability of existing or potential income generating/livelihood improvement activities and/or contribute to the improvement of living conditions in the target communes/villages.

I.6.3.2 Procedures and Institutional Responsibilities

EMMP will be undertaken after the proposed activities has passed the screening of negative checklist. In particular, the proposed activities should be further analyzed in term of environmental and social impact. In this regard, Site-level Implementation Plan Environmental and Social Checklist has been prepared (**Appendix-B (3))**. In addition, the simple ECOP (**Appendix-C**) has been prepared for incorporated into the bidding document for the contractor contracts of infrastructure subprojects.

In fact, the EIA would be required and prepared for the whole project. However, it is suggested that for individual subprojects, particularly the silviculture and small scale infrastructure projects should be further analysed and assessed in term of environmental and social risk by applying the Site-level Implementation Plan Environmental Checklist. This procedure might be especially helpful for proposed activities which might not be listed in the initial proposed activities and subject to the government EIA/EPP procedures and cleared at the district level.

FMBs will be responsible for undertaking this procedure for their respective site-level implementation plans. PPMBs will be responsible for due diligence and checking to make sure the procedure has been correctly applied. Further, due diligence and periodical checks and spot-checks should also be carried out by the CPMB with support from the international/national safeguard consultants. Training will be provided during implementation to ensure all stakeholders understand the procedures and their responsibilities.

I.6.3.3 Environmental Management Plan/Environmental Code of Practice (ECOP)

As mentioned in the table I.4.1, the rehabilitation/upgrading of small-scale rural infrastructure and silviculture infrastructure could generate minor environmental impacts on air/dust, water sources, chemicals/pollutants, noise, waste disposal during the construction. However, these impacts will be inconsiderably, temporally and under the country's emission standard. To minimize these limited impacts, Environmental Management Plan - the Environmental Code of Practice (ECOP - see **Appendix C**) has been prepared.

ECOPs outline typical generic low-level impacts that can be expected to occur in a wide range of small scale temporary construction activities in the four provinces. They include mitigation measures for these impacts and a process for including them in the construction contracts of contractors. During the detailed design of technical specifications for each construction contract, the technical design consultant will incorporate into the contract the parts of the ECOPs specific to that contract, as well as the specific measures identified should be strictly followed by the contractors during the construction time.

Table 6.1 briefly introduce the proposed Environmental Management Plan/Environmental Code of Practice. The detail ECOP has been included in **Appendix C**.

Table I.6.1: Proposed Environmental Management Plan/Environmental Code of Practice

Potential Environmental Impact	Proposed Mitigation/Enhancement	Responsibility	Cost
Construction Phase			
Dust generation/ Air pollution	- The Contractor implement dust control measures to ensure that the generation of dust is minimized. ✓ water dusty roads and construction sites. ✓ cover materials loaded/stockpiled in the sites to protect soils and materials stockpiled from being exposed to wind. ✓ prevent soils, sands, materials and dusts from scattering during transportation.	Contractor	to be included in construction cost
Water pollution (Water quality)	- Portable or constructed toilets must be provided on site for construction workers. Wastewater from toilets shall be discharged into a holding tank for removal from the site - Wastewater over permissible values set by relevant Vietnam technical standards/regulations must be collected in a storage tank and removed from site by licensed waste collectors.	Contractor	to be included in construction cost
Solid waste (Waste)	- At all places of work, the Contractor shall provide litter bins, containers and refuse collection facilities. - No burning, on-site burying or dumping of solid waste shall occur. - Recyclable materials such as wooden plates for trench works, steel, scaffolding materiala, packaging material, etc. shall be collected and separated on-site from other waste sources for reuse, for use as fill, or for sale.	Contractor	to be included in construction cost
Chemical or hazardous wastes (Waste)	- Used oil, lubricants, cleaning materials shall be collected in holding tanks and removed from site. - Chemicals shall be stored in a safe and appropriate manner by roofing, fencing and appropriate labelling.	Contractor	to be included in construction cost
Drainage and sedimentation (Soil)	- Areas of the site not disturbed by construction activities shall be maintained in their existing conditions.	Contractor	to be included in construction cost
Soil Erosion (Soil)	- The excavation in the open cutting area shall be avoided during heavy rainy season. - The tentative prevention measures against soil erosion shall be prepared before rain	Contractor	to be included in construction cost
Restoration of affected areas (Soil)	- Cleared areas such as disposal areas, site facilities, workers' camps, stockpiles areas, working platforms and any areas temporarily occupied during construction of the project works shall be restored using landscaping, adequate drainage and vegetation. - Trees shall be planted at exposed land and on slopes to prevent or reduce land collapse and keep stability of slopes.	Contractor	to be included in construction cost
Noise and vibration	All vehicles must have appropriate "vehicle inspection certificate," and "technical safety and environmental protection certificate" to avoid exceeding noise emission from poorly maintained machines. - Permissions from local authorities should be obtained in case of night time activities, if necessary.	Contractor	to be included in construction cost
Disruption of vegetative cover and ecological resources (Ecosystems)	- Areas to be cleared should be minimized as much as possible. - The application of chemicals for vegetation clearing shall not be permitted. - Cutting of any tree shall be prohibited unless such an act is explicitly authorized in the vegetation clearing plan. - When needed, temporary protective fence shall be set up to efficiently protect the preserved trees before commencement of any works within the site. - The Contractor shall ensure that no hunting, such as trapping shooting, poisoning of fauna, takes place.	Contractor	to be included in construction cost
Communication with local	- The contractor shall disseminate project information to communities/groups/ entities affected by the construction (for	Contractor	to be included in construction cost

Potential Environmental Impact	Proposed Mitigation/Enhancement	Responsibility	Cost
communities (Resettlement)	example local authority, enterprises and affected households, etc) through community meetings before construction commencement. - The contractor shall provide a community relations contact from whom interested parties can receive information on site activities, project status and project implementation results. - Local residents shall be informed about construction and work schedules, interruption of services, and traffic detour routes as appropriate - Notification boards shall be erected at all construction sites providing information about the project.		
Worker and public Safety (Work environment)	- The contractor shall train workers on occupational safety regulations and provide sufficient protective clothing for workers in accordance with applicable Vietnamese laws. - Fences, barriers, dangerous warning shall be installed around the construction area which showing potential danger to public people. - The contractor shall provide safety measures as installation of fences, barriers warning signs, lighting system against traffic accidents as well as other risk to people and sensitive areas. - First-aid stations, safety equipment, and warning signals shall be placed.	Contractor	to be included in construction cost
Traffic management (Work environment)	- Signs/notices with directions, safety advice and warning shall be placed around the construction areas to facilitate traffic movement. - Safe traffic control measures, including road/rivers/canal signs and flag persons, shall be employed to warn of dangerous conditions	Contractor	to be included in construction cost
	Operation Phase		
Air Quality, Noise and Vibration	- All the constructed facilities, especially forest roads and commune roads, shall be properly maintained on a regular basis.	FMBs/ PPMBs	to be included in construction cost
Water Quality	- All the constructed facilities, especially irrigation and water supply facilities, shall be properly maintained on a regular basis.	FMBs/ PPMBs	to be included in construction cost
Accidents	- Staff of FMBs/CPCs and communities concerned shall be trained on operation and maintenance.	FMBs/ PPMBs	to be included in construction cost

I.6.3.4 Environmental Monitoring Plan

Safeguard implementation, monitoring, and reporting is an integral part of the project implementation and specific safeguard officer under each PPMB/FMB shall be assigned to be responsible for the activities. At the stage of site-level implementation planning, the designated staff responsible for safeguards at the FMB shall ensure that the CPGs have been correctly followed e.g. to ensure that communities have been selected appropriately, social assessments and participatory land use planning have been carried out according to the specified requirements so that interventions are appropriate and could be broadly supported by communities. Each of these safeguards requirements has corresponding process indicators. Therefore, it is the job of the designated safeguards staff to collect and collate the various forms that provide evidence of the consultation and participation processes. In addition, he/she should also check the proposed plan against the Negative Checklist.

Once project activities have been appraised and approved (requiring environmental clearance or not), it is necessary to monitor the implementation of the activities to ensure that environmental and social impacts do not occur and/or are being managed and mitigated appropriately. For example, the designated FMB staff responsible for environmental and social safeguards should follow up during the implementation of activities such as the

construction/upgrade of forest roads to ensure that environmental protection measures pertaining to tree-clearance, road width, management and use of chemicals and hazardous substances and other safeguards are being implemented in reality by the contractors.

The safeguard compliance during the project/subproject implementation should be also closely monitored by staff from local authorities; provincial and district Environment Officers; Technical staff of CPMU and representatives from local NGOs, Cooperatives and Associations; and community mass organizations such as Social Groups, women's Unions, youth unions. Regular/periodic visits should also be carried out to confirm that the potential positive impacts have been led by the project and mitigation measure have been carried out properly by the awarded contractors/implementer.

Table I.6.2 below shows the proposed environmental monitoring plan, especially for silviculture infrastructure (forest roads, sub-stations, watchtowers, fire-breaks, etc.) and small-scale infrastructure (commune roads, water supply, irrigation facilities) which expectedly would generate minor temporary/reversible environmental impacts on air/dust, water sources, chemicals/pollutants, noise, waste disposal during the construction.

Table I.6.2 (1):Environmental Monitoring Plan (for Construction)

Items	Parameters	Location	Method	Frequency	Responsibility [10]	Due Diligence
Construction Phase						
Dust generation/ Air pollution	Dust, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMB Safeguards Officer (and CPMB/TA Consultant)
Water pollution (Water quality)	Water quality change, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMB Safeguards Officer (and CPMB/TA Consultant)
Solid waste (Waste)	Volume and kind of construction wastes, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMB Safeguards Officer (and CPMB/TA Consultant)
Chemical or hazardous wastes (Waste)	oil, lubricants, cleaning materials, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMB Safeguards Officer (and CPMB/TA Consultant)
Drainage and sedimentation (Soil)	mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMB Safeguards Officer (and CPMB/TA Consultant)
Soil Erosion (Soil)	Visual monitoring of storm water runoff, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMB Safeguards Officer (and CPMB/TA Consultant)
Restoration of	mitigation	Subproject	Visit site and	Bi-annually	FMB	PPMB

[10] FMB shall be supported by NREO as required. Simple monitoring form shall be drafted by TA Consultants and applied by FMBs in the field.

Items	Parameters	Location	Method	Frequency	Responsibility [10]	Due Diligence
affected areas (Soil)	measure implemented	areas	visual check		Safeguards Officer/ CPC	Safeguards Officer (and CPMB/TA Consultant)
Noise and vibration	Noise, complain from local resident mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMB Safeguards Officer (and CPMB/TA Consultant)
Disruption of vegetative cover and ecological resources (Ecosystems)	Illegal tree clearing, wild animal hunting, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMB Safeguards Officer (and CPMB/TA Consultant)
Communication with local communities (Resettlement)	Complaint from local resident, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMB Safeguards Officer (and CPMB/TA Consultant)
Worker and public Safety (Work environment)	Training for worker, fences, barriers warning signs, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMB Safeguards Officer (and CPMB/TA Consultant)
Traffic management (Work environment)	Signs, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMB Safeguards Officer (and CPMB/TA Consultant)
Operation Phase						
Accidents (Work environment)	Regularly maintenance	Subproject areas	Record the accident Check the training record	Annually	PPMB, FMB	

Source: JICA Preparatory Survey Team (2016)

Furthermore, the following table gives the proposed monitoring plan on the potential environmental and social risks associated with the forest development activities.

Table J.6.2 (2):Environmental Monitoring Plan (for Forest Development)

Items	Parameters	Location	Method	Frequency	Responsibility [11]	Due Diligence
Construction Phase						
Disturbance of ecosystem	Design, Species planted,	Subproject areas	Visit site and visual check	Bi-annually	PPMB, FMB	PPMB Safeguards Officer (and CPMB/TA Consultant)
Resettlement (loss of income or loss of access)	Process of selection of the project areas, Negative impact on household economy	Subproject areas	Interviews	Bi-annually	PPMB, FMB	PPMB Safeguards Officer (and CPMB/TA Consultant)
Affects on	Any direct or	Subproject	Interviews	Bi-annually	PPMB, FMB	PPMB

[11] FMB shall be supported by NREO as required. Simple monitoring form shall be drafted by TA Consultants and applied by FMBs in the field.

Items	Parameters	Location	Method	Frequency	Responsibility [11]	Due Diligence
livelihoods	indirect impact on livelihoods	areas				Safeguards Officer (and CPMB/TA Consultant)
Operation Phase						
Affects on livelihoods (loss of income or loss of access)	Any direct or indirect impact on livelihoods	Subproject areas	Interviews	Annualy	PPMB, FMB	PPMB Safeguards Officer (and CPMB/TA Consultant)

Source: JICA Preparatory Survey Team (2016)

Appendixes-G and H show the draft TORs for environmental monitoring and the samples of the environmental monitoring forms in and post project periods, respectively.

I.6.4 Consultation and Participation Guidelines

I.6.4.1 Objectives and Principles of the Consultation and Participation Guidelines

Detailed guidance for the Consultation and Participation Guidelines is provided as **Appendix-D.**

The Consultation and Participation Guidelines (CPG) have been developed to ensure that all local communities and households;

a) are adequately informed about the project's objectives, activities, benefits and risks;

b) have equitable opportunities to participate in the project;

c) receive culturally appropriate benefits responsive to their interests, capacities and priorities which will be identified through prior consultations, and that those benefits are shared in an equitable way;

d) are not adversely impacted by the project (or associated/linked) activities and/or that any adverse impacts are managed and mitigated appropriately;

e) have the opportunity to raise project-related grievances and have processes in place for their redress.

In principle, firstly the CPGs are applied at all project sites and throughout project implementation and is focused on ensuring that vulnerable groups (including poor/near poor, landless, ethnic minority groups and women) in particular are properly consulted in site-level project planning and that they have equitable opportunities to participate in the project, based on internationally recognised principles of free, prior and informed consultation and participation.

Secondly, it is intended that the CPGs provide guidance such that the substantive elements of indigenous peoples planning are met in accordance with the JICA guidelines. The term indigenous peoples is not used in Vietnam with respect to peoples within its own borders. However, the country does recognise 54 ethnic groups including the ethnic majority Kinh people as well as 53 other ethnic minority groups, who share many of the characteristics of the internationally recognised definition of indigenous peoples (e.g. having cultural and belief systems, language, institutions which are distinct from the majority and close associations with/dependency on forests and natural resources). The overwhelming majority of project-affected households are ethnic minorities. Therefore, rather than having a separate stand-alone Indigenous Peoples Planning Framework or an Ethnic Minority Development

Framework (EMDF), it is proposed that the substantive elements are integrated here within the ESMF and the CPGs provide a process of stakeholder engagement and free, prior and informed consultation leading to broad community support for the site-level interventions. The site-level implementation plan includes the required elements of the Indigenous Peoples Plan or Ethnic Minority Development Plan (EMDP), as it would more appropriately be termed in Vietnam.

I.6.4.2 Stakeholder Engagement and Free, Prior and Informed Consultation Elements and Procedures

The key elements and procedures in the CPGs include the following:

- Community/Village Selection Procedures
- Baseline Social Assessment
- Confirmation of Broad Community Support
- Participatory Land Use Planning
- Site-level Implementation Planning
- Beneficiary Selection
- Grievance Redress Mechanism

Detailed guidance on these elements and procedures is provided as **Appendix-D**.

I.6.5 Institutional Responsibilities for ESMF Implementation and Monitoring

I.6.5.1 Central Level

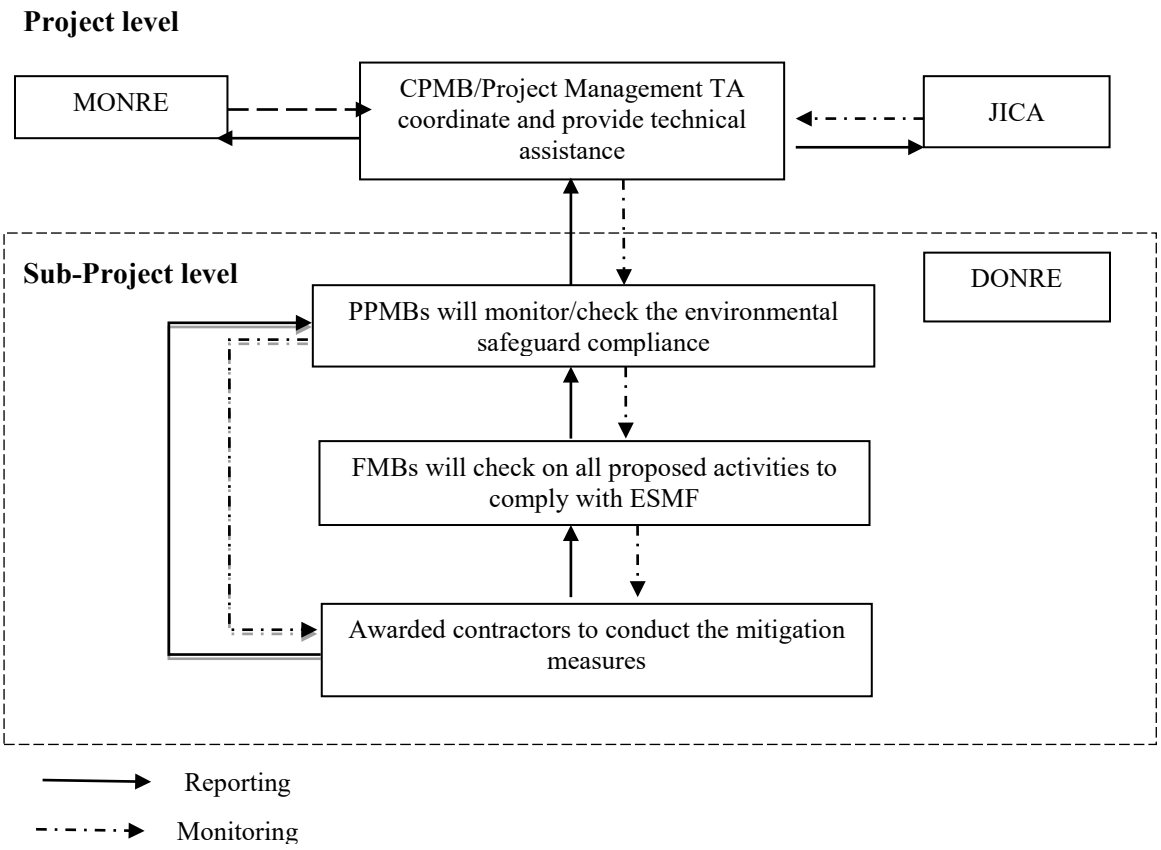
MoNRE is the environmental management authority at the central level in Vietnam. As part of its management function, MONRE appraises and approves environmental reports and carries out post-EIA monitoring given that the project impact is positive by mostly restoring and improving the forest cover/quality.

At the central level, the MBFP under MARD will be the overall coordinators of the project. In addition to that, the project consultat will be also expected. In this regard, the environmental and social safeguard technical advice will also be provided during the project implementation.

I.6.5.2 Provincial Levels

PPMBs will be established in each of the four provinces under the DARDs/PPCs and will be the main body responsible for project management and implementation in each province. This will include management and oversight of safeguards tasks, especially ESMF implementation and monitoring. A designated safeguard staff of PPMBs will be responsible for monitoring and cooperating with FMBs on environmental safeguard compliance. FMBs will also assign a designated safeguard staff in charge of checking on all planned activities against Negative Checklist, additional requirement for environmental and socio monitoring, ensure full and effective consultation and participation and full environmental and social compliance and reporting during the project implementation at site level.

DoNREs are the provincial agencies responsible for environmental management and will provide additional monitoring oversight for the environmental and social safeguard compliance during project implementation. The institutional arrangements for ESMF monitoring and reporting are presented below.



Source: JICA Preparatory Survey Team (2016)

Figure I.6.2 Diagram of institutional arrangement on safeguard compliance monitoring and reporting

The table below highlights key environmental and social management roles of the different project stakeholders in the institutional framework.

Table I.6.2: ESMF Main Institutional Responsibilities in the Project Cycle

Institution	ESMF Main Responsibilities
CPMB	1. Pre-project EIA – procure and manage consultant 2. Advise on the integration of national/project EIA measures and procedures with those proposed here 3. Overall oversight on ESMF and safeguards implementation and monitoring 4. Establishment of a project monitoring system including relevant safeguards indicators 5. Periodical checks and due diligence on safeguards reports, monitoring data etc.
Project Consultant	1. Support CPMB/FMBs with elaboration of project information brochures for disclosure and consultation, guidance to FMBs and consultants on information disclosure and consultation 2. Training for PPMB and FMB safeguards officers on safeguards requirements 3. Technical design of SA methodology and tools, elaboration of monitoring indicator set, advice to CPMZB on monitoring system establishment (for safeguards indicators), support CPMB/PPMBs with management of SA consultant/NGO, provision of SA training 4. Development of PLUP approach and guidelines, training on PLUP to FMBs and consultants, and support CPMB/FMBs with management of PLUP consultants 5. Safeguard checks on subprojects, especially to verify avoidance of involuntary resettlement and land acquisition issues 6. Development of EMMP checklist, procedures and training; Safeguard checks 7. Due diligence follow ups

Institution	ESMF Main Responsibilities
	8. Technical guidelines for component technical approaches, safeguard checks/guidelines for particular activities (if required) 9. Development of monitoring forms, review of monitoring data, reporting, assistance with evaluations
PPMBs	1. PPMB will assign an environmental and social safeguards officer 2. The safeguards officer will facilitate the work of the PMC safeguards specialists in the field as required 3. The safeguards officer will be responsible for ensuring the proper implementation of the ESMF at the project sites within their respective province through checking site implementation plans and specific activities/items requiring Environmental Management and Monitoring as per the EMMP procedures outlined. 4. The safeguards officer will be responsible for collating and checking monitoring of activities at the sites in the province, and reporting to CPMB 5. Due diligence checks (as required)
FMBs	1. FMBs will assign a member of staff to be responsible for ensuring ESMF implementation and monitoring at the site level 2. Organise stakeholder engagement and free, prior and informed consultation processes 3. Backstopping guidance and logistical support to SA, participation as key informants 4. Backstopping guidance, logistical support to and participation in PLUP 5. Receipt of funds for subprojects, beneficiary selection, subproject implementation and management, community-based operation and maintenance 6. Receive and address project-related complaints and grievances 7. Report to PPMBs on implementation of safeguards-related aspects e.g. PLUPs, site-level implementation plans, Environmental Management and Monitoring as per the EMMP procedures, grievances etc.

Source: JICA Preparatory Survey Team (2016)

I.6.6 Capacity Development for ESMF Implementation and Monitoring

In order to implement the proposed ESMF and associated safeguards procedures effectively, it is necessary to build the capacity of various agencies and stakeholders. Tables I.6.3 and I.6.4 below provide some suggested/tentative itineraries for environmental and social safeguards trainings during the project implementation.

Training 1 would be for staff of CPMB, PPMB and FMBs with designated environmental and social safeguards responsibilities and would focus specifically on applying the ESMF.

Table I.6.3: Training Programs for Capacity Building on Safeguard Implementation and Compliance

Training 1	JICA Environmental and Social Guidelines and ESMF Procedures
Participants	1. Designated staff CPMB/MARD 2. Designated safeguards staff of DARD/PPMBs 3. Designated safeguards staff of FMBs
Duration	3 days training per province (including 1 day on-the-job training in the field) to be repeated once a year in the first three years
Content	The detail content of training would be further developed by the consultant with clearance by CPMU and JICA, but may tentatively include • Legal framework on environmental and social safeguards of Vietnam and JICA guidelines • UNFCCC REDD+ Safeguards • Environmental and Social Considerations and Potential Impacts • ESMF Procedures: Negative Checklist • ESMF Procedures: Environmental Management Monitoring Procedures

	• ESMF Procedures: Consultation and Participation Guidelines (Social Assessment, FPIC, Beneficiary Selection, Grievance Redress Mechanisms)
Consultant input	International and National Environmental and Social Specialists (see **Appendix-F**)

Source: JICA Preparatory Survey Team (2016)

Training 2 would be more generic and could involve a broader range of participants from the FMBs to provide

Table I.6.4: Training Programs for Capacity Building on Safeguard Implementation and Compliance

Training 2	**General Co-management/Participatory Forestry and REDD+ Training**
Participant	1. Designated staff of FMBs,
Time	1 day presentation and 1 day on-the job training/province repeated once a year in the first 3 years
Content	The detailed content of training would be further developed by the qualified TA Consultant firm or individual hired by CPMU/JICA. Contents may tentatively include: • Community-based Natural Resource Management/Participatory Forestry • REDD+ (including REDD+ Safeguards) • Sustainable livelihoods and PRA skills • Free, Prior and Informed Consultation/Consent (FPIC) • Participatory Land/Resource Use Mapping • Land/Resource Conflict Management • Co-management • Gender Issues in forestry, forest conservation
Consultant input	International and National Environmental and Social Specialists (see **Appendix-F**)

Source: JICA Preparatory Survey Team (2016)

The capacity-building programme will help to addresses gaps in the existing environmental and social management system. The programme should be designed and delivered (or at least supervised) by the appropriately qualified environmental and social specialists of the TA Consultant hired by the CPMU/JICA. The trainings are necessary to ensure that the environmental and social safeguards are effectively operationalised, and in many cases are also linked to the effective implementation of the project activities. It is suggested that the training courses should be carried out as soon as possible after commencing of the project and repeated at least once a year in the first three years. The detail content of training course should be further developed by hired consultants with comments and clearance of CPMU and JICA. The template of TOR of the consultants have been attached as **Appendix-F.**

I.6.7 Necessary Arrangement for Implementation of the ESMF

The ESMF and its associated capacity development activities will be implemented by CPMB and PPMBs by using the Vietnamese budget, except for those needed for REDD+ Safeguard experts. **Appendix-I** describes types of activities and inputs needed and financially covered by the project, either the GoV's budget or JICA loan.

Appendix

Appendix-A: Negative Checklist

No	Type of subprojects
Environmental Considerations	
1.	Sub-projects that result in any clearance of natural forest
2.	Conversion of >5ha of Protection Forest
3.	Conversion of >50ha of any kind of forest
4.	Road construction inside SUF core zones
5.	Use of non-native species in afforestation/ANR activities in SUFs
6.	Use of non-approved stand designs for afforestation/ANR activities in Protection Forests (should promote use of native species and encourage natural regeneration without enrichment)
7.	Construction of roads of 50 km (class IV mountainous roads) or more
8.	Construction of irrigation and water supply and drainage works for agricultural, forestry and fishery production in the area over 500 hectares
9.	Construction of reservoirs with capacity/volume of 100,000 m^3 or more
10.	Purchase and use of dangerous substances such as toxic chemicals, explosives, inflammable, prohibited pesticides and fertilizers
11.	Other subprojects (with scope and scale) which lead to the requirement for national EIA clearance (according to Decree 18/2015).
Social Considerations	
12.	Involuntary resettlement
13.	Involuntary land acquisition and loss of livelihoods
14.	Activities affecting physical cultural resources such as graves, temples, pagodas, churches, historical relics, archaeological sites, and other religious structures

Any subprojects or activities of subprojects listed in the negative list are not allowed to be financed by the project

Appendix-B (1): Environmental Checklists

a. Forestry Project

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) N (b) N (c) N/A (d) N	(a) As regulated in the Decree No 18/2015/ND-CP dated February 14th 2015 and Circular No 27/2015/TT-BTNMT dated May 29th 2015, an EIA is required as part of the project approval process on GoV side but has not been conducted yet. (b) EIA report shall be prepared by the project proponent (MBFPs) and submitted to MONRE for obtaining of approval before submission of pre-F/S for approval of PM. (c) See above. (d) Beyond the project-level EIA, no further approvals are required.
	(2) Explanation to the Local Stakeholders	(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) Stakeholder Consultation Meetings were held during the project preparation survey, however this was restricted to consultations with local level government authorities and mass organisations and did not include adequate consultation with project affected communities and households. Further consultation is therefore required specifically at project site levels prior to implementation of specific activities. Such consultation is provided for in the ESMF - see Consultation and Participation Guidelines (Appendix D) (b) Comments from project stakeholders (Forest Management Boards, Local government authorities (PPC, CPC, DARD, DoNRE, CEMA etc.) and mass organisations) were noted and reflected in project design. However, comments from affected communities and households should be absorbed into detailed design of interventions at the site level.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Full consideration of an alternative for the project has not been considered however the project design has been examined with respect to environmental and social considerations during the preparatory survey. Certain activities have been eliminated or altered so as to ensure that environmental and social impacts are avoided, minimised or otherwise mitigated during implementation (see ESMF).
2 Pollution Control	(1) Air Quality	(a) Do air pollutants, such as dust, soot and dust, sulphur oxides (SOx), nitrogen oxides (NOx), and organic chemical substances emitted from various sources, such as logging operations, forest products manufacturing processes, and incinerators comply with the country's emission standards and ambient air quality standards? Are any mitigating measures taken?	(a) N/A	(a) There will be no project activities with any significant impact in terms of air pollution.
	(2) Water Quality	(a) Is there a possibility that the use of chemicals, such as fertilizers, and agrochemicals will cause water pollution? (b) Where facilities, such as forest products manufacturing facilities are installed, do effluents from the facilities comply with the country's effluent standards and ambient water quality standards?	(a) N (b) N	(a)There may be some limited use of fertilizer in afforestation and fertilizers/pesticides for certain agricultural/NTFP livelihood activities, however these will have a very minimal environmental impact. In general the project will promote organic farming and the use of bio-fertilizers. In case that this is not feasible in certain areas and the use of chemicals is inevitable for some agricultural livelihood models, the project

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				will develop instructions on the use of fertilizers/pesticides throughout the introduction of farming good practices. There will not be any noticeable impact on water sources. (b) There will be no 'manufacturing' of forest products under the project, except for small scale honey production. No pulp, paper or timber operations with factories etc. Thus any associated effluent and effect on water sources/supply will be nil or negligible.
	(3) Wastes	(a) Are wastes properly treated and disposed of in accordance with the country's regulations?	(a) Y	(a) There will not be any significant waste associated with project activities since there will be no manufacturing.
	(4) Soil Contamination	(a) Are adequate measures taken to prevent contamination of soil and groundwater by use of chemicals, such as agrochemicals? (b) Are any agrochemicals management plans prepared? Are any usages or any implementation structures organized for proper use of the plans?	(a) N/A (b) N/A	(a) Use of such chemicals will be minimal under the project (b) Agricultural livelihood interventions in the project are very small scale and mainly restricted to technical trainings with limited provision of inputs such as the provision of fertilizers and pesticides. Agricultural models will not promote the extensive use of agrochemicals, indeed organic production models are preferred.
3 Natural Environ-ment	(1) Protected Areas	(a) Is the project site or discharge area located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) Y	(a) The project will not involve any significant discharge from construction or other production activities such as wood processing. The project aims to implement the forest development and improvement activities in protected areas (e.g., nature reserves); however, the project interventions are primarily beneficial to the conservation and protection of the protected areas. In addition, the project will strengthen the capacity of SUFMBs concerned, which will further contribute to strengthen the management of the protected areas.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) Is there a possibility that changes in localized micro-meteorological conditions, such as solar radiation, temperature, and humidity due to a large-scale timber harvesting will affect the surrounding vegetation? (d) Is there a possibility that a large-scale timber harvesting will result in loss of breeding and feeding grounds for wildlife? (e) In the case of reforestation projects, is there a possibility that mono-species plantations will adversely affect wildlife habitats? Is there a possibility that mono-species plantations will cause outbreaks of pests? (f) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? (g) Isn't an illegal deforestation associated with the project being carried out, or is an acquisition of the forest certification by the project proponent being carried out?	(a) Y (b) Y (c) N (d) N (e) N (f) N/A (g) N	(a) The project will be implemented at several protected area sites and in other tropical rain forest areas. However, project interventions are aimed at forest protection and restoration. (b) A number of the forest sites, especially the designated protected area sites, include important habitats for endangered species. However, project interventions are primarily beneficial (and not damaging) to the conservation and protection of the protected areas (c) No large scale timber harvesting activities (d) No large scale timber harvesting activities (e) Mix planting of indigenous species and fast growing species is the main design of afforestation in protection forests, while planting of several indigenous species is the main design of the same in nature reserves. (f) Significant ecological impacts are not anticipated since sub-projects activities with significant ecological impacts are eliminated (see Negative Checklist in ESMF Appendix A) (g) The project supports sustainable forest development and protection and thus does not include any significant deforestation activities. Moreover, any clearance of natural forest is also eliminated through

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				the Negative Checklist in ESMF Appendix A.
	(3) Hydrology	(a) Is there a possibility that alteration of rainwater runoff and runoff characteristics due to a large-scale timber harvesting and access road construction will cause impacts on the hydrology of the surrounding areas? (b) Is there a possibility that decreased water retention capacity due to deforestation will affect the existing drainage patterns of the forest?	(a) N (b) N	(a) There is no large scale timber harvesting activities planned in the project. (b) The project supports sustainable forest development and protection and thus does not include any significant deforestation activities. The project is aimed at enhancing water retention in critical watersheds.
	(4) Topography and Geology	(a) Is there a possibility that loss of forest stability due to timber harvesting will cause slope failures or landslides?	(a) N	(a) There is no significant timber harvesting activities planned in the project, although some minimal clearance may be associated with establishment of fire-breaks, constructing forest roads, and upgrading small scale village roads.
	(5) Management of Abandoned Sites	(a) Are adequate restoration and vegetation plans considered for the harvested areas? In particular, are adequate measures taken to prevent soil runoff from the harvested areas? (b) Is a sustainable management system for the harvested areas established? (c) Are adequate financial provisions secured to manage the harvested areas?	(a) N/A (b) N/A (c) N/A	(a) There is no significant timber harvesting activities planned. (b) Ditto (c) Ditto
4 Social Environ-ment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? (b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Is the compensations going to be paid prior to the resettlement? (e) Is the compensation policies prepared in document? (f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples? (g) Are agreements with the affected people obtained prior to resettlement? (h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (i) Are any plans developed to monitor the impacts of resettlement? (j) Is the grievance redress mechanism established?	(a) N (b) N/A (c) N/A (d) N/A (e) N/A (f) N/A (g) N/A (h) N/A (i) N/A (j) Y	(a) There will be no physical displacement nor land acquisition under the project. (b) There will not be any resettlement associated with the project. (c) Ditto. (d) Ditto. (e) Ditto. (f) Ditto. (g) Ditto. (h) Ditto. (i) Ditto. (j) Guidance on GRM is prepared as part of IPPF substantive requirements and included as part of the Consultation and Participation Guidelines (ESMF Appendix D)
	(2) Living and Livelihood	(a) Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary? Is particular attention paid to the inhabitants whose livelihoods are based on primary industries, such as farming, raising livestock, or hunting and gathering in the forests? (b) Are adequate measures taken to prevent illegal entry into the forestry resource areas from the outside through newly constructed access roads?	(a) N (b) N/A (c) N (d) Y	(a) There may be the possibility for some loss of access to productive assets and livelihoods by introduction of afforestation and ANR activities in lands under customary use. However, this threat can be avoided and mitigated through consultations with local communities including participatory land use planning activities planned in the project. Procedures and measures for consultations are described in Consultation and Participation Guidelines of ESMF. In fact, it is expected that local people can increase their cash earnings through

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		(c) Is there a possibility that the forest right of common is obstructed? (d) Are considerations given to life of residents before implementation of project?		participation of the project because of the following reasons: - In general, the project will use abandoned areas where local communities have left as fallow over years and do not plan to use for farming in coming years; and - Local communities will gain cash income from the forest development and improvement activities during the project period; and - They will be able to earn cash income from thinning of subordinate (economic) species, collection of NTFPs, and payment of PFES after the end of the project under the collaborative management agreement with PFMBs/ SUFMBs. (b) Forestry road is basically developed for carrying seedlings for afforestation and patrolling the areas. Hence, the major part of it will be just good for motorbike use, which cannot be used for transportation of timber illegally cut. (c) The project does not include activities which significantly strengthen forest law enforcement or create additional restrictions of access to forest lands and resources (d) A socio-economic baseline survey is planned to be conducted in the beginning of the project to clarify the life of local communities residing in the project areas. Consultations will also be carried out to give due considerations to local livelihoods and life style in making detailed designs of the project activities. Detailed description of consultation and participation procedures to be applied prior to and during project implementation are included in ESMF (Please see ESMF Appendix D).
	(3) Heritage	(a) Is there a possibility that the project will damage the local archaeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) There is no archaeological, historical, cultural, and religious heritage sites in and around the project areas.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) The project promotes sustainable forest development and protection, as such it aims to enhance local landscapes.
4 Social Environ-ment	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(a) Y (b) Y	(a) An Integrated ESMF is prepared to meet the substantive requirements of an IPPF, which details the procedures for consultations to reduce and minimize impacts on culture and lifestyle of ethnic minorities in the Consultation and Participation Guidelines (see ESMF Appendix D). (b) The project avoids any involuntary resettlement or formal land acquisition of ethnic minority households. The project does not include significant additional restrictions on access to forest resources. Where there are situations of existing latent land tenure conflict these are to be resolved through a process of free, prior and informed consultation (FPIC) leading to broad community support and agreements on spatial land use plans which acknowledge customary/informal land use areas to avoid and mitigate any

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				loss of livelihoods (see ESMF, especially Appendix D).
	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	(a) N/A (b) N/A (c) N/A (d) N/A	(a) No physical development relating to forestry development is planned in the project. (b) Ditto. (c) The majority of the works to be undertaken by local communities are simple and less dangerous, as they are similar to farming activities, such as weeding, hole digging, carrying materials, and planting seedlings. Hence, health program and safety training are not necessarily required for the project. (d) No security guard will be placed in the project.
5 Others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(a) N/A (b) N/A (c) N/A	(a) No physical development relating to forestry development is planned in the project. (b) Ditto. (c) Ditto.
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	(a) N/A (b) N/A (c) N/A (d) N/A	(a) Environmental Management and Monitoring Framework developed in ESMF can be used for the basis of monitoring plan. (b) Ditto. (c) Ditto. (d) Environmental monitoring will be carried out as a part of regular monitoring defied by Decision No. 18/2016.
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Agriculture checklist should also be checked.	(a) N/A	(a) Agricultural activities under the project are extremely small-scale, restricted mainly to capacity-building and do not involve significant environmental or social risks.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to trans-boundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as trans\boundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) N/A	(a) No significant negative impacts on trans-boundary or global issues are expected. To the contrary, the project is expected to enhance GHG sequestration as forest carbon sinks.

Remarks: "Y," "N," and "N/A" means "Yes," "No," and "Not Applicable."

Note:
1) Regarding the term "Country's Standards" mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are required to be made. In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan's experience).

2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which the project is located.

Appendix-B (1): Environmental Checklists

b. Silviculture and Small Scale Rural Infrastructure Project

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) N (b) N (c) N (d) N	(a) As regulated in the Decree No 18/2015/ND-CP dated February 14th 2015 and Circular No 27/2015/TT-BTNMT dated May 29th 2015, an EIA is required as part of the project approval process on GoV side but has not been conducted yet. (b) EIA report shall be prepared by the project proponent (MBFPs) and submitted to MONRE for obtaining of approval before submission of pre-F/S for approval of PM. (c) See above. (d) Beyond the project-level EIA, no further approvals are required.
	(2) Explanation to the Local Stakeholders	(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) Stakeholder Consultation Meetings were held during the project preparation survey, however this was restricted to consultations with local level government authorities and mass organisations and did not include adequate consultation with project affected communities and households. Further consultation is therefore required specifically at project site levels prior to implementation of specific activities. Such consultation is provided for in the ESMF - see Consultation and Participation Guidelines (Appendix D) (b) Comments from project stakeholders (Forest Management Boards, Local government authorities (PPC, CPC, DARD, DoNRE, CEMA etc.) and mass organisations) were noted and reflected in project design. However, comments from affected communities and households should be absorbed into detailed design of interventions at the site level.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Full consideration of an alternative for the project has not been considered however the project design has been examined with respect to environmental and social considerations during the preparatory survey. Certain activities have been eliminated or altered so as to ensure that environmental and social impacts are avoided, minimised or otherwise mitigated during implementation (see ESMF).
2 Pollution Control	(1) Air Quality	(a) Do air pollutants, (such as sulphur oxides (SOx), nitrogen oxides (NOx), and soot and dust) emitted from the proposed infrastructure facilities and ancillary facilities comply with the country's emission standards and ambient air quality standards? Are any mitigating measures taken? (b) Are electric and heat source at accommodation used fuel which emission factor is low?	(a) N/A (b) N/A	(a) The rehabilitation/upgrading of small-scale rural infrastructure and silviculture infrastructure could generate unnoticeable dust. However, these impacts are inconsiderably temporal and below the country's emission standard. These potential risks will be further minimized by following the environmental management plan, particularly the Environmental Code of Practice (ECOP) given by ESMF. ECOPs outline typical generic low risk techniques that can be applied to a wide range of small scale temporary construction activities in the four provinces. ECOPs include mitigation measures and procedures for introduction of mitigation measures in the construction works. They include mitigation measures for these impacts and a process for including them in the construction contracts of contractors. Detailed designs shall be developed in accordance with ECOPs and also other specific measures identified in the environmental management plan.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				(b) All the construction work is seasonal and temporal. In fact, the construction period is estimated at less than 6 months in general. Therefore, no electric and heat source is required during the construction. Furthermore, no infrastructure development associated with an electric and heat source is planned in the project.
	(2) Water Quality	(a) Do effluents or leachates from various facilities, such as infrastructure facilities and the ancillary facilities comply with the country's effluent standards and ambient water quality standards?	(a) Y	(a) The rehabilitation/upgrading of small-scale rural infrastructure and silviculture infrastructure could only generate small amount of effluents; therefore, these impacts are inconsiderably temporal and below the country's emission standard. However, EMP/ECOP included in ESMF specifies the mitigation measures to control the effluent to minimize the water pollution during the construction phase.
	(3) Wastes	(a) Are wastes from the infrastructure facilities and ancillary facilities properly treated and disposed of in accordance with the country's regulations?	(a) Y	(a) There will not be any significant waste associated with project activities since any small-scale issues of waste will be dealt with according to national regulations and in accordance with the proposed Environmental Code of Practice (ECOP - see ESMF Appendix C).
	(4) Soil Contaminatio n	(a) Are adequate measures taken to prevent contamination of soil and groundwater by the effluents or leachates from the infrastructure facilities and the ancillary facilities?	(a) Y	(a) Likewise, the impact will be temporal and minimal, and a potential risk of effluents will be strictly dealt with by applying the ECOPs.
	(5) Noise and Vibration	(a) Do noise and vibrations comply with the country's standards?	(a) Y	(a) Given that small-scale rural infrastructure focuses on rehabilitation/ upgrading and the scale of silviculture infrastructure is small, noise and vibration are expected to be very small. Furthermore, the locations of the construction sites are remote and mountainous areas, there will be less households who might be affected by the construction. Moreover, the issue can be properly dealt with by applying the noise/vibration mitigation measure described in the ECOPs.
	(6) Subsidence	(a) In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence?	(a) N/A	a) No extraction of a large volume of groundwater is associated with the construction works of such small scale infrastructure and silviculture infrastructure.
	(7) Odor	(a) Are there any odor sources? Are adequate odor control measures taken?	(a) N	a) No odor sources are foreseen during the project implementation.
3 Natural Environment	(1) Protected Areas	(a) Is the project site or discharge area located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas? (b) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) Y	(a) The project will not involve any significant discharge from construction. (B) No physical development of small scale rural infrastructure is planned in the project. Only minor works, such as set-ups of watch towers and information boards, may be undertaken in the special use forests. However, they are generally simple interventions which will not disturb ecosystem around them. Moreover, they are primarily part of the management works of SUFMBs concerned and beneficial to strengthening of conservation and protection in the protected areas.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on ecosystems?	(a) N (b) N (c) Y (d) Y (e) Y (f) N/Y	(a) No infrastructure development even watch tower and information board is not planned in primary forests and tropical rain forests, which are designated as strictly conservation sub-zone. (b) As described above, no infrastructure development is planned in the protected habitats (or nature reserves). Any potential impacts on ecosystems in protection forests can be eliminated by applying the Negative Checklist given in ESMF.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		(d) Are adequate protection measures taken to prevent impacts, such as distribution of migration routes, habitat fragmentation, and traffic accident of wildlife and livestock? (e) Is there a possibility that installation of roads will cause impacts, such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystem due to introduction of exotic (non-native invasive) species and pests? Are adequate measures for preventing such impacts considered? (f) In cases the project site is located at undeveloped areas, is there a possibility that the new development will result in extensive loss of natural environment?		(c) Only motorbike road is proposed as the forestry road in principle so as to minimize significant negative impact on ecosystems. All construction works for small scale rural infrastructure are upgrading of existing facilities; hence, the construction works will be extremely small-scale and temporal. Furthermore, any potential impacts can be minimized or prevented by application of the negative checklists and mitigation measures described in in the ECOPs of the ESMF. (d) Ditto. (e) Natural vegetation might be cleared by installation of the forestry road. However, as described above, the installation of motorbike road can mitigate such a risk. Furthermore, forestry road (either motorbike road or forestry road) will not be developed in existing forests but in degraded vegetation areas; hence destruction of forest is considered minimal. Again, the application of the negative checklists and mitigation measures described in in the ECOPs could minimize the risk. (f) Any infrastructure development will not be undertaken in undeveloped areas.
	(3) Hydrology	(a) Is there a possibility that hydrologic changes due to the project will adversely affect surface water and groundwater flows? (b) Is there a possibility that alteration of topographic features and installation of structures, such as tunnels will adversely affect surface water and groundwater flows?	(a) N (b) N/Y	(a) Given that the scale and scope of "improvement of small-scale rural infrastructure" and "development of silviculture infrastructure" and small and scattered, and mainly focus on rehabilitation/upgrading of existing facilities, the potential risks on surface water and groundwater flows are expected to be minimal. Furthermore, the impacts on surface water and groundwater flows can be eliminated by applying the Negative Checklist in ESMF. In addition, the ECOPs with mitigation measures will help the contractors not to cause any adverse impacts. (b) No physical development which might cause the alteration of topographic features is planned in the project.
	(4) Topography and Geology	(a) Is there a possibility the project will cause large-scale alteration of the topographic features and geologic structures in the project site and surrounding areas? (b) Is there any soft ground on the route that may cause slope failure or landslides? Are adequate measures considered to prevent slope failures or landslides, where needed? (c) Is there a possibility that civil works, such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides (d) Is there a possibility that soil runoff will result from cut and fill areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?	(a) N	(a) No large scale alternation of topographic features and geologic structures are expected and eliminated by using the Negative Checklist. (b) The size and scale of construction works are minimal and the extent of ground work is limited. The potential risk of slope failure and landslide can also be minimize and eliminated by application of the negative checklist and mitigation measures described in in the ECOPs. (c) Some cutting and filling will be associated with construction of motorbike/forestry road as well as improvement of rural roads. However, the size of filling and cutting is minimal; therefore the potential impacts is likely negligible. ECOPs describe the necessary mitigation measures to protect slopes (cutting and filling areas) from erosion and failures. (d) In theory, there is possibility that soil runoff can happen in cut and fill areas. However, the size of the construction site is general minimal and construction period is seasonal (mainly dry season) and temporal, hence the potential risk is also minimal. Plus, the application of the mitigation measures described in in the ECOPs can further minimize the risks.
4 Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary	(a) N (b) N/A	(a) There will be no physical displacement nor land acquisition under the project.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? (b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Is the compensations going to be paid prior to the resettlement? (e) Is the compensation policies prepared in document? (f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples? (g) Are agreements with the affected people obtained prior to resettlement? (h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (i) Are any plans developed to monitor the impacts of resettlement? (j) Is the grievance redress mechanism established?	(c) N/A (d) N/A (e) N/A (f) N/A (g) N/A (h) N/A (i) N/A (j) Y	(b) There will not be any resettlement associated with the project. (c) Ditto (d) Ditto (e) Ditto (f) Ditto (g) Ditto (h) Ditto (i) Ditto (j) Guidance on GRM is prepared as part of IPPF substantive requirements and included as part of the Consultation and Participation Guidelines (ESMF).
	(2) Living and Livelihood	(a) Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary? (b) Is there any possibility that the project will adversely affect the living conditions of the inhabitants other than the target populations? Are adequate measures considered to reduce the impact, if necessary? (c) Is there any possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary? (d) Is there any possibility that the project will adversely affect road traffic in the surrounding areas? (e) Is there any possibility that roads will impede the movement inhabitants? (f) Is there any possibility that structures associated with roads will cause a sun shading and radio interference?	(a) N (b) N (c) N (d) N (e) N (f) N	(a) The rehabilitation/upgrading of small-scale rural infrastructure and silviculture infrastructure will not adversely affect the living conditions of inhabitants. However, ESMF includes a detailed description of consultation and participation procedures to be applied for the adequate consideration of local livelihoods and consultation with affected communities and households prior to and during project implementation (see ESMF Appendix D). (b) No adverse influence is caused by the project. If anything, all the small scale rural infrastructure will give substantial benefits to local communities and improve their living conditions. (c) The construction works for all the infrastructure is at the small scale, hence, casual labourers will be mainly local people living in the target areas. The risk of the outbreak of HIV or other transmittable diseases is limited. (d) There is no possibility of affecting the existing road traffic. (e) There is no possibility of impeding the movement of inhabitants as the scale of the planned rural and silviculture infrastructure facilities is small. (f) There is no possibility of sun shading and radio interference.
	(3) Heritage	(a) Is there a possibility that the project will damage the local archaeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) There is no archaeological, historical, cultural, and religious heritage sites in and around the project areas. Also any such activities can be further eliminated by using a negative checklist presented in ESMF Appendix A.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N (b) N	(a) The project will not adversely affect the local landscapes. (b) No high building is proposed in the project

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		(b) Is there a possibility that landscape is spoiled by construction of high-rise buildings such as huge hotels?		
	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(a) Y (b) Y	(a) An Integrated ESMF is prepared to meet the substantive requirements of an IPPF, which details the procedures for consultations to reduce and minimize impacts on culture and lifestyle of ethnic minorities in the Consultation and Participation Guidelines (see ESMF Appendix D). (b) Any involuntary resettlement or land acquisition will not occur along with improvement of small scale rural infrastructure and development of silviculture infrastructure in general. In the process of free, prior and informed consultation (FPIC), which leads the participatory land use planning, the proposed locations of village roads or forest roads to be developed could be discuss with local communities to avoid land acquisition and cause any loos of livelihood.
	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	(a) N (b) Y (c) Y (d) Y	(a) The project will not violate any laws regarding working conditions (see Environmental Code of Practice in ESMF Appendix C) (b) Environmental Code of Practice in ESMF Annex C is included the content of Worker safety which require the worker should wear protective labour equipment at construction site. (c) Environmental Code of Practice in ESMF Appendix C include the contractor's workers environmental code of conducts to cope with risk and emergency at construction site and provide training for workers on occupational safety regulations. (d)Environmental Code of Practice is also included the requirement of Installation of fences, barriers, lighting system against traffic accidents, dangerous warning/prohibition site around the construction area which showing potential danger to public people .
5 Others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(a) Y (b) Y (c) Y	(a) Construction activities in the project are small scale (primarily upgrading existing infrastructure); therefore, the potential adverse impact is expected to be minimal. However, measures to reduce impacts are specified as the ECOP in ESMF Annex C) (b) There will be no clearance of natural forest under the project nor any construction of new roads, even forestry road in the nature reserves (protected areas). Forestry or motorbike roads will be developed in the protection forests, but its scope (width) is narrow and the lengths are also limited; therefore, the potential impact is expected to be less. Moreover, any significant impact can be avoided by applying the Negative Checklist in ESMF Appendix A. (c) There will be no physical resettlement or land acquisition in the project; therefore social issues can be expected to be minimal and temporary disruption during the construction phase. These are generally mitigated by application of the ECOP in ESMF Appendix C.
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program?	(a) Y (b) Y (c) Y (d) Y	(a) Environmental Management and Monitoring Framework developed in ESMF can be used for the basis of monitoring plan. (b) Ditto. (c) Ditto.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		(c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?		(d) Environmental monitoring will be carried out as a part of regular monitoring defied by Decision No. 18/2016.
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Roads, Railways and Bridges checklist should also be checked (e.g., projects including access roads to the infrastructure facilities).	(a) N/A	(a) The small-scale rural infrastructure and silviculture infrastructure under the project are extremely small-scale, restricted mainly to rehabilitation/upgrading/restoration the existing works and do not involve significant environmental or social risks.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to trans-boundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as trans-boundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) N/A	(a) No significant negative impacts on trans-boundary or global issues are expected. To the contrary, the project is expected to enhance GHG sequestration as forest carbon sinks.

Remarks: "Y," "N," and "N/A" means "Yes," "No," and "Not Applicable."

Note:

1) Regarding the term "Country's Standards" mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are required to be made. In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan's experience).

2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which the project is located.

Appendix-B (2): Environmental Scoping

a. Forestry Project

Category		Item	Evaluation		Reason for evaluation
			Before/ during construction	After construction	
Pollution control measures	1	Air	D	D	Before/during construction Any activities planned before and during the project are not expected to cause air pollution. After construction No activity which might cause air pollution will be carried out in the post project period.
	2	Water	D	D	Before/during construction Any activities planned before and during the project are not expected to cause water pollution as the opportunity to use fertilizer in the project is limited and the amount of use is also small. After construction No activity which might cause water pollution will be carried out in the post project period.
	3	Waste	D	D	Before/during construction Any activities planned before and during the project are not expected to generate significant waste. After construction No activity which might generate waste will be carried out in the post project period.
	4	Soil	D	D	Before/during construction As the use of chemical (e.g., fertilizers and agrochemicals) is limited, the possibility of soil contamination is nil. After construction No activity which might cause soil pollution and degradation will be carried out in the post project period.
	5	Conservation area	D	B+	Before/during construction Although special use forests, namely nature reserves, are part of the project areas in the project, the project plans to restore deforested areas into forests of indigenous species, assist natural regeneration of degraded forests, and protect natural forests in such areas. Hence, no adverse effect caused by the project is foreseen. After construction The project plans to strengthen the capacity of SUFMBs responsible for management of the conservation areas.
	6	Ecosystem	B+	B+	Before/during construction The project activities, particularly those under "Improvement of Watershed Forests," will improve the function of ecosystems through restoration/rehabilitation of degraded areas and protection of natural forests. After construction Under the collaborative management agreement, local communities and SUFMBs will protect the ecosystems in a sustainable manner. As mentioned above, SUFMBs will be capacitated to manage the protected areas in a proper manner.
	7	Hydrology	D	D	Before/during construction Any activities planned before and during the project are not expected to alter the hydrologic characteristics of the project areas. After construction No large scale timber harvesting or deforestation activity will be carried out in the post project period.
	8	Topography and geology	D	D	Before/during construction Any activities planned before and during the project are not expected to alter the topographic conditions of the project areas.

Category		Item	Evaluation		Reason for evaluation
			Before/ during construction	After construction	
					After construction No large scale timber harvesting or deforestation activity will be carried out in the post project period.
Natural environment	9	Resettlement	D/B-	D/B-	Before/during construction No physical displacement, land acquisition, or any other types of resettlement will be associated with the project. Loss of assets or limited access to productive asset could also be eliminated and minimized as long as the project will hold adequate consultation meetings as planned in the participatory land use planning as well as indicated in the Consultation and Participation Guidelines (CPGs) in the ESMF. After construction Likewise, no physical displacement or any types of resettlement is foreseen in the post project period. Some communities might want to convert forested areas into farms.
Social environment	10	Living and Livelihood	B+	B+	Before/during construction Temporary employment opportunities will be heightened during the project period. After construction Livelihood conditions of local communities will be improved by improvement of small scale rural infrastructure, introduction of additional income generating activities, and PFES payment.
	11	Heritage	D	D	Before/during construction T There is no archeological, historical, cultural, and religious heritage sites in and around the project areas. After construction Ditto.
	12	Landscape	D	D	Before/during construction T There is no physical development activity which might change the landscape of the project areas. After construction Ditto.
	13	Ethnic minority・ indigenous people	B+	B+	Before/during construction Ethnic minorities can enhance their skills and techniques on agriculture and forestry production and livelihood development activities. After construction They can use the skills and techniques that they learned from the project for operations of improved agriculture and forestry production and livelihood development activities in the pot project period. They can also earn cash income from forestry products under the collaborative management agreement with SUFMBs concerned.
	14	Gender	C	D	Before/during construction An in-depth gender sensitive analysis will be carried out in the beginning of the project so that the project could further give consideration to gender aspect. After construction No significant impact is expected.
	15	Work environment (including work safety)	D	D	Before/during construction The majority of the works will be simple and less dangerous. In fact, they are similar to farming activities. Hence, there is no possibility of i) violating any laws and ordinances associated with the working conditions or ii) causing any risks to health conditions of local communities. After construction Only patrolling works will be carried out in the post project period, which do not require any physical

Category		Item	Evaluation		Reason for evaluation
			Before/ during construction	After construction	
					development; therefore, any risk is not foreseen in the post project period.

Remarks: The alphabets indicate the extent of impact, namely, A: Highly possible, B: Slightly possible, C: Unknown, and D: Less possible, while the mathematical symbols (- and +) indicate the types of impact, namely, - : negative and + : positive.

Appendix-B (2): Environmental Scoping

b. Silviculture and Small-Scale Rural Infrastructure Development

Category		Item	Evaluation		Reason for evaluation
			Before/ during construction	After construction	
Pollution control measures	1	Air	D/B-	D	Before/during construction The construction works might generate innoticeable dust. However, these impacts re inconsiderably temporal and below the country's emission standard. These potential risks will be further minimized by following the environmental management plan, particularly the Environmental Code of Practice (ECOP) described in the ESMF. After construction No physical development works which might generate dust or cause air pollution is planned in the post project period.
	2	Water	D/B-	D	Before/during construction The construction works might generate small amount of effluents. As they will be small, inconsiderably temporal and below the contry's emission standard. Likewise, potential adverse impact can be minimized and eliminated by following the EMP/ECOP in the ESMF. After construction No physical development works which might cause water pollution is planned in the post project period. .
	3	Waste	D/B-	D	Before/during construction There will not be any significant waste associated with the project activities. After construction No physical development works which might generate waste is planned in the post project period. .
	4	Soil	D/B-	D	Before/during construction The construction works might generate small amount of effluents or leachates from the infrastructure facilities. As they will be small, inconsiderably temporal and below the country's standard. Likewise, potential adverse impact can be minimized and eliminated by following the EMP/ECOP in the ESMF. After construction No physical development works which might cause water pollution is planned in the post project period.
	5	Noise ・Vibration	D/B-	D	Before/during construction Likewise, noise and vibration associated with the construction works are expected to be very small in consideration of the types and scale of rural and silviculture infrastructure. The occurrence of noise and vibration can be minimized by applying the mitigation measures described in ECOP. After construction No physical development works which might cause noise and vibration is planned in the post project period.
	6	Land sinkage	D	D	Before/during construction

Category		Item	Evaluation		Reason for evaluation
			Before/ during construction	After construction	
					There is no construction work which requires the extraction of groundwater in the project. After construction No physical development works which might cause land sinkage is planned in the post project period.
	7	Bad odor	D	D	Before/during construction There is no construction work which might generate sources of bad odor in the project. After construction No physical development works which might cause bad odor is planned in the post project period.
Natural environment	8	Conservation area	D	D	Before/during construction No physical development of small scale rural infrastructure is planned in the project. Only minor works, such as set-ups of watch towers and information boards, may be undertaken in the special use forests. However, they are generally simple interventions which will not disturb ecosystem around them; therefore, no adverse impact on conservation area is foreseen during the construction. After construction No physical development or construction work within the special use forests is planned in the post project period.
	9	Ecosystem	D/B-	D/B-	Before/during construction Natural vegetation might be cleared by installation of the forestry road. However, the installation of motorbike road, as proposed in the plan, can mitigate such a risk. Furthermore the application of the mitigation measures described in ECOP in the ESMF can further minimize and eliminate the adverse impact on the natural ecosystems in the project areas. After construction No physical development or construction work within the special use forests is planned in the post project period. Silviculture /motorbike roads might facilitate the human encroachment of natural resources in ecosystems in the project areas.
	10	Hydrology	D	D	Before/during construction No large scale deforestation which may cause hydrologic changes would happen in the project. After construction Ditto.
	11	Topography and geology	D	D	Before/during construction No large scale physical development which cause the alteration of topographic/geologic conditions is not planned in the project. There will be some cutting and filling works associated with parts of infrastructure development in the project. However, the size of filling and cutting is minimal; therefore, the potential impacts is likely negligible. Moreover, potential impacts can

Category		Item	Evaluation		Reason for evaluation
			Before/ during construction	After construction	
					be further minimized by applying the mitigation measures described in ECOP in the ESMF. After construction No large scale physical development which cause the alteration of topographic/geologic conditions is not planned in the post project period.
Social environment	12	Resettlement	D	D	Before/during construction No physical displacement nor land acquisition is expected to occur in the project. After construction Ditto.
	13	Living and Livelihood	B+	B+	Before/during construction The rehabilitation and upgrading of small scale rural infrastructure will not adversely affect the living conditions of local communities. If anything, the construction works associated with the infrastructure development can generate additional employment opportunities for local communities. After construction Livelihoods of local communities will be improved by improvement of marketability of local products and productivity of major crops.
	14	Heritage	D	D	Before/during construction T There is no archeological, historical, cultural, and religious heritage sites in and around the project areas. After construction Ditto.
	15	Landscape	D	D	Before/during construction T There is no physical development activity which might change the landscape of the project areas. After construction Ditto.
	16	Ethnic minority・ indigenous people	D	B+	Before/during construction The majority of local communities in the project areas are ethnic minorities. There is no involuntary resettlement nor land acquisition (including any forms of resettlement) caused by the silviculture and rural infrastructure development. After construction As described above, the economic conditions and local livelihoods of ethinic minorities will be improved owing to the improvement of small scale rural infrastructure.
	17	Work environment (including work safety)	D/B-	D	Before/during construction The project will not violate any laws and regulations relating to working environment. As long as ECOP described in the ESMF is properly observed, workers' safety can be protected and maintained. After construction No physical development is planned in the post project period. Local communities will

Category		Item	Evaluation		Reason for evaluation
			Before/ during construction	After construction	
					be involved in daily maintenance on a voluntary base.
	18	Gender	C	D	Before/during construction An in-depth gender sensitive analysis will be carried out in the beginning of the project so that the project could further give consideration to gender aspect. After construction No significant impact is expected.

Remarks: The alphabets indicate the extent of impact, namely, A: Highly possible, B: Slightly possible, C: Unknown, and D: Less possible, while the mathematical symbols (- and +) indicate the types of impact, namely, - : negative and + : positive.

Appendix-B (3): Site-level Implementation Plan Environmental Checklist

No.	Items	N	L	M	Not known	*Remarks*
	Does the subproject is eligible (pass the negative list)? ***(If Yes, please continue answer the below question? If No, stop and remove the name of the subprojects out of eligible list)***					
	Does the subproject entail these environmental impacts?					
1.	Encroachment on historical/cultural areas					
2.	Encroachment on an ecosystem (e.g. natural habitat sensitive or protected area, national park, nature reserve etc....)					***Describe and briefly assess impact's level***
3.	Disfiguration of landscape and increased waste generation					
4.	Removal of vegetation cover or cutting down of trees during clearance for construction					
5.	Change of surface water quality or water flows (e.g. Increase water turbidity due to run- off, waste water from camp sites and erosion, and construction waste) or long-term.					***Indicate how and when this occurs.***
6.	Increased dust level or add pollutants to the air during construction					***Indicate how and when this occurs***
7.	Increased noise and/or vibration					***Indicate how and when this occurs***
8.	Temporally impact to households? If yes, how many households?					
9.	Risk of disease dissemination from construction workers to the local peoples (and vice versa)?					***Note estimated number of workers to be hired for project construction in the commune/district and what kind of diseases they might introduce or acquire***
11.	Potential for conflict between construction workers and local peoples (and vice versa)?					
12.	Use of explosive and hazardous chemicals					
13.	Construction that could cause disturbance to the transportation, traffic routes, or waterway transport?					
14.	Construction that could cause any damage to the existing local roads, bridges or other rural infrastructures?					
15.	Soil excavation during subproject's construction so as to cause soil erosion					

16.	Need to open new, temporary or permanent, access roads?					***Estimate number of and length of temporary or permanent access roads and their locations***
17.	Long-term impacts on air quality					
18.	Accident risks for workers and community during construction phase					
19.	Use of hazardous or toxic materials and generation of hazardous wastes					
20.	Risks to safety and human health					***Describe how.***
	Does the subproject entail temporally land acquisition or restriction of access to resources?					
21.	Acquisition (only allow temporarily of land (public or private) for its development					***List land areas for temporary land acquisition, type of soils, duration and purpose of acquisition***
22.	Use land that is currently occupied or regularly used for productive purposes (e.g., gardening, farming, pasture, fishing locations, forests)					
23.	Temporary or permanent loss of crops, fruit trees or household infrastructure					
24.	Involuntary restriction of access by people to legally designated parks and protected areas					
	If the answer to any of the questions 21-24 is "Yes" for "L", "M", please further consult with local people and authorities for voluntary donation or preparation of a simple Resettlement Action Plan (RAP)					
	N: No impact; L: Low Impact; M: moderate impact					

Appendix-C: Simplified Environmental Code of Practice (ECOP) for Small Civil Works

The Environmental Codes of Practice (ECOP) is prepared to manage small environmental impacts during construction. The ECOPs is the good practice of World Bank funded project to manage small scale infrastructure investments subproject. ECOP will be a mandatory part of construction contract or bidding documents so that contractor complies with environmental covenants. The subproject owner (PPMU/FMB) will be responsible for monitoring of compliance with ECOP and preparing the required reports.

Responsibilities:

The subproject owner (PPMUs/FMBs) and Contractors are the key entities responsible for implementation of this ECOP. Key responsibilities of PPMUs/FMBs and the contractors are as follows: PPMUs/FMBs is responsible for ensuring that the ECOP is effectively implemented. The PPMUs/FMBs will assign a qualified staff to be responsible for checking implementation compliance of Contractors, include the following: (a) monitoring the contractors' compliance with the environmental plan, (b) taking remedial actions in the event of non-compliance and/or adverse impacts, (c) investigating complaints, evaluating and identifying corrective measures; (d) advising the Contractor on environment improvement, awareness, proactive pollution prevention measures; (e) monitoring the activities of Contractors on replying to complaints;

Contractor: Contractor is responsible for carrying out civil works and informs PPMUs/FMBs, local authority and community about construction plan and risks associated with civil works. As such, contractor is responsible for implementing agreed measures to mitigate environmental risks associated with its civil works. Contractor is required to obey other national relevant legal regulations and laws.

Small Civil Works: two type of small civil works identified in the project: silviculture infrastructure (forest roads, sub-stations, watchtowers, fire-breaks, etc.) and small-scale infrastructure (commune roads, water supply, irrigation facilities).

Part 1 – Contractor's Responsibilities

This is an example and is not necessarily a full treatment of all requirements for a specific project. For example, there might be reason to have contractor deal with sexually transmitted diseases, medical and hazardous waste s (e.g., oil from vehicle or furnace repair and similar, oily rags).

Issues/Risks	Mitigation Measure
1) Dust generation/ Air pollution	• The Contractor implement dust control measures to ensure that the generation of dust is minimized and is not perceived as a nuisance by local residents, maintain a safe working environment, such as: water dusty roads and construction sites; covering of material stockpiles; Material loads covered and secured during transportation to prevent the scattering of soil, sand, materials, or dust; Exposed soil and material stockpiles shall be protected against wind erosion.
2) Noise and vibration	• All vehicles must have appropriate "Certificate of conformity from inspection of quality, technical safety and environmental protection" following Decision No. 35/2005/QD-BGTVT; to avoid exceeding noise emission from poorly maintained machines.
3) Water pollution	• Portable or constructed toilets must be provided on site for construction workers. Wastewater from toilets as well as kitchens, showers, sinks, etc. shall be discharged into a conservancy tank for removal from the site or discharged into municipal sewerage systems; there should be no direct discharges to any water body. • Wastewater over permissible values set by relevant Vietnam technical standards/regulations must be collected in a conservancy tank and removed from site by licensed waste collectors. • At completion of construction works, water collection tanks and septic tanks shall be covered and effectively sealed off.

Issues/Risks	Mitigation Measure
4) Drainage and sedimentation	• The Contractor shall follow the detailed drainage design included in the construction plans, to ensure drainage system is always maintained cleared of mud and other obstructions. • Areas of the site not disturbed by construction activities shall be maintained in their existing conditions.
5) Solid waste	• At all places of work, the Contractor shall provide litter bins, containers and refuse collection facilities. • Solid waste may be temporarily stored on site in a designated area approved by the Construction Supervision Consultant and relevant local authorities prior to collection and disposal. • Waste storage containers shall be covered, tip-proof, weatherproof and scavenger proof. • No burning, on-site burying or dumping of solid waste shall occur. • Recyclable materials such as wooden plates for trench works, steel, scaffolding material, site holding, packaging material, etc. shall be collected and separated on-site from other waste sources for reuse, for use as fill, or for sale. • If not removed off site, solid waste or construction debris shall be disposed of only at sites identified and approved by the Construction Supervision Consultant and included in the solid waste plan. Under no circumstances shall the contractor dispose of any material in environmentally sensitive areas, such as in areas of natural habitat or in watercourses.
6) Chemical or hazardous wastes	• Used oil and grease shall be removed from site and sold to an approved used oil recycling company. • Used oil, lubricants, cleaning materials, etc. from the maintenance of vehicles and machinery shall be collected in holding tanks and removed from site by a specialized oil recycling company for disposal at an approved hazardous waste site. • Unused or rejected tar or bituminous products shall be returned to the supplier's production plant. • Store chemicals in safe manner, such as roofing, fenced and appropriate labelling.
7) Disruption of vegetative cover and ecological resources	• Areas to be cleared should be minimized as much as possible. • The Contractor shall remove topsoil from all areas where topsoil will be impacted on by rehabilitation activities, including temporary activities such as storage and stockpiling, etc; the stripped topsoil shall be stockpiled in areas agreed with the Construction Supervision Consultant for later use in re-vegetation and shall be adequately protected. • The application of chemicals for vegetation clearing is not permitted. • Prohibit cutting of any tree unless explicitly authorized in the vegetation clearing plan. • When needed, erect temporary protective fencing to efficiently protect the preserved trees before commencement of any works within the site. • The Contractor shall ensure that no hunting, trapping shooting, poisoning of fauna takes place.
8) Traffic management	• Before construction, carry out consultations with local government and community and with traffic police. • Significant increases in number of vehicle trips must be covered in a construction plan previously approved. Routing, especially of heavy vehicles, needs to take into account sensitive sites such as schools, hospitals, and markets. • Installation of lighting at night must be done if this is necessary to ensure safe traffic circulation.

Issues/Risks	Mitigation Measure
	• Place signs around the construction areas to facilitate traffic movement, provide directions to various components of the works, and provide safety advice and warning. • Employing safe traffic control measures, including road/rivers/canal signs and flag persons to warn of dangerous conditions. • Avoid material transportation for construction during rush hour. • Signpost shall be installed appropriately in both water-ways and roads where necessary.
9) Restoration of affected areas	• Cleared areas such as disposal areas, site facilities, workers' camps, stockpiles areas, working platforms and any areas temporarily occupied during construction of the project works shall be restored using landscaping, adequate drainage and vegetation. • Trees shall be planted at exposed land and on slopes to prevent or reduce land collapse and keep stability of slopes. • Soil contaminated with chemicals or hazardous substances shall be removed and transported and buried in waste disposal areas.
10) Worker and public Safety	• Training workers on occupational safety regulations and provide sufficient protective clothing for workers in accordance with applicable Vietnamese laws. • Install fences, barriers, dangerous warning/prohibition site around the construction area which showing potential danger to public people. • The contractor shall provide safety measures as installation of fences, barriers warning signs, lighting system against traffic accidents as well as other risk to people and sensitive areas. • If previous assessments indicate there could be unexploded ordnance (UXO), clearance must be done by qualified personnel and as per detailed plans approved by the Construction Engineer.
11) Communication with local communities	• The contractor shall coordinate with local authorities (leaders of local communes, leader of villages) for agreed schedules of construction activities at areas nearby sensitive places or at sensitive times (e.g., religious festival days). • Copies in Vietnamese of these ECOPs and of other relevant environmental safeguard documents shall be made available to local communities and to workers at the site. • Disseminate project information to affected parties (for example local authority, enterprises and affected households, etc) through community meetings before construction commencement. • Provide a community relations contact from whom interested parties can receive information on site activities, project status and project implementation results. • Inform local residents about construction and work schedules, interruption of services, traffic detour routes and provisional bus routes, blasting and demolition, as appropriate. • Notification boards shall be erected at all construction sites providing information about the project, as well as contact information about the site managers, environmental staff, health and safety staff, telephone numbers and other contact information so that any affected people can have the channel to voice their concerns and suggestions.

Part 2 – Contractor's Workers Environmental Code of Conducts

This is an example for typical project, but for a specific project, some other requirements might be relevant. For example, washing hands protocol, or agreeing to attend STD workshops.

Do:	Do not
◆ **Use the toilet facilities provided – report dirty or full facilities** ◆ **Clear your work areas of litter and building rubbish at the end of each day – use the waste bins provided and ensure that litter will not blow away.** ◆ **Report all fuel or oil spills immediately & stop the spill from continuing.** ◆ **Smoke in designated areas only and dispose of cigarettes and matches carefully. (littering is an offence.)** ◆ **Confine work and storage of equipment to within the immediate work area.** ◆ **Use all safety equipment and comply with all safety procedures.** ◆ **Prevent contamination or pollution of streams and water channels.** ◆ **Ensure a working fire extinguisher is immediately at hand if any "hot work" is undertaken e.g. Welding, grinding, gas cutting etc.** ◆ **Report any injury of workers or animals.** ◆ **Drive on designated routes only.** ◆ **Prevent excessive dust and noise**	◆ Remove or damage vegetation without direct instruction. ◆ Make any fires. ◆ Poach, injure, trap, feed or harm any animals – this includes birds, frogs, snakes, etc. ◆ Enter any fenced off or marked area. ◆ Drive recklessly or above speed limit ◆ Allow waste, litter, oils or foreign materials into the stream ◆ Litter or leave food lying around. ◆ Cut trees for any reason outside the approved construction area ◆ Buy any wild animals for food; ◆ Use unapproved toxic materials, including lead-based paints, asbestos, etc.; ◆ Disturb anything with architectural or historical value ◆ Use of firearms (except authorized security guards) ◆ Use of alcohol by workers during work hours ◆ Wash cars or machinery in streams or creek ◆ Do any maintenance (change of oils and filters) of cars and equipment outside authorized areas ◆ Dispose trash in unauthorized places ◆ Have caged wild animals (especially birds) in camps ◆ Work without safety equipment (including boots and helmets) ◆ Create nuisances and disturbances in or near communities ◆ Use rivers and streams for washing clothes ◆ Dispose indiscriminately rubbish or construction wastes or rubble ◆ Spill potential pollutants, such as petroleum products ◆ Do explosive and chemical fishing ◆ Use latrines outside the designated facilities; and ◆ Burn wastes and/or cleared vegetation.

Appendix-D: Consultation and Participation Guidelines

D1 Objectives of the Consultation and Participation Guidelines

The Consultation and Participation Guidelines (CPG) has been developed to ensure that all local communities and households;

a) are adequately informed about the project's objectives, activities, benefits and risks;

b) have equitable opportunities to participate in the project;

c) receive culturally appropriate benefits responsive to their interests, capacities and priorities which will be identified through prior consultations, and that those benefits are shared in an equitable way;

d) are not adversely impacted by the project (or associated/linked) activities and/or that any adverse impacts are managed and mitigated appropriately;

e) have the opportunity to raise project-related grievances and have processes in place for their redress.

The CPG places particular emphasis on ensuring that vulnerable groups including but not limited to indigenous communities and households will be informed of the project opportunities and consulted on its activities prior to their commencement, and receive project benefits that are culturally appropriate and gender- and inter-generationally inclusive. It will also ensure that the vulnerable groups will be informed of potential involuntary resettlement and land acquisition and any other potential adverse impacts of the project or potentially associated with the project. As such, the CPG aims to address the requirements of the JICA guidelines, including reference to guiding the preparation of Indigenous Peoples Plans (IPP) following the format indicated in Appendix B of the World Bank Operational Policy 4.10 on 'Indigenous Peoples', as required.

The World Bank and other international agencies use the term "indigenous people" in a broader sense to refer to communities which are socially and culturally different from vulnerable and other communities and possessing some or all of the following characteristics:

a) Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;

b) Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories

c) Customary cultural, economic, social, or political institutions that are separate from those of the dominant society and culture; and

d) An indigenous language, often different from the official language of the country or region.

Vietnam does not use the term 'indigenous' peoples to differentiate groups of peoples, because as in many other parts of Asia, the peoples with the dominant culture and language are also 'indigenous'. Instead, Vietnam does recognise 'ethnic minority peoples (*người dân tộc)* or groups (*dân tộc thiểu số*). Thus, the differentiation is based on cultural and ethnic grounds rather than origin or 'native-ness', as per native American Indians, for example (such peoples would be referred to as *người bản địa* or *người bản xứ* in Vietnamese). Ethnic minority groups share many equivalent characteristics with the broader understanding of 'indigenous peoples' as above and typically, major international development agencies apply the policies relating to IPs to projects which affect ethnic minority populations in Vietnam. In view of historical and socio-political contexts surrounding ethnic minority groups in the northern mountains, ethnic minorities are considered a key vulnerable group and treated as such in the CPF.

In compliance with the JICA guidelines, the CPG thus effectively follows the principles of an Indigenous Peoples Planning Framework (IPPF), or more appropriately for Vietnam, an Ethnic Minority Development Framework. As with the ESMF as a whole, a framework approach is taken (as

opposed to a plan) because at this stage, it is not known specifically which ethnic minority communities will be affected nor the precise activities to be implemented or they have only just been determined at the time of writing (with insufficient time for detailed assessment during the preparatory survey). Given that ethnic minority groups make up the overwhelming majority of the population in the target provinces, it is suggested that rather than creating an additional requirement to develop separate EMDPs at each site, the substantive elements are incorporated within the site-level project implementation plans. As such, the CPG set out:

- Village and beneficiary selection principles and criteria
- Social assessment guidelines
- A framework for ensuring free, prior, and informed consultation with the affected ethnic minority communities
- Institutional arrangements (including capacity building where necessary) for screening project-supported activities, evaluating their effects on ethnic minorities, preparing site-level implementation plans (including the required elements indicated in the IPP format OP 4.10), and addressing any grievances.
- Monitoring and reporting arrangements
- Disclosure arrangements for the site-level project implementation plans

D2 Consultation and Participation Guidelines Principles

Stakeholder engagement in the project should be based on general international standard principles of free, prior and informed consultation (FPIC) and participation i.e.:

- **Free:** No coercion, intimidation or manipulation;
- **Prior:** Conducted sufficiently in advance of commencement of project activities;
- **Informed:** Relevant information is provided covering (at least) the following aspects:
  a) The nature, size, pace, reversibility and scope of any proposed project or activity;
  b) The reason/s or purpose of the project and/or activity;
  c) The duration of the project;
  d) The area that will be affected;
  e) An assessment of the potential environmental and social impacts, positive and negative;
  f) Expected role and responsibilities of different project stakeholders (including government agencies, NGOs, research institutions, private sector individuals/companies, community institutions, sub-groups within communities e.g. indigenous peoples, and others)
  g) Procedures that the project may entail
- **Consultation:** A two-way process of ongoing dialogue between a proponent and the stakeholders involved or affected

AND

- **Participation:** Participation is a process through which stakeholders influence and share control over development initiatives and the decisions and resources which affect them (World Bank, 1996)[1].

[1] World Bank. 1996. *The World Bank Participation Sourcebook*. Washington, D.C.: The World Bank. http://documents.worldbank.org/curated/en/1996/02/696745/world-bank-participation-sourcebook

D3 Target Groups of the Consultation and Participation Guidelines

Table 1 below indicates the groups the CPG is aimed at protecting, although it should be noted that an individual or household may fall into more than one of the categories below.

Table 1: CPG Target Groups

	Group	Description/Rationale
1	Poor/Below Near Poor Households	Poor households tend to be more dependent on forest resources and are thus disproportionately impacted by forest protection and development activities. For various reasons they may also be excluded from decision-making processes and equitable opportunities to benefit from development interventions. In Vietnam, there is also a 'near-poor' category of household socio-economic status. Such households should also be considered vulnerable as many, although better off than the poor, remain in a precarious position and can easily slip back into poverty. Some of these households were formerly categorized as poor but have become 'near poor' following a change in the way the GoV defines and calculates poverty.
2.	Landless	The landless are often highly dependent on forest resources for their daily subsistence needs and as a safety net in times of duress. Development interventions can also often neglect this disadvantaged group as investments target farmers who have land and assets. In NW Vietnam, many upland ethnic minority farmers have still not been formally granted land rights for agricultural, forest and settlement land. Without any available alternatives, the majority will continue to clear land and cultivate 'illegally' but the lack of formal land rights adversely impacts their livelihoods in a number of ways, not least that without a LUC, farmers are not eligible for preferential/subsidized credit. Many of the landless therefore become trapped in a cycle of debt and are effectively indentured to informal moneylenders who charge extortionate interest rates.
3.	Ethnic Minorities	Ethnic minorities in Vietnam share many of the same or similar characteristics as 'indigenous peoples as defined by the World Bank and other major multilateral development agencies. They are characterized by having their own distinctive cultural and spiritual beliefs, practices and institutions, they have their own languages, they often inhabit specific more geographically remote or isolated areas and agro-ecological zones and are highly dependent on forest lands and natural resources in their daily livelihoods. Ethnic minorities in the mountainous NW region specifically, are amongst the poorest and most vulnerable groups in the country. Ethnic minorities comprise the overwhelming majority of the population in Vietnam's NW provinces and especially in the remote forest areas. The major ethnic minority groups in the region are Muong, Thai, Tay, H'mong, Dzao, Giay, Lao and San Chay. It is noted that certain ethnic minority groups are poorer and more vulnerable than others, particularly those groups which tend to reside in the highest and most remote areas such as the H'mong and to a slightly lesser extent the Dzao. However, this is not always true and it should also be noted that there are numerous sub-groups (e.g. Black/White Thai, Black/Blue/White/Flower H'mong, Red Dzao etc) again with their own slight distinctions. Many of the mountainous groups traditionally practice shifting cultivation although many communities' agricultural practices are becoming more sedentary as land availability, conflict and pressure becomes increasingly an issue.
4.	Women and Female Headed Households (FHH)	In traditional patriarchal ethnic minority societies women are often excluded by socio-cultural norms and practices from decision-making processes and development interventions do not meet their needs. In NW Vietnam, upland ethnic minority women are often further disadvantaged due to high girl drop-out rates from formal education (earlier than boys) and as a consequence their Vietnamese language ability is weaker affecting their ability and confidence to participate effectively in community meetings. Women also play a specific and differentiated role in terms of agricultural production and forest management within different ethnic minority household divisions of labour (e.g. sowing, tending/weeding, marketing/selling produce, collection of NTFPs, craft production). FHH are a particularly vulnerable sub-group with a typically limited asset base and high levels of forest dependency

Source: Compiled by JICA Survey Team

D4 Stakeholder Engagement and FPIC Elements and Procedures

D4.1 Community/Village Selection

The preparatory survey team through consultation with DARDs/FMBs and other local stakeholders have managed to earmark particular project sites for participation in the project, and have even prioritised particular communes for project investment. However, the specific communities (i.e. villages, sub-villages or hamlets) is yet to be determined. Since the project is primarily focused on forest protection and development, it therefore follows that the communities will be selected on the following bases:

a) Those villages with forest land allocated to households in the area where afforestation, ANR and forest protection activities are desired by the FMBs

b) Those villages with forest protection contracts (or with identified forest management and protection rights allocated for the provision of services and receipt of PFES payments) in the areas where afforestation, ANR and forest protection activities are desired by the FMBs

c) Those villages living inside, adjacent to or on the periphery of the FMB site and especially the areas where afforestation, ANR and forest protection activities are desired by the FMBs

Village selection should be done by FMBs in consultation with the relevant CPCs and with due consideration of cost estimates. In principle, forest protection and development activities should be tangibly linked to livelihood and rural infrastructure benefits, and therefore there should be sufficient budget to achieve meaningful impacts with participating households and communities and the temptation to include as many villages as possible (whilst spreading project funds more thinly) should be resisted. Village selection should be checked and approved by the PPMBs.

Once the tentative list of villages is drawn up, initial meetings should be held with the villages to introduce the project and confirm whether they are interested in the project (noting that actual participation is confirmed after Social Assessment – see below).

D4.2 Baseline Social Assessment

A baseline social assessment (SA) will be carried out in the project preparation phase following confirmation of selected villages. Qualified and experienced experts will be contracted to conduct a SA in a gender-sensitive manner in consultation with local households in the target villages prior to site-level planning and implementation. The SA will serve a number of purposes:

a) establish the baseline socio-economic situation of local households and ethnic minority groups in the project area (their demographic, social, cultural, and political characteristics)

b) develop baselines of socio-economic indicators of households targeted by the project for monitoring of project impacts,

c) clarify gender differences in forest management and protection in the communes.

d) provide a basis for identifying appropriate community development and livelihoods interventions under the project

e) assess and determine, based on free, prior, and informed consultation, with the affected communities, the specific potential adverse and positive effects of the project at the site, on the socio-cultural and economic status of particular vulnerable groups, including women, poor households, female-headed households, landless, and others as may be considered relevant

f) highlight key social issues present, particularly those that are underscored in the JICA guidelines (e.g. relating to human rights, involuntary resettlement, land acquisition, loss of livelihoods, ethnic minorities, gender etc)

g) provide a basis for developing recommendations for addressing the various concerns and issues of projects that affect them

Whilst the ESMF has identified broad theoretical issues, the SA will help the project to identify more specific issues at the field level and devise appropriate solutions accordingly for implementation. In the case of this project, and given that the preparatory survey has not been able to assess social safeguard issues in detail at each site, the SA represents a particularly important opportunity to confirm the existing land tenure situation and ascertain whether involuntary resettlement and formal land acquisition is going on at the site or whether it is possible to resolve land conflict issues through participatory land use planning and voluntary land acquisition alone. Where it is not, the site, commune or village may need to be removed from project support. In order to comply with World Bank OP 4.10 Appendix B, the SA will also include specific recommendations resulting from consultations with local ethnic minority households and the provision of culturally appropriate benefits, when/where they fall within the project impact area.

Guidelines for carrying out the SA are provided in Chapter 3 of the DFR (including outline approach and methodology and report contents). An SA report will be prepared for each province by the qualified team responsible but will describe conditions separately for each FMB in the province. The PMC will synthesize all the reports into 1 succinct summary report at the project level. At both levels the SA report will include but not necessarily be limited to the following contents:

1. **Introduction:** The introductory section shall define the basic purpose of the SA report. It describes its scope and provides a brief outline of how the report is organized.
2. **Project Description:** This section provides brief details of the site-level project – rationale, objectives, project area, key component activities, proposed implementation schedule etc.
3. **Approach and Methodology:** This section describes the methods used in conducting the assessment, both quantitative and qualitative.
4. **Baseline Socio-economic and Livelihoods Assessment:** This section profiles the project target area and covers:
    a) **Location and Physical Characteristics:** Description and map
    b) **Overall Socio-economic Context:** Demographic statistics (male/female, employment, migration, poverty, main industries/livelihoods
    c) **Stakeholder Analysis:** Identifies and describes particularly vulnerable groups within the community and how they may be affected by the project, including the different ethnic minority groups and sub-groups (where relevant), poor/near poor, women/female headed households, landless, elderly, etc.
    d) **Sustainable Livelihoods Analysis:** Presents, using primary and secondary data collected from the field, an analysis of ethnic minority household's access to the five forms of capital (i.e. human, social, financial, natural, and physical), the vulnerability of particular groups (to climate change trends, disasters, commodity price shocks etc) as well as the opportunities and constraints for socio-economic development and livelihood improvement (transforming structures and processes)
5. **Description of Project Impacts:** Based on consideration of the project's objectives and activities as well as the socio-economic/livelihoods assessment, describes potential positive and negative impacts of the project.
6. **Mitigation Measures:** Identification of specific measures to avoid, minimize and/or compensate for project activities with adverse impacts on forest dependent communities and particularly vulnerable groups.
7. **Public Consultation and Information Disclosure:** Documents and presents results of public consultation events (presenting project information and results from the SA including potential positive and adverse impacts of the project and receiving feedback) with the communities.

8. Conclusion and Recommendations: Conclusions and recommendations from the assessment for project design and implementation in the locality (appropriate types of interventions, key opportunities/constraints, modes of implementation etc)

D4.3 Consultation Meetings to Confirm Broad Community Support

Once the particular villages and as part of the SA, it is necessary to organize meetings at all identified villages to confirm broad community support for the project and confirmation of their willingness to participate. The table below outlines the key features of these consultation meetings.

Table 2 Consultation for Broad Community Support

Consultation Topic/s:	Present, using simple language, basic information about the project including area, location, purpose/objectives, key activities, stakeholders involved, target beneficiaries, expected role and involvement of communities, results of the SA and an overview of possible environmental and social risks. Opportunities for open discussion of the project should be provided
Purpose/Objective:	Establishing broad community support for the project
Participants:	CPC representatives, Village Head, Customary leaders and institutions, Women's Union, Farmer's Union, villagers
Time/Timing:	At an early stage in project/batch implementation, immediately following village selection. Adequate time should be provided following the meeting for the community to digest the information, discuss internally and decide if they do not wish to participate (suggested timeframe of 1 week – to be confirmed)
Approach:	• Presentation and discussion with Village Head and other key representatives • General community meeting to present, answer questions and discuss concerns
Materials Required:	• Provision of simple/easy to read project brochures in Vietnamese language (using diagrams/pictures as much as possible). • Use of ethnic minority language interpreter as/if required, especially for women groups • Consultation and Participation Monitoring Sheets
Institutional Responsibilities:	• PMC to prepare agenda and project brochure for distribution • FMBs to propose/organize meetings • FMB to present project with assistance from PMC staff in responding to community concerns • FMBs to record participants and meeting minutes
Special Notes:	In terms of demonstrating broad community support, it is proposed that at the time of recording meeting attendance, participants indicate their support by ticking a box on the attendance sheet. Where the majority (>50%) support the project, the project will go ahead in that village. Below 50% support will be discussed with village heads regarding the possibility that further information is required to better address community concerns. It may be possible to re-convene the meeting and try to establish broad community support a second time. If the majority of people still reject the project, alternative villages will be selected.

Source: Compiled by JICA Survey Team

D4.4 Participatory Land Use Planning and Formation of Village Working Groups

Participatory Land Use Planning (PLUP) is already identified as a project activity. It should be noted that there is no intention to conduct any parallel or separate PLUP activities. The intention is that measures proposed here will be fully integrated into the implementation of PLUP activities under Component 2 (Forest Inventory and Planning). The specific aims of PLUP as defined in DFR Chapter 3 are to:

a) develop present land use maps of villages relating to the project areas based on GIS-based photo-like map

b) develop future land use maps of villages relating to the project areas with determination of areas which can be used for forest development and improvement

c) identify and select households who have vested land use rights over the project areas and who are willing to participate in the project activities

d) verify if the project areas can be used for the project on the ground with households/communities concerned

e) organize households who are willing to participate in the project into village working groups which will be sub-contractors for forest development and improvement activities

f) make agreements with village working groups on forest development and improvement activities in the project areas.

It is important to highlight here that PLUP processes offer the main way through which the project will avoid involuntary resettlement and land acquisition issues. The procedures are described in DFR Chapter 3 and briefly listed below with additional comments with relation to key social safeguards concerns:

1) Consultation with commune leaders and leaders of villages: This initial consultation step is presumed to be consistent with the procedures described above regarding community/village selection and establishing broad community agreement. It represents an important first opportunity for community leaders to learn about the project and opt out from participating where implementation would be believed to be contentious or undesirable. It is also an opportunity to confirm current forest land allocation status and any plans for re-allocation for the site as a whole.

   Where there are ongoing or planned attempts to re-allocate agricultural or forest land currently legally allocated to households (i.e. with red books) to FMBs, it is suggested that the project does not work at these sites at all, or not within the same commune at least.

   Where there are ongoing or planned attempts re-allocate agricultural or forest land under conflict and at some stage in the formal process of being allocated to households or communities, further investigation is required to determine precisely what has happened and the extent to which communities have a reasonably legitimate claim over lands (e.g. they were informed that they would be allocated red books and surveys had taken place for the purpose but they had yet to actually receive formal LUCs), when the decision to halt the land allocation process to households was and when the decision to allocate the land to a FMB occurred. Discussions during this stage of consultation should give a good indication as to whether households in particular villages will be willing to participate in the project or whether land conflict issues are simply too heated.

   At other sites where there may still be land use conflict issues but where local households have no form of legal claim or right, it is assumed that the project can go ahead (although detailed land use planning is still required, as is community and household agreement).

2) Preparation of present land use maps of the villages relating to the target protection forests/nature reserves: This step is absolutely critical as local people will participate in identifying lands within the FMB which are formally allocated to households or where there are conflicts, and where there are viable areas in which the forest development activities can be reasonably implemented.

3) Determination of the project areas with development of a future land use map; Based on step 2 above, afforestation and ANR sites will be defined. It is made clear to households with either legal LUCs or claims that if the project activities are implemented on 'their' lands, they will be voluntarily agreeing to those activities on those lands i.e. voluntary land acquisition. If the households do not agree, the plot shall be left out of the project's area. Discussions during step 1 should indicate whether this is likely to be the case or whether households are likely to be amenable to voluntary land acquisition. In this way the project will avoid any involuntary resettlement and land acquisition. All households should be involved in the meeting and the final plan should be agreed by all and signed by the village head (this may require another meeting to re-visit the village with the final confirmed land use map).

4) Organization of a village working group: The village working group refers to those individuals and households that will be involved in forest protection and development activities. Households which have voluntarily offered their formal/informal lands should be prioritized as members of the village working group and as project beneficiaries. Otherwise participation in the group should be open to all households in the relevant villages, but with preference for vulnerable households (e.g. poor/near poor, landless, female-headed etc.) agreed through participatory consultation.

D4.5 Site-level Implementation Plans

The PLUP process described above will largely define the important aspects of the forest protection and development activities. However, further site-level consultations are required to complete the planning for full project implementation in the target sites i.e. integrating the small-scale infrastructure and livelihoods components in a comprehensive site-level plan. As an output, the site-level plan shall meet the substantive requirements of an IPP or EMDP. As such, the Site-level Implementation Plan shall include:

- A summary of key information from the Social Assessment.
- A summary of the results of the free, prior and informed consultations in the initial meetings and meetings to establish broad community support as well as the PLUP processes in participating villages.
- An action plan setting out the project components and activities at the site. Information from the SA should serve to justify the cultural appropriateness of the activities, and the selection of particular livelihood menu options.
- A section detailing mitigation measures for any potential adverse impacts on ethnic minority communities. This will include specifying that any loss of assets or livelihoods is compensated through the benefits of participating in the forest protection and development activities (employment in forest patrolling, planting, weeding/tending as well as sharing of benefits from thinning) as well as community infrastructure and livelihood development investments.
- Detailed cost estimates for the Plan.
- Project milestones and monitoring.
- A grievance redress mechanism (see below).

D4.6 Beneficiary Selection

Participation in the forest protection and development activities is determined through the formation of village working groups as described above.

In addition, the project shall determine the beneficiaries of other project activities e.g. small-scale infrastructure and livelihood support, as follows:

Small-scale infrastructure: Investment in small-scale infrastructure should be oriented towards the provision or upgrading of appropriate infrastructure (rural roads, irrigation and water supply facilities) which benefits the specific communities which are involved in the forest protection and development works, as a further incentive or compensatory benefit.

Livelihood Support: Livelihood development support activities shall again be organised for the specific benefit of households in the villages involved in forest protection and development. Within which, beneficiaries will be organised into particular interest groups around particular livelihood support activities. The following criteria are suggested in order to offer some guidance on equitable selection of beneficiaries within these groups:

- At least 50% of the members of all livelihood interest groups (collectively) shall be comprised of poor/near poor households that are also members of the village working groups (because livelihood benefits should also be linked to forest protection and development commitments as a form of incentive or compensatory benefit)
- At least 30% of the members of all livelihood interest groups (collectively) shall be comprised of female beneficiaries (from different households), especially poor women and female-headed households (to ensure that women are not excluded from the benefits of the project and including beneficiaries who may not be involved in the village working groups but who are dependent on forest resources)
- The remaining 20% (or less) may be comprised of 'others' according to interest (this could include medium/rich households who may be required as demonstration farmers for example as capable, respected members of the community with available land for piloting etc.)

D4.7 Grievance Redress Mechanism

As discussed in chapter 3 of this ESMF, there are a number of shortcomings or weaknesses with the existing framework for grievance redress in Vietnam. Vietnam does have systems for addressing disputes and grievances at grassroots level (through grassroots mediation) as well as channels for registering formal complaints (under the framework of the Law on Complaints and Denunciations) and for appealing with regard to cases of land acquisition and resettlement (under the Land Law). However, grassroots mediation is limited with respect to addressing the grievances of villagers against higher level authorities, meanwhile the existing system for registering complaints and grievances is somewhat limited in capacity and local authorities would not have the capacity to deal with and monitor project specific grievances in a timely manner.

Therefore, in order to address these gaps, a simple and direct project grievance redress mechanism (GRM) is proposed, whereby project-related grievances such as disputes over location of afforestation/ANR activities, beneficiary selection, distribution of project benefits, behaviours of project-related staff or consultants etc. can be reported directly to FMBs, who shall record such grievances in a project grievance logbook. A staff of each FMBs would be allocated the responsibility of managing and monitoring these grievances as part of a more modern, open and collaborative approach to community liaison and forest management in general. This staff member would log grievances and could then report upwards to the PPMB (who will also identify a safeguards officer). The same member of staff could also be trained as the resource person for other relevant social safeguards issues such as consultation and participation. It may not necessarily mean creating an entirely new position but a designated staff member being allocated and performing these responsibilities. The creation of such a new system would however incur certain costs and require capacity development.

Grievances can be raised by individuals in name or anonymously, or through traditional institutions (e.g. the same institutions under the Law on Grassroots Mediation) according to culture and context, as appropriate. Grievances should be recorded in written form and efforts made to address them within 30 days. The form of response shall depend on the type and context of the grievance. For example, if an anonymous grievance has been made then it should be addressed through public consultation e.g. a village meeting responding generically to the point raised. If the grievance is raised by and specific to an individual or group of individuals, then it should be resolved through a smaller, more focused meeting. Meeting minutes and outcomes are recorded. It is expected that most project-related grievances could be addressed relatively easily within 1-2 meetings e.g. adjusting beneficiary lists, areas for afforestation/ANR, alignment or location of rural infrastructure etc. If grievances are more serious in nature, then they should be dealt with through the project hierarchy as necessary and any complainant should be made aware of their legal rights according to the Land Law and Law on Complaints and Denunciations.

Appendix-E: Stakeholder Consultation Participant Lists

CÔNG TY TƯ VẤN QUẢN LÝ VÀ CHUYỂN ĐỔI TỔ CHỨC (T&C CONSULTING)
Địa chỉ: số 18, ngách 21, ngõ 12 Đào Tấn, Ba Đình, Hà Nội
Điện thoại: Tel: (+84-4) 3762 2256 | 3762 2257. Fax: (+84-4) 3762 2258

DANH SÁCH THÀNH VIÊN THAM DỰ HỘI THẢO THAM VẤN

Dự án: *Khảo sát kinh tế xã hội vùng Tây Bắc để chuẩn bị cho dự án phát triển rừng bền vững ở vùng Tây Bắc Việt Nam (Socio economic survey and stakeholder meeting in the Northwest Sub-Region For the Preparatory Survey for the Sustainable Forest Development Project in the Northwest Sub-region in Vietnam).*

Hội thảo/phỏng vấn:

Nội dung thanh toán:

Ngày 9 **tháng** 7 **năm 2016**

Tỉnh: Lai Châu

TT	Họ và tên	Chức vụ	Số điện thoại và địa chỉ e-mail (nếu có)	Chữ ký
1	Hà Quang Hưng	Phó GĐ Sở Nông nghiệp PTNT t. Lai Châu	0919.513.883	
2	Nguyễn Văn Bắc	Chi cục trưởng Chi cục Lâm nghiệp Lai Châu	0912.748.129	
3	Nguyễn Ngọc Chính	Giám đốc BQL RPH Nậm Nà - Sìn Hồ	0975.575.116	
4	Sùng Văn Thanh	Phó Giám đốc BQL RPH Nậm Nà - Sìn Hồ	0984.963.786	
5	Hoàng Anh Vũ	Giám đốc BQL RPH Nậm Nà	0947.946.796	
6	Vũ Ngọc Tú	Phó Giám đốc BQL RPH huyện Tam Đường	0977.628.287	
7	Lò Văn Sơn	Phó chủ tịch HĐND tỉnh Lai Châu	0917.160.880	
8	Hồ Thị Huế	Trưởng phòng Tuyên giáo HĐND tỉnh Lai Châu	0948.331.973	
9	Nhữ Văn Cường	Phó chi cục trưởng Chi cục Lâm nghiệp Lai Châu	0912.938759	
10	Trần Công Trung	Phó phòng QLBVR - Chi cục Kiểm lâm	0944.861.555	

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11	Hoàng Bình Nhường	Phó ban thực thi Lai Châu	098.984.333	
12	Phạm Thế Trung	Phụ Chánh PTTC - Ban PTTC LC	01652154529	PT Trung
13	Vũ Đức Long	Hội nông dân tỉ LC	0915.143.229	
14	Hoàng Hồng Hường	Trung tâm Khuyến nông tỉ LC	01676.168.988	
15	Mai Hồng Hanh	BQL RPH Tân Uyên	0989.898.333	
16	Phạm Anh Công	BQL RPH Tân Uyên	01644.624.456	
17	Nguyễn Việt Cường	Trung tâm Khuyến nông tỉnh LC	0916.208282	
18	Phạm Thế Phúc	Sở Tài nguyên Môi trường tỉ LC	0978.862.202	
19	Nguyễn Xuân Thanh	Tổ ban BQL RPH Thân Uyên	0982.771.729	
20	Vũ Văn Năm	Phòng sử dụng rừng - Chi cục Kiểm lâm	0985.492.207	
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Sau khi cuộc họp kết thúc, các thành viên tham dự hội thảo đã được mời ăn cơm trưa do đoàn khảo sát tổ chức (tiền ăn trưa của mỗi đại biểu là 150000 đồng/người).

Xác nhận của Chi cục Kiểm lâm - Lai Châu

CHI CỤC KIỂM LÂM TỈNH LAI CHÂU

PHÓ CHI CỤC TRƯỞNG

Mai Văn Cường

2

CÔNG TY TƯ VẤN QUẢN LÝ VÀ CHUYỂN ĐỔI TỔ CHỨC (T&C CONSULTING)
Địa chỉ: số 18, ngách 21, ngõ 12 Đào Tấn, Ba Đình, Hà Nội
Điện thoại: Tel: (+84-4) 3762 2256 | 3762 2257. Fax: (+84-4) 3762 2258

DANH SÁCH NGƯỜI ĐÃ NHẬN TIỀN XĂNG XE ĐỂ THAM DỰ HỘI THẢO THAM VẤN CÁC BÊN LIÊN QUAN

Dự án: Khảo sát kinh tế xã hội vùng Tây Bắc để chuẩn bị cho dự án phát triển rừng bền vững ở vùng Tây Bắc Việt Nam (Socio economic survey and stakeholder meeting in the Northwest Sub-Region For the Preparatory Survey for the Sustainable Forest Development Project in the Northwest Sub-region in Vietnam).

Hội thảo/phỏng vấn:

Nội dung thanh toán:

Ngày 2 **tháng** 7 **năm 2016**

Tỉnh: Lai Châu

TT	Họ và tên	Đơn vị/Địa điểm	Số điện thoại	Số tiền đã nhận	Chữ ký
1	Hà Quang Hưng	Phó GĐ Sở NN PTNT t Lai Châu	0949 515 883	0	
2	Nguyễn Văn Nhẫn	Chi cục trưởng CC Lâm nghiệp LC	0912 748.119	0	
3	Nguyễn Ngọc Chiến	Giám đốc BQL RPH Nậm Nhùn	0925 303.116	200.000	
4	Sần Văn Thanh	Ch kỹ thuật BQL RPH Nậm Nhùn	0984 963.796	200.000	
5	Lưu Ánh Vũ	GĐBQL RPH Nậm Nhùn	0984 944.796	300.000	
6	Lê Ngọc Tú	Ch P kỹ thuật BQL RPH Nậm Nhùn	0917 828 787	300.000	
7	Lò Văn Sơn	Phó chủ tịch HĐND xã Lai Châu	0912 140.889	0	
8	Hồ Thị Thuế	Trưởng ban dân tộc HĐND xã LC	0984 331.973	0	
9	Như Văn Cường	Phó chi cục trưởng CC Kiểm lâm LC	0912.958859	0	
10	Trần Công Trường	Trưởng phòng BQLRPH CC Kiểm lâm	0944 261.515	0	

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11	Hoàng Bá Nhường	Phó ban dân tộc tỉnh Lai Châu	0983.989.333	0	
12	Phạm Thế Trung	Phòng Chỉ đạo Dân tộc - Ban DT	016521.54.529	0	PTrung
13	Vũ Đức Long	Hội vườn đồi tỉnh LChâu	0915.193.229	0	
14	Hoàng Hồng Hường	Trung tâm Khuyến nông tỉnh LC	01676.268.988	0	
15	Mai Hồng Hạnh	BQL RPH Tân Uyên	0989.848.333	300.000	
16	Phạm Đức Công	BQL RPH Tân Uyên	01644.624.456	300.000	
17	Nguyễn Việt Cường	Trung tâm Khuyến nông tỉnh LC	0916.208.282	0	
18	Đoành Thị Phúc	Sở Tài nguyên MT t. LChâu	0972.862.202	0	
19	Nguyễn Xuân Thịnh	Trưởng ban BQL RPH h. Than Uyên	0982.771.729	400.000	
20	Vũ Văn Nam	Phòng Sử dụng rừng - Chi cục KL	0985.492.207	0	
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Xác nhận của Chi cục Kiểm lâm - Lai Châu

CHI CỤC KIỂM LÂM TỈNH LAI CHÂU

PHÓ CHI CỤC TRƯỞNG

Nhữ Văn Cường

2

CÔNG TY TƯ VẤN QUẢN LÝ VÀ CHUYỂN ĐỔI TỔ CHỨC (T&C CONSULTING)
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Điện thoại: Tel: (+84-4) 3762 2256 / 3762 2257, Fax: (+84-4) 3762 2258

DANH SÁCH THÀNH VIÊN THAM DỰ HỘI THẢO THAM VẤN

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Hội thảo/phỏng vấn:

Nội dung thanh toán:

Ngày 29 tháng 6 năm 2016

Huyện: [illegible] **Tỉnh:** [illegible]

TT	Họ và tên	Chức vụ	Số điện thoại và địa chỉ e-mail (nếu có)	Chữ ký
1	[illegible]	[illegible]	[illegible]	
2	[illegible]	[illegible]	[illegible]	
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Xác nhận của

CHÁNH VĂN PHÒNG

Nguyễn Thế Phương

CÔNG TY TƯ VẤN QUẢN LÝ VÀ CHUYỂN ĐỔI TỔ CHỨC (T&C CONSULTING)
Địa chỉ: số 18, ngách 21, ngõ 12 Đào Tấn, Ba Đình, Hà Nội
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Hội thảo/phỏng vấn:

Nội dung thanh toán:

Ngày 22 **tháng** 6 **năm 2016**

Huyện: Tuần Giáo **Tỉnh:** Điện Biên

TT	Họ và tên	Chức vụ	Số điện thoại và địa chỉ e-mail (nếu có)	Chữ ký
1	Giàng A Pua	Chủ tịch xã Tỏa Mà - h Tuần Giáo	0169. 708 677	
2	Vàng A Vàng	Bí thư Đảng xã Tỏa Mà	0168. 223 746	
3	Giàng A Dỉ	Phó chủ tịch UBND xã Tỏa Mà	0168 382 . 9021	
4	Quàng Văn Phải	Trưởng bản Mà Đông - xã Tỏa Mà	0166430. 4765	
5	Quàng Văn Cường	Phó chính xã Tỏa Mà h Tuần Giáo	0169 274 4534	
6	Phan Quốc Huy	Phó Giám đốc BQL RPH Tuần Giáo	0915. 839. 484	
7	Lê Văn Mạnh	Phó phòng kỹ thuật BQLRPH huyện Tuần Giáo	01652. 002. 571	
8	Giàng A Dũng	Chủ tịch xã Phình Sáng h Tuần Giáo	0169 741 682	

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9	Sùng A Thào	Khuyến nông xã Phú Sáng - h Tủa Chùa	0981 795 380	
10	Mùa A Thu	Phó chủ tịch Hội nông dân xã Phú Sáng	0982 762 192	
11	Trần Thị Minh	Chủ tịch Hội phụ nữ xã Phình Sáng	0989. 5828 94	
12	Giàng A Dê	Cán bộ địa chính xã phình Sáng	0988 334 014	
13	Vũ Văn Cường	Hạt trg Hạt kiểm lâm h Tủa Chùa	0914. 674. 929	
14	Lò Văn Tiến Xuân Bản	phó hạt thường trực kiểm lâm h Tủa Chùa	0914 315 362	
15	Trần Xuân Bản Lò Văn Tiến	Phụ trách Lý RPH Tuần Giáo	01659,66 87.35	
16	Lò Văn Cường	Phó chủ tịch UBND huyện T. Giáo	094 770 6869	
17	Trần Xuân Bản	phó phòng Kỹ Thuật BQLRPH Tủa Chùa	016 97086023	
18	Phạm Tiến Hưng	phó phòng kỹ thuật BQL RPH Mường Ảng	0164 863235	
19				
20				

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Xác nhận của Ban QLRPH T.Giáo

Phạm Quốc Hưng

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Hội thảo/phỏng vấn:

Nội dung thanh toán:

Ngày 23 tháng 4 năm 2016

Tỉnh: Điện Biên

TT	Họ và tên	Chức vụ	Số điện thoại và địa chỉ e-mail (nếu có)	Chữ ký
1	Trần Văn Tiến	Giám đốc Sở NN&PTNT	0914822415	
2	Phan Hữu Chiến	Phó Trưởng phòng Nông nghiệp và PTNT	0915704696	
3	Chiêu Thế Dương	Phó Trưởng phòng TN&MT huyện Mường Nhé	0949972898	
4	Lò Văn Hiệu	Trưởng phòng Tài nguyên - Môi trường MN	0917625181	
5	Phạm Quốc Hưng	Bảo Hiểm by PJICO T. Điện Biên	0915239489	
6	Đinh Văn Cường	Hạt trưởng Hạt Kiểm Lâm S. Điện Biên	0919679919	
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9	Cứu Chạn Hồng	Ban Dân tộc		
10	Hoàng Duy	(T)	0912974921	
11	Phùng Quốc Tiến	Phó Chủ tịch UBND huyện Mường Nhé	0915131442	
12	Đỗ Hải Bình	PCT UBND huyện Điện Biên		
13	Lò Văn Oàng	Phó chủ tịch UBND huyện Tuần Giáo	0947706869	

1

14	Trần Khắc Phương	Phó phòng Kỹ thuật - Kỹ thuật, Chi cục Lâm nghiệp	0986 077 801	
15	Tô Quang Huyện	Hạt Phó Hạt Kiểm lâm huyện Điện Biên	0983 903 163	
16	Nguyễn Ngọc Đăng	Chuyên viên phòng TNMT huyện Điện Biên	0976 590 500	
17	Lê Như Hoa	TP Tổng hợp - ĐTM - Chi cục BVMT	0983 023 293	
18	Hà Thị Cười	PCT Hội LHPN tỉnh Điện Biên	0945 043 455	
19	Lường Hồng Nhung	Phó Ban GĐXH - Hội LHPN tỉnh Điện Biên	0945 251 889	
20	Trần Thị Thanh Phương	Chi cục trưởng - CC Bảo vệ MT tỉnh Điện Biên	0948 327 567	
21	Hoàng Văn Viễn	[illegible]	0912 248 426	
22	Lò Quang Châu	PGĐ Sở LĐ	0912 053 913	
23	Nguyễn Ngọc Thủy	Cổng thông tin điện tử tỉnh		
24	[illegible] Thị Hồng Oanh	Chi cục Kiểm lâm	0945 558 088	
25	Nguyễn Việt Cường	Ban quản lý rừng phòng hộ	0915 558 180	
26	Hà Trường Sơn	Ban Quản lý RPH huyện Điện Biên	0914 628 458	
27	Phạm Văn Khiêm	Chi cục phó Chi cục Kiểm lâm Điện Biên	0918 207 959	
28	Nguyễn Thị Phương	Chánh Văn phòng Sở NN	0169 995 7178	
29	Phạm Văn Phiên	Chuyên viên Văn phòng Sở	0913 375 469	
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Xác nhận của Sở Nông nghiệp và PTNT

SỞ NÔNG NGHIỆP VÀ PHÁT TRIỂN NÔNG THÔN

Nguyễn Thị Phương

2

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Hội thảo/phỏng vấn:

Nội dung thanh toán:

Ngày 6 tháng 6 năm 2016

Xã:.....Huyện:.....Tỉnh: Sơn La

TT	Họ và tên	Chức vụ	Số điện thoại và địa chỉ e-mail (nếu có)	Chữ ký
1	[illegible]	[illegible]		
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19	Phạm Hồng Tiến	CC KL Sơn La		
20	[illegible]	[illegible]	0973 705 [illegible]	
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Xác nhận của .....

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Hội thảo/phỏng vấn:

Nội dung thảo luận:

Ngày 27 tháng 6 năm 2016

Xã:………………… Huyện:………………… Tỉnh: Hòa Bình

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1	[illegible]	[illegible]	[illegible]	[illegible]
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Xác nhận của ………………

Phạm Phúc Hà

Appendix-F: Basic TORs for PMC Environmental and Social/REDD+ Safeguards Specialists

The ESMF has identified a number of environmental and social safeguard issues and provided overall guidance on their avoidance, management and mitigation. However, it is believed that it will still be necessary to employ international and national safeguards experts as part of the Project Management Consultant or TA team for the provision of more detailed and specific guidance, capacity-building and follow-up during implementation. This is particularly the case due to the fact that detailed assessments of specific impacts on the ground have been limited during the preparatory survey.

It is envisaged that the international and national experts would work as a team with the international expert engaged for 9 man-months with intermittent inputs in a supervisory and technical guidance role whilst the national expert will have 46 man-months for following up on safeguards activities and checks in the field.

The following TORs provide a basic summary of the key aspects for the attention of the Safeguards Specialists during implementation, and some of their tasks assigned:

1) Situation Review and Further Investigation

The project document and the ESMF identify certain potential safeguard issues of particular concern, particularly those related to involuntary resettlement. An important task for the safeguards specialists at an early stage in implementation (inception phase) will be to review and further investigate the potential social safeguard issues at each site and to update the ESMF as appropriate/necessary.

2) Safeguards Capacity-building

A key set of tasks for the safeguards experts will relate to building the capacity of project owners and implementing agencies to enable them to implement the ESMF. This will include:

a) Developing appropriate training materials on the various elements (and sub-elements) of the ESMF i.e. Negative Checklist, Environmental Assessment and Monitoring Procedures and Consultation and Participation Guidance
b) Delivering safeguards training courses tailored to the different levels of project stakeholders e.g. i) CPMB/MBFP; ii) PPMBs; iii) FMBs, and any other related stakeholders as required
c) Provision of on-the-job guidance and supervision to PPMB and FMBs as required

3) Stakeholder Engagement Materials and Processes

The safeguards experts should take the lead in designing appropriate consultation and stakeholder engagement materials and processes:

a) Processes and procedures are indicated in the ESMF, however the safeguards consultants may provide more specific guidance for PPMBs and FMBs for the information dissemination and consultation activities at the project sites, in line with the indicative guidance provided in the Consultation and Participation Guidelines
b) Development of appropriate consultation materials

4) Social Assessments

Baseline social assessments are to be carried out for the purposes of guiding the development of appropriate livelihood interventions, setting a baseline for project impact monitoring and for assessing in greater detail potential impacts on local communities and vulnerable groups (as an ethnic minority development planning requirement). The safeguards experts will:

a) Work together with the Livelihoods Experts in designing the survey approach, methodology and tools
b) Assist with the selection and management of the contractor
c) Ensure the adequate supervision of the contactor to conduct a full and proper assessment of impacts, risks and vulnerabilities
d) Coordinate and ensure the quality of SA reports

5) Participatory Land Use Planning

The PLUP activities are of critical importance to the project overall but also from a safeguards perspective as a form of consultation leading to broad community support and individual household agreement to the proposed project activities. The safeguards experts will:

a) Provide specific inputs to the technical guidelines for PLUP to ensure that the process adequately addresses potential safeguards issues, particularly those related to involuntary resettlement and loss of livelihoods, respect for ethnic minority knowledge, institutions, rights etc, and ensures the full and effective participation of ethnic minorities and other vulnerable groups
b) Provide on-the-job guidance to FMBs and contractors in the implementation of the PLUP activities at the sites

6) Beneficiary Selection

Review and provide additional guidance on community and beneficiary selection procedures

7) Benefit Sharing
8) Technical Guidelines for Project Activities

Review the technical guidelines produced by other experts for the implementation of project components (e.g. livelihoods, small-scale infrastructure, afforestation/ANR etc) to ensure their compliance with the ESMF and the JICA Guidelines.

9) Due Diligence and Monitoring

The safeguards experts will be required to:

a) Review the proposed set of safeguards indicators and monitoring system
b) Design a simple monitoring system with simple forms for capturing information on consultation, participation, benefit distribution, application of environmental procedures, impacts on forests and households and other relevant safeguards indicators
c) Follow up with PPMBs and FMBs to ensure that safeguards are being operationalised and that the safeguards monitoring and reporting system is being correctly implemented. They may also be required to follow-up in the field where particular issues are identified.

10) Review of Safeguards and Safeguards Information Reporting Requirements

Over the coming months and years, the national and sub-national REDD+ safeguards information reporting requirements should become clearer. It will be the role of the safeguards experts to ensure that the project adheres to these requirements for reporting to the UNFCCC. This may involve supporting the provinces to develop systems for collecting additional information from the project sites (as required).

11) Collating Information and Reporting

The safeguards experts will be responsible for collating information from the relevant agencies on safeguards issues and in formulating reports on implementation of the ESMF e.g. for inception, annual, mid-term reports, and final reports etc. (as required)

Appendix G: Basic TORs for Environmental Monitoring

PPMBs will be established in each of the four provinces and will be the main body responsible for environmental monitoring in each province. A designated safeguard staff of the PPMB will be responsible for monitoring and cooperating with FMBs on environmental monitoring compliance. FMBs will also assign a designated safeguard staff in charge of checking on all planned activities against Negative Checklist, additional requirement for environmental and socio monitoring, ensure full and effective consultation and participation and full environmental and social compliance and reporting during the project implementation at site level. Particularly, environmental monitoring form (See Appendix H) should be used as an effective tool to monitor the environmental compliance during the construction phase.

The following TORs provide a basic summary of the key aspects for the attention of the Safeguards Staffs of FMBs/PFMB during implementation, and some of their tasks assigned:

a) Review the proposed set of safeguards indicators and monitoring system
b) Review simple monitoring system with simple forms
c) Implement the environmental monitoring and reporting system by using the environmental monitoring form during the project implementation.
d) Regularly (monthly) site visit to infrastructure subproject sites where the civil work taking place
e) Consult with the local community for the effective mitigation measure taken place.
f) Closely work with the local authorities, particularly the local environmental authorities (DONRE, District environmental and natural resource office) to comply with the relevant environmental monitoring and reporting procedure.
g) Closely work with CPMB/safeguard consultant on environmental monitoring and reporting issues.

Appendix H: Environmental Compliance Monitoring Forms

1. Monitoring Form for Construction Works for Silviculture and Small Scale Rural Infrastructure

1.1 General Information

Items	Descriptions
Project	The Sustainable Forest Development Project in the Northwest Sub-region (JICA 3 Project)
Name of subprojects	
Location	
Contractor	

1.2 Information of Monitoring

Items	Descriptions
Name of Monitor	
Date of Monitoring	
Location of Monitoring	
Weather condition	

1.3 Application of Mitigation Measures

Items	Yes/No
Have the contractors applied the mitigation measures?	
Was ECOP applied into the contractor's contract?	

1.4 Monitoring Environmental Impact and Possible Mitigation Measures

Items	Environmental Impact Observed	Mitigation measures applied and Compliance with ECOP (Yes/No). If Yes, please specify	Effectiveness of mitigation measures (1-5 Scaling)	Action to be taken for improvement
Dust generation/Air pollution (Dust and Smoke)				
Water Quality (Change in water quality)				
Drainage and sedimentation				
Solid waste (Waste from construction works (types and volume)				
Chemical or hazardous wastes (oil,				

Items	Environmental Impact Observed	Mitigation measures applied and Compliance with ECOP (Yes/No). If Yes, please specify	Effectiveness of mitigation measures (1-5 Scaling)	Action to be taken for improvement
lubricants, cleaning materials)				
Disruption of vegetative cover and ecological resources (Illegal tree clearing, wild animal hunting)				
Traffic management (Signs)				
Restoration of affected areas				
Soil Erosion (Visible soil erosion and water runoff including rill/gully erosion)				
Worker and public Safety (Training for worker, fences, barriers warning signs)				
Communication with local communities (complaints from local residents about resettlement, loss of livelihoods, wtc.)				

Date of Monitoring:

Signature of Monitor

2. Monitoring Form for Forest Development Activities

2.1 General Information

Items	Descriptions
Project	The Sustainable Forest Development Project in the Northwest Sub-region (JICA 3 Project)
Name of subprojects	
Location	
Contractor	

2.2 Information of Monitoring

Items	Descriptions
Name of Monitor	
Date of Monitoring	
Location of Monitoring	
Weather condition	

2.3 Monitoring Environmental Impact and Possible Mitigation Measures

Items	Environmental Impact Observed	Mitigation measures applied and Compliance with ECOP (Yes/No). If Yes, please specify	Effectiveness of mitigation measures (1-5 Scaling)	Action to be taken for improvement
Disruption of vegetative cover and ecological resources (Illegal tree clearing, wild animal hunting)				
Communication with local communities (complaints from local residents about resettlement, loss of livelihoods, wtc.)				

Date of Monitoring:

Signature of Monitor

Appendix I: Budget Allocation necessary for ESMF Activities

In many instances the ESMF includes actions or measures which do not necessarily entail costs which are additional to the implementation costs already identified in the project cost estimate. For example, Baseline Social Assessments and Participatory Land Use Planning activities are already proposed as project activities. The ESMF merely provides guidance on how these activities should be carried out to ensure they meet the requirements of the JICA Guidelines. The following sections describe safeguards-related activities and associated costs.

Personnel

The ESMF has indicated the need for certain project stakeholders to have staff or consultants designated for the purpose of meeting ESMF implementation requirements.

- 1 member of staff of CPMB should take overall responsibility for overseeing ESMF implementation and monitoring
- PPMBs should allocate 1 staff member for following-up with FMBs, collating safeguards information from the sites, reporting up to CPMB
- FMBs should allocate 1 staff member for ensuring ESMF implementation at the site levels
- The PMC/TA Consultant should have a team of 1 international and 1 national environmental and social safeguards specialists (possibly integrated into the role of the REDD+ Safeguards and Co-management Specialist)

The costs of such personnel have been integrated into the proposed project budget.

Capacity-building and Training

The CPMB is responsible to ensure that the level of expertise related to the project is adequate to perform the assigned responsibilities, including the application of safeguards through the implementation of the ESMF. PPMBs will be responsible for operationalising the safeguards measures in their respective provinces, meanwhile FMBs will be responsible for ESMF implementation and monitoring at the site-level. One staff of the PPMB and one staff from Technical Section of each FMB will be responsible for fulfilling the safeguards requirements.

The PMC, through the assigned REDD+ Safeguards experts (see Appendix E) will provide TA to ensure that such appropriate capacity-building and training is delivered at central, provincial and site-levels. The following trainings are proposed (consistent with section 8 in the ESMF) with budget itemised:

- **Training 1: CPMB, PPMB and FMB Training on JICA Guidelines and ESMF Procedures** once in each province (CPMB only need to attend training in 1 province)
- **Refresher Training 1 (twice in 3 years)**
- **Training 2: General Co-management/Participatory Forestry and REDD+ Training for FMBs/DARDs** once in each province
- **Refresher Training 2 (twice in 3 years)**

Activities

There are a number of activities related to ESMF implementation such as Baseline SA, PLUP, Information Dissemination, various consultation activities etc. These costs are embedded within the budgets of the corresponding project components (e.g. PLUP is covered under the Forest Inventory and Planning Component).

PPMBs should have a budget for conducting periodical site visits to target SUFs and PFs. This would include visits to conduct due diligence checks on ESMF implementation. Similarly other administrative and project management costs are embedded within the project budget for CPMB, PPMB and FMB operations. No special equipment is required for ESMF implementation.

Annex J

Annex J: Draft Pre-Feasibility Study of the Project

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Annex J: Draft Pre-Feasibility Study of the Project

J.1 Primary Information of the Project

J.1.1 Name of the Project

The Project of Sustainable Forest Management in the Northwest Sub-region in the Socialist Republic of Vietnam

J.1.2 Overall Goal and Project Objectives

The overall goals of the Project are: i) sustainable development, management and protection of forests in the Northwest region; ii) improvement of the production values of forest products; iii) conservation of biodiversity; and iv) reduction of poverty and improvement of livelihoods of households living in mountainous areas. In order to achieve these overall goals, the Project specifically aims:

a. To restore and improve watershed forests in four provinces in the Northwest region for both economic and environmental purposes;
b. To strengthen the capacity of the local governments and owners of forests, such as, management boards of protection and special use forests, organizations, groups of households, and individuals for sustainable forest management; and
c. To contribute to the achievement of the goal and objectives of the National REDD+ Action Plan, especially the reduction of greenhouse gas (GHG) emissions through reduction of deforestation and forest degradation in the Northwest region.

J.1.3 Target Provinces and Areas

Four provinces in the Northwest region, namely Dien Bien, Lai Chau, Son La, and Hoa Binh provinces, are the target provinces where the proposed project will be implemented. The following 10 protection forests and six special use forests are further selected as the target areas for the project activities.

Target Areas of the Project

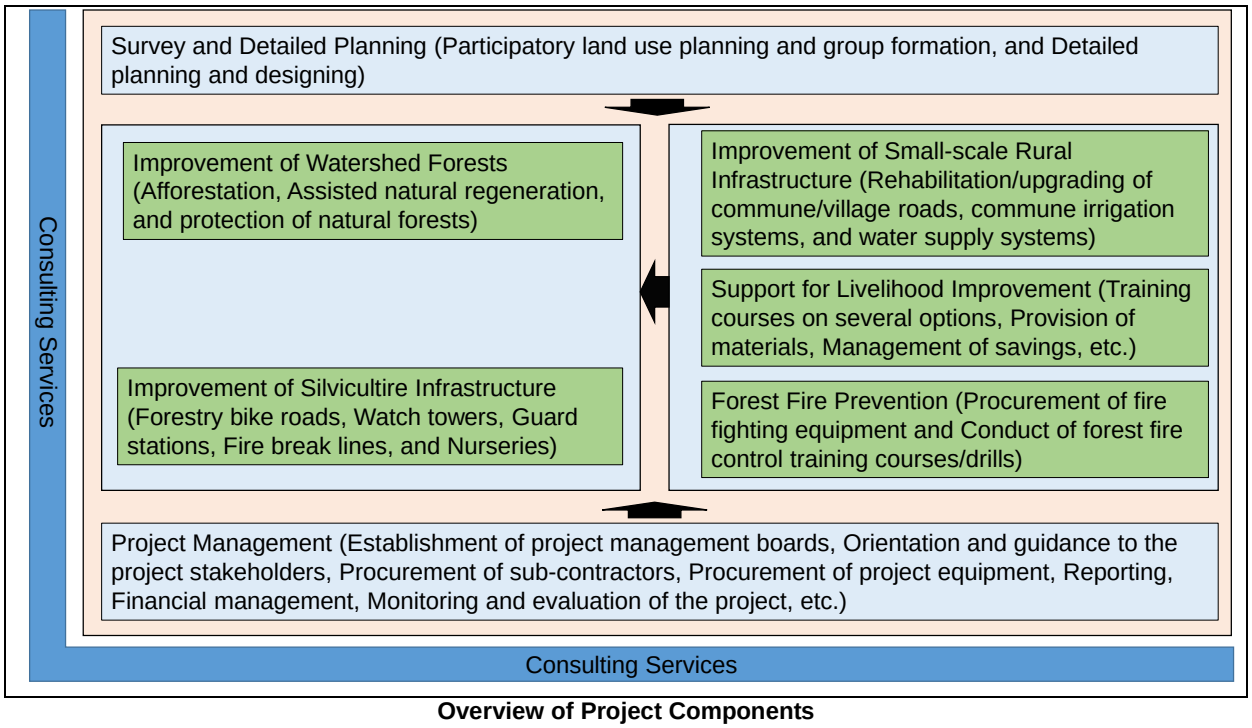
Province	Proposed Areas	Districts concerned	Communes concerned
Dien Bien	Dien Bien Protection Forest	Dien Bien	3 communes
	Muong Cha Protection Forest	Muong Cha	1 commune
	Tuan Giao Protection Forest	Tuan Giao	2 communes
	Muong Phang Special Use Forest	Dien Bien	2 communes
Lai Chau	Nam Ma Protection Forest	Shin Ho	13 communes
	Nam Na Protection Forest	Shin Ho	8 communes
	Tan Uyen Protection Forest	Tan Uyen	9 communes
	Than Uyen Protection Forest	Than Uyen	10 communes
Son La	Copia Special Use Forest	Thuan Chau	3 communes
	Thuan Chau Protection Forest	Thuan Chau	3 communes
	Quynh Nhai Protection Forest	Quynh Nhai	5 communes
	Xuan Nha Special Use Forest	Van Ho and Moc Chau	4 communes
Hoa Binh <1	Da River Protection Forest	Da Bac, Mai Chau, Tan Lac, and Cao Phong	18 communes
	Ngoc Son – Ngo Luong Special Use Forest	Lac Son and Tan Lac	7 communes
	Hang Kia – Pa Co Special Use Forest	Mai Chau	8 communes
	Phu Canh Special Use Forest	Da Bac	4 communes

Note: <1 Three (3) communes in Da River PF also relate to either Hang Kia-Pa Co SUF or Phu Canh SUF, hence the total number of communes relating to the potential sites in Hoa Binh is 34.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.1.4 Project Components

The proposed project is composed of eight components: namely, i) survey and detailed planning; ii) improvement of watershed forests; iii) development of silviculture infrastructure, iv) improvement of small scale rural infrastructure, v) support for livelihood improvement, vi) forest fire control, vii) project management, and viii) technical cooperation/consulting services. The project components will interrelate and interact with each other to generate synergy as shown below.



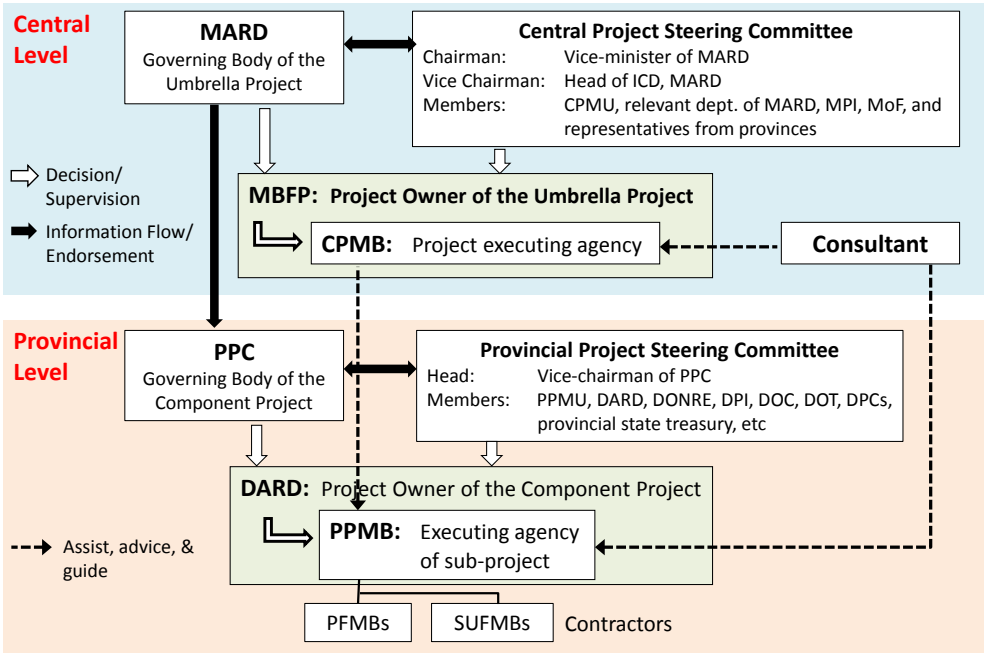
Overview of Project Components

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.1.5 Governing Body, Proposing Unit, and Project Owners

The project was conceptualized by the International Cooperation Department (ICD) and Management Board of Forestry Projects (PFMBs) of MARD with technical assistance from JICA in August/September 2016.

In accordance with Decree No. 16/2016/ND-CP (PM Decree on Management and Utilization of Official Development Assistance (ODA) and Concessional Loans granted by Foreign Sponsors), the project is categorized as a "joint program/project." Hence, the project will basically managed at the two levels: central and provincial levels. The organizational framework for implementation of the project is illustrated below.



Organizational Structure for Implementation of the Project

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The agencies and organizations involved in the implementation of the project at the respective levels are summarized below.

At the central level

a. Governing body of the umbrella project: Ministry of Agriculture and Rural Development (MARD)
b. Project owner of the umbrella project : Management Board for Forestry Projects (MBFPs).
c. Executing agency of the umbrella project: Central Project Management Unit (CPMU)

At the provincial level

a. Governing body of the component projects: Provincial People's Committees (PPCs) of Dien Bien, Lai Chau, Son La, and Hoa Binh Provinces
b. Project owner of the component project : Departments of Agriculture and Rural Development (DARDs) of the same provinces
c. Executing agency of the component project: Provincial Project Management Units (PPMUs) of the same provinces

J.1.6 Intended Foreign Sponsor and Co-sponsor (if any)

The project will be implemented with ODA loan assistance from JICA. There is no other co-sponsor expected for the project.

J.2 Study on the Proposed Project (including Analysis and Selction of the Investment Plan)

J.2.1 Significance, Requirement and Necessity of the Proposed Project

J.2.1.1 Contribution to Socio-economic Development

The socio-economic development strategy for the period of 2011-2020 was approved by Prime Minister on April 12, 2012 (Ref: Decision No. 432/QD-TTg) with an aim to achieve sustainable and effective economic growth balancing with social equality, environmental protection, socio-political stabilization, and territorial integrity of the country. The strategy lay out a path towards industrialization by 2020 based on the review and assessment of the achievements made for socio-economic development in the country from 2001-2010. Some of the key targets of economic, socio-cultural and environmental development set by the strategy for 2020 are shown below.

Targets of economic development in 2020	
- Average annual GDP growth rate:	7-8%/year
- Average per capita GDP in real price:	US$ 3,000
- Ratio of communes with standard rural infrastructure:	about 50%
Targets of socio-cultural development in 2020	
- Human development index:	Medium to high
- Annual population growth rate:	1.1%/year
- Decrease rate of poor households:	2~3%/year
- Real income of household	3.5 times of the level in 2010
Targets of environmental development in 2020	
- Ratio of forest cover:	45%
- Access to clean water	Almost 100%

The sustainable forest development is one of the key approaches to the implementation of the strategy; therefore, the proposed project could specifically contribute to the achievement of three development orientations, namely, "effective and sustainable agriculture development," "sustainable development and of urban and rural areas," and "improvement of environment quality," of the 12 socio-economic development orientations set by the strategy.

J.2.1.2 Contribution to the Existing Policies and Plans in the Forestry Sector

The implementation of the proposed project will contribute to the achievement of the following national policies and plans in the forestry sector.

- Vietnam Forest Development Strategy (2006-2020)
- National Forest Protection and Development Plan (2011-2020)
- Forest Sector Reform Proposal
- National Action Program on REDD+ (2011-2020)

(1) Vietnam Forest Development Strategy (2006-2020) (PM Decision No. 18/2007/QD-TTg on February 5, 2007)

The Vietnam Forestry Development Strategy (2006-2020) issued in 2007 sets the following overall objectives of the forestry sector toward 2020.

a. To establish, manage, protect, develop, and use 16.2 million of land for forestry in a sustainable manner;
b. To increase the forest cover up to 47% by 2020;
c. To ensure the participation of a wide range of stakeholders from various economic sectors and social organizations in forest development;
d. To contribute to socio-economic development, environmental protection, biodiversity conservation and provision of environmental services;
e. To reduce poverty and improve the livelihoods of rural people living in mountainous areas; and
f. To contribute to national defense and security.

To achieve the objectives toward 2020, a number of strategies and tasks are set from the economic, social, and environmental points of views. Among other things, the following tasks set by the strategy are consistent with the approaches and activities of the proposed project.

a. Forest protection and biodiversity conservation for watershed protection, natural disaster mitigation, erosion control, protection of water sources as well as environment, and increase values of environmental services;
b. Increase of forest cover; and
c. Reduction of slash and burn cultivation in forest lands.

(2) Forest Protection and Development Plan (2006-2020) (PM Decision No. 57/QD-TTg on January 9, 2012)

Likewise, the "Forest Protection and Development Plan (FPDP) for the Period 2011-2020" provides the objectives and tasks that the forestry sector should achieve and address from 2011 to 2020. The following table shows the relevance of the proposed project to the Forest Protection and Development Plan on a national level.

Comparison between the National FPDP and the Proposed Project (JICA 3)

National Forest Protection and Development Plan	Proposed Project (JICA3)
Objectives: ◆ To effectively manage available forest and land resources available for forestry in an effective and sustainable manner ◆ To increase the forest cover to 42-43% by 2015 and 44-45% by 2020, respectively; increase the productivity, quality, and values of forests; restructure the sector towards increasing added values; and meet basic demands for timber and forest products for domestic consumption and export ◆ To generate more job opportunities; improve income structure of forest-dependent households; contribute to hunger elimination and poverty reduction; and ensure national security and defense	Objectives: ◆ To restore and improve watershed forests in four provinces in the Northwest region for both economic and environmental purposes ◆ To strengthen the capacity of the local governments and owners of forests, such as, management boards of protection and special use forests, organizations, groups of households, and individuals for sustainable forest management ◆ To contribute to the achievement of the goal and objectives of the National REDD+ Action Plan, especially the reduction of greenhouse gas (GHG) emissions through reduction of deforestation and forest degradation in the Northwest region
Targets: ◆ To protect 13,388,000 ha of existing forest, 750,000 ha of regenerated forests, and 12,500,000 ha of new plantations; ◆ To develop 250,000 ha of new protection and special use forests, 1,000,000 ha of new production forests, and 1,350,000 ha of replanting after harvesting; ◆ To zone 750,000 ha of regeneration mainly in protection and special use forests; ◆ To rehabilitate 350,000 ha of critically poor natural forests ◆ To conduct supplemental planting of 500 million trees ◆ To improve quality of natural forests, productivity of plantation forests by 25% in 2020 compared with 2011	Targets: ◆ To protect 45,180 ha of existing natural forests in protection forests and nature reserves ◆ To develop 16,020 ha of new forests in bare lands, grasslands, or bushes in protection forests and nature reserves ◆ To rehabilitate 12,500 ha of degraded forests in protection forests and nature reserves

National Forest Protection and Development Plan	Proposed Project (JICA3)
Key approaches: i) Strengthening of communication and enhancement of awareness; 2) Review of planning of forest lands and improvement of management of three types of forests; 3) Strengthening of institutional set-ups and law enforcement for forest protection; 4) Facilitation of forest allocation, lease contract, and co-management; 5) Strengthening of science, technology and forestry extension; 6) Coordination with international cooperation; 7) Strengthening of market chain of forest products; and 8) Development of a mechanism for mobilization of funding sources.	Basic approaches: i) Application of community-centered concept 2) Introduction of collaborative management with benefit sharing mechanism 3) Integration of livelihood development with forest development and improvement 4) Contribution to REDD+ activities in the provinces 5) Capacity development of relevant stakeholders 6) Synchronization with JICA-T/C project

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

It is concluded that the implementation of the proposed project would directly contribute to the execution of the national Forest Protection and Development Plan from the macro point of view.

(3) Forest Sector Reform Proposal (MARD Decision No. 1565/QD-BNN-TCLN on July 8, 2013)

The Forest Sector Reform Proposal was issued to reform the forest sector into an economically, socially, and environmentally sustainable sector. The following specific objectives are set in the reform proposal.

a. To improve the value-added forest products and services and increase the annual average production values by 4.0-4.5% by 2020;
b. To gradually meet the demand of timber and timber products in domestic and international markets; and
c. To contribute to job creation, poverty alleviation, livelihood improvement, ecologically environmental protection aiming for sustainable development.

As shown in the following table, the proposed project is considered consistent with the Forest Sector Reform Proposal and crucial to the achievement of the targets set by the orientations of the reform, except "Increase of added values to forest products."

Comparison between the Forest Sector Reform Proposal and the Proposed Project (JICA 3)

Orientation	Target up to 2020	Contribution of the proposed project
Forest status	Overall: 16.2-16.5 million ha ◆ Production forest: 8.1 million ha ◆ Protection forest: 5.8 million ha ◆ Special use forest: 2.3 million ha	◆ Increase of forests in protection and special use forests ◆ Protection of natural forests and maintenance of quality forests in protection and special use forests
Economic development in the forestry sector	◆ Restructuring and strengthening of forest management entities ◆ Transformation of state-owned forest enterprises into the other state-owned organizations ◆ Development of forestry-based private and collective economic organizations	◆ The technical and financial capacities of 10 protection forest management boards (PFMBs) and six nature reserve management boards (NRMBs) in the four provinces will be enhanced in the course of the proposed project as the main implementers of forest development and improvement activities. ◆ The proposed project will develop silviculture infrastructure in 10 protection forests and 6 nature reserves, to improve the function of the PFMBs and NRMBs concerned.
Mobilization and utilization of financial resources	◆ Total capital demand/year: VND 700 – 800 billion ◆ ODA fund: 18-20% of the total demand	◆ About 85 % of the project budget will be financed from Japanese ODA budgets. ◆ About 50 % of the total loan amount are

Orientation	Target up to 2020	Contribution of the proposed project
	◆ Increase of non-state budget investment for development in the forest sector	expected to be used for forest development and improvement activities.
Development of forestry ecological economic regions (Northwest region)	◆ Development and fostering of watershed protection forests, special use forests, and natural production forests in the watersheds of hydropower plants to maximize protective efficiency and enable localities to get more benefits from PFES	◆ The main component of the project, "Improvement of watershed forests" mainly aims to restore, improve, and protect protection forests and special use forests in the critical watersheds of hydropower plants.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(4) National Action Program on REDD+ (2011-2020) (PM Decision No. 799/QD-TTg on June 27, 2012)

The National Action Program on REDD+ (2011-2020) was approved and issued to reduce GHG emissions by i) mitigating deforestation and forest degradation, ii) increasing GHG sequestration by forests, iii) achieving sustainable management of forest resources and conservation of biodiversity, and iv) implementing the national strategy on climate change along with poverty reduction. In the period of 2015-2020, the action program aims to:

- ◆ Accomplish the mechanisms, policies, organizational structures, and technical capacity to ensure the proper management, coordination, and effective operation of projects and activities under the National REDD+ action program at the national level; and
- ◆ Reduce GHG emissions through i) reduction of deforestation and forest degradation, ii) increase of GHG sequestration by forests, iii) management and sustainable development of forest resources, iv) increase of the national forest cover ratio to 44-45%, v) conservation of biodiversity and vi) improvement of livelihoods of forest owners and households concerned with forests.

Given that the proposed project will restore forests of about 16,010 ha of bare lands/grasslands/bushes, rehabilitate 12,500 ha of degraded forests, and protect 45,180 ha of natural forests, along with introduction of a collaborative management mechanism with local communities for sustainable management in the post-project period, it is judged that the proposed project could directly contribute to the reduction of GHG emissions through reduction of deforestation and forest degradation and increase of GHG sequestration by afforestation.

J.2.1.3 Compliance with International Conventions

The Government of Vietnam (GoV) ratified several international conventions related to climate change, sustainable forest management, and biodiversity conservation, such as the United Nation Framework Convention on Climate Change (UNFCC), the United Nation Convention to Combat Desertification (UNFCCD), and Convention on Biological Biodiversity (CBD), and have actively participated in the international conferences and worked on key issues to be addressed in the respective fields,

Among others, GoV has put its emphasis on the climate change issues, especially on the mitigation of climate changes through reduction of GHG emissions. Particularly, GoV pledges to reduce Vietnam's Greenhouse Gas (GHG) emissions by 8% by 2030 compared to a Business as Usual scenario (BAU) in the recent UNFCCC Conference of Parties (CoP) in Paris. The enhancement of forest carbon sequestration including REDD+ is one of the mitigation components promoted by GoV's policy initiatives.

In addition, GOV submitted the National Biodiversity Strategy to 2020, vision to 2013 (NBSAP Ver. 3, 2013) to CBD in 2013 by revising NBSAP submitted in 2007. The overall objectives of the strategy is to preserve and sustainably use the important ecosystems, rare and precious species, and genetic resources to contribute to the development of the green economy and actively respond to climate changes. Specifically, the strategy aims to: i) improve the quality and increase the areas of protected ecosystems; ii) increase populations of endangered, rare and precious species, and iii) compile inventory information, and iv) conserve native, endangered, rare, and precious genetic resources. The proposed project will directly contribute to the implementation of the activities relating to conservation of natural ecosystems, especially natural forests in nature reserves and protection forests.

J.2.1.4 Necessity of ODA Assistance

(1) Necessity of the External Assistance

As described in the Forest Sector Reform Proposal (MARD Decision No. 1565/QD-BNN-TCLN on July 8, 2013), forests in the Northwest region have an important role in protecting watersheds of major hydropower plants in the region, such as Hoa Bin Dam and Son La Dam. Moreover, they have also contributed to the stabilization of river flow of the major rivers flowing into Hanoi (e.g., the Da river and other tributaries of the Red river). Lowering of the innate watershed functions due to deforestation and forest degradation in the area is a serious concern for the country. Hence, aggressive interventions for improving functions of watershed forests in the region is needed for economic and social stability in the country.

The target provinces have planned and programmed several measures for forest restoration, improvement, and management into the provincial FPDPs. Nevertheless, PPCs/DARDs have faced difficulties in securing sufficient budgets to implement the activities programmed in the plans. Particularly, it has been difficult for DARDs in the target provinces to improve protection forests and special use forests on a large scale since there has been no large scale government program (such as 661 program) or donor-funded project focusing on protection and/or special use forests in the region recently. It is also necessary to strengthen the forest protection activities in natural forests in the provinces although the significant part of natural forests have been under the scheme of PFES. The PFES payments range from about VND 10,000/ha/year to VND 260,000/ha/year in the target provinces except Lai Chau; therefore, the current payment level is not necessarily sufficient to motivate local communities to engage in forest protection activities in Son La and Hoa Binh.

It is, therefore, judged that the proposed project is the requisite intervention for PPCs/DARDs of the target provinces to restore and improve degraded forests/lands and maintain the quality of natural forests in the respective jurisdictions, especially in critical watersheds for major hydropower plants. Moreover, JICA has recently launched a new technical cooperation project named the Sustainable Natural Resource Management Project (SNRMP) with an aim to help the four provinces prepare the provincial REDD+ action plans and implement REDD+ pilot activities. The proposed project will also play an important role in the implementation of the provincial REDD+ action plans and scaling up the REDD+ pilot models developed by SNRMP.

(2) Necessity of the Use of ODA Support

From a macro economic point of view, the forest protection and restoration should be promoted as part of public investments as they would produce significant benefits not only for local environment but also local and regional economy. In fact, its importance has been further heightened recently as the necessity of mitigating climate changes has been increased globally. Despite its increased importance, the government investments are limited. Likewise, the share of the forestry sector in the total ODA assistance for the agriculture and rural development sectors for the last five years (2010-2015) is also limited (3.8%) as compared to its tasks and economic contribution.

ODA Share in the Agriculture and Rural Development Sectors

Sub-sector	Amount (US$ Million)	Proportion (%)
Water supply	1,302.0	53.3
Rural development	628.5	25.7
Agriculture	416.3	17.0
Forestry	92.7	3.8
Fishery	30.3	1.2
Total	2,441.8	100.0

Source: Report No. 645/CP-BC (November 20, 2015) on the use of ODA loan from 2010 2015 and Article of Director of ICD, MARD on August 5, 2015 posed on electric information page of the central economy board/committee.

Given the fact that the share of the agriculture and rural development sectors is less than 10% among all the economic sectors (e.g., transport, urban development, energy, etc.), the provision of ODA support to the forestry sector is considered quite low. It is, however, rational to use the concessional ODA scheme (for environmental protection) for the proposed project because of its nature. The proposed project is not expected to generate substantial short-term returns unlike other infrastructure development projects, but would definitely contribute to the stabilization and improvement of the regional economy as well as environment.

(3) Necessity of the JICA's Assistance

JICA is one of the largest donors in the forestry sector and have been implementing a number of forestry projects in Vietnam as listed below.

- Sustainable Natural Resource Management Project (Technical Cooperation Type Project): 2015-2020
- Protection Forest Restoration and Sustainable Management Project (Loan): 2012-2021
- Dien Bien REDD+ Pilot Project (Technical Cooperation Type Project): 2012-2013
- The Project for Sustainable Forest Management in the Northwest Watershed Area (Technical Cooperation Type Project): 2010-2015
- Afforestation Planning and Implementation Capacity Strengthening Project (Development Study): 2010-2013
- The Project for Afforestation on the Coastal Sandy Area in Southern Central Vietnam (Grant Aid Project): 2009-2014
- The Study on Potential Forest and Land related to Climate Change and Forests in Vietnam (Development Study): 2009-2012
- The Study on Capacity Development for AR-CDM Promotion in Vietnam (Development Study): 2006-2008

- The Project on the Villagers Support for Sustainable Forest Management in Central Highland (Technical Cooperation Type Project): 2005-2008
- Capacity Building for Preparing Feasibility Study and Implementation for Afforestation Projects (Technical Cooperation Type Project): 2005-2007
- Rehabilitation of Natural Forest in Degraded Watershed Area in the North of Vietnam (Technical Cooperation Type Project): 2003-2008
- Rural Infrastructure Development and Living Standard Improvement Project III (Loan): 2002-2008

Among others, the experiences gained and lessons learned from the Protection Forest Restoration and Sustainable Management Project can be fully used for the proposed project as its project framework and organizational structure are similar to those of the proposed project. Furthermore, the technical guidelines and manuals and human resources that the Sustainable Natural Resource Management Project will develop and enhance in the course of the project can be used for the implementation of the proposed project. Consequently, the experiences of JICA are best fit to the proposed project.

Moreover, JICA has recently launched a new technical cooperation project named the Sustainable Natural Resource Management Project (SNRMP) with an aim to help the four provinces prepare the provincial REDD+ action plans and implement REDD+ pilot activities. The proposed project will also play an important role in the implementation of the provincial REDD+ action plans and scaling up the REDD+ pilot models developed by SNRMP.

J.2.2 Site Location, Estimation of Demands for Land Areas and Other Resources

J.2.2.1 Present Conditions of the Target Sites

(1) Location and Topography

The four target provinces cover a total of 37,415 km^2 of geographical area, which comprise around 11 % of the total land of Vietnam. Those provinces are geographically categorized as Northwest sub-region, which lies between latitudes 21°00' - 22°30'N and longitude 102°30' - 106°00'E. The target protection forests and nature reserves are located in the areas overlapped with 97 communes in 15 districts in the four provinces. The following table shows the number of communes as well as the associated villages geographically relating to the potential target sites.

Districts, Communes, and Villages relating to the Potential Target Sites

Province	District	No. of target communes	No. of village	Area (km2)
Dien Bien	Dien Bien	5	85	513
	Muong Cha	1	11	171
	Tuan Giao	2	18	195
Lai Chau	Sin Ho	21	223	1,445
	Tan Uyen	9	134	834
	Than Uyen	10	133	723
Son La	Thuan Chau	6	140	650
	Quynh Nhai	5	75	485
	Van Ho	3	25	340
	Moc Chau	1	23	92
Hoa Binh	Da Bac	11	88	450
	Mai Chau	12	69	339
	Tan Lac	5	29	143
	Cao Phong	2	13	62
	Lac Son	4	52	146

Province	District	No. of target communes	No. of village	Area (km2)
TOTAL		97	1,118	6,588

Source: District Statistical Year Book 2015 and Results of the field survey made by JICA Preparatory Survey Team (2016)

(2) Rainfall and Temperature

The following table shows the annual and monthly rainfalls of the target provinces. As shown below, the average rainfalls in the four provinces between 2011 and 2015 range from 1,570 to 1,960 mm, of which the majority are concentrated in five months between May and September.

Rainfall Data in the Four Target Provinces

	Dien Bien					Lai Chau					Son La					Hoa Binh					Average				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015 prel.	2011	2012	2013	2014	2015
Total	**1,418**	**1,978**	**1,978**	**2,069**	**1,709**	**2,179**	**2,554**	**2,358**	**2,475**	**2,480**	**1,176**	**1,405**	**1,337**	**1,290**	**1,374**	**1,825**	**1,904**	**1,736**	**1,252**	**1,674**	**1,570**	**1,960**	**1,875**	**1,681**	**1,927**
January	16	64	42	7	83	49	83	53	23	92	24	57	25	0	65	11	8	14	3	40	25	53	34	8	70
February	7	3	23	15	11	6	4	44	15	39	13	1	8	10	4	5	5	22	3	12	8	3	24	11	16
March	111	71	35	81	26	126	44	26	69	56	108	14	34	42	12	57	20	17	31	51	101	37	28	56	36
April	128	135	197	104	144	147	145	198	183	155	107	59	91	93	103	71	77	48	128	47	113	104	133	127	112
May	221	286	296	172	162	286	306	301	198	235	136	186	214	113	52	268	443	197	198	152	228	305	252	170	150
June	240	209	198	256	278	393	466	352	424	404	191	127	148	303	250	313	314	309	243	284	284	279	252	307	304
July	243	507	528	509	489	382	678	502	679	529	215	392	336	257	322	268	259	347	184	247	277	459	428	407	397
August	172	281	350	294	490	164	267	430	469	357	168	305	260	259	263	359	281	425	184	129	216	283	366	302	310
September	180	180	131	132	184	183	282	190	202	269	89	166	114	100	103	297	315	208	175	509	187	236	161	152	266
October	72	56	35	66	131	89	111	55	111	151	77	18	21	34	50	141	139	108	71	63	95	81	55	71	99
November	24	144	7	72	72	28	139	14	101	73	32	59	3	79	49	21	34	28	21	91	26	94	13	68	71
December	4	42	227	2	110	10	31	193	4	122	16	21	83	0	101	14	9	13	11	49	11	26	129	4	95

Source: Provincial Statistical Year Books, 2015

The annual mean temperatures in the provinces are between 20~26 ℃ in 2015, but it tends to be below 20 ℃ between November and February.

Monthly Temperature in the Target Provinces

Unit: ℃

	Dien Bien					Lai Chau					Son La					Hoa Binh				
	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015	2011	2012	2013	2014	Prel. 2015
Average	20.9	22.0	21.3	21.7	23.3	19.5	20.6	20.3	20.5	20.8	21.0	21.9	21.4	22.3	23.0	22.8	28.4	23.3	24.2	25.1
January	13.4	15.8	15.9	14.9	16.1	11.7	13.8	14.3	13.4	13.4	11.7	14.2	14.7	15.0	15.5	12.6	17.8	21.5	16.5	17.8
February	17.5	18.6	20.2	17.5	19.1	15.9	16.5	18.5	15.9	16.0	16.7	16.7	19.6	17.1	18.2	18.0	19.6	15.6	17.7	19.7
March	17.6	20.3	21.0	21.3	23.1	15.8	18.7	20.6	19.8	22.6	18.4	20.1	22.3	21.4	22.5	17.1	24.6	20.3	20.9	22.6
April	22.2	23.7	23.0	24.5	24.1	20.8	22.6	21.8	23.2	21.6	22.1	24.3	23.1	25.4	24.0	23.7	31.8	24.4	26.0	25.5
May	23.9	25.3	24.3	25.0	27.4	22.6	24.3	23.5	24.2	24.9	24.1	26.1	25.1	26.7	28.4	26.4	33.9	25.3	28.9	30.6
June	25.2	25.3	25.0	25.4	27.2	24.2	24.1	23.8	24.6	24.8	25.5	25.9	25.1	26.6	27.3	28.9	34.4	28.5	29.3	30.3
July	25.3	24.8	24.1	25.0	26.5	24.4	23.8	23.6	24.2	24.1	25.5	25.4	24.6	26.2	26.3	29.0	33.8	28.1	28.9	29.2
August	25.0	25.1	24.6	24.6	26.3	23.9	24.2	23.7	23.6	23.0	25.1	25.2	25.0	25.5	26.1	28.0	33.4	28.3	28.4	29.2
September	24.5	23.6	23.8	24.8	26.3	23.3	22.5	22.9	23.6	23.9	24.5	23.6	23.7	25.7	25.6	26.9	31.2	26.1	28.3	28.0
October	22.1	22.7	21.0	22.2	24.1	20.9	21.5	19.8	20.8	21.4	23.6	22.8	21.1	22.8	23.3	23.8	30.4	24.0	25.5	25.9
November	19.3	21.1	19.7	20.2	22.1	17.2	19.6	18.4	18.4	19.3	18.4	20.7	19.6	20.4	22.1	22.5	27.3	21.9	22.6	24.2
December	15.2	17.9	13.6	15.7	17.6	13.4	15.9	12.5	14.1	15.1	16.4	17.4	13.0	15.0	16.4	16.7	22.2	15.0	16.9	18.5

Source: Provincial Statistical Year Books, 2015

(3) Forest Conditions and Changes of Forest Areas

Forest cover is broadly classified into three types: natural forest, plantation, and bare land. As shown in the table below, about 30~55% of the forest land in the target provinces are bare lands or in less vegetative conditions. Among the four province, Dien Bien shows the highest ratio of bare lands.

Forest Covers in the Forest Land in the Target Provinces

Unit: ha

Province	Natural Forest (a)	Plantation (b)	Bare Lands (c)	Total Forestry Land (d)	Ratio of Bare Land (c/d) (%)
Dien Bien	362,243	5,227	446,268	813,737	54
Lai Chau	403,963	8,049	295,391	707,403	41
Son La	573,593	25,870	436,171	1,037,635	42
Hoa Binh	158,812	76,187	112,428	347,426	32
Total of 4 province (e)	1,498,610	115,333	1,292,257	2,906,201	44
Whole country (f)	10,175,519	3,886,337	N.A.	14,061,856	N.A.
e/f (%)	14.7	3.0	N.A.	20.7	

Source (f): MARD Decision No. 3158/QD-BNN-TCLN, dated on 27 July 2016.

N.A.: Data of bare land in whole country are not presented in MARD Decision No. 3158, dated on 27 July 2016.
Source of all other figures: Provincial Peoples Committee's Decision
(1) Dien Bien PPC Decision No. 499/QĐ-UBND, dated on 8/4/2016
(2) Lai Chau PPC Decision No. 347/QĐ-UBND, dated on 29/3/2016
(3) Son La PPC Decision No. 1529/QĐ-UBND, dated on 29/6/2016
(4) Hoa Binh PPC Decision No. 742/QĐ-UBND, dated on 28/32016

The present forest conditions in the communes relating to the potential target sites were confirmed by analyzing the latest National Forest Inventory and Statistic (2015 NFI&S) data approved by PPCs of the target provinces in 2016. The results of the analysis are summarized below. As shown below. forests under poor or regenerating conditions account for more than 50% of the total forests in the communes in the four provinces.

Forest Area in 97 Communes in the Four Provinces

Province	Evergreen broadleaves (Rich)	Evergreen broadleaves (Medium)	Evergreen broadleaves (Poor)	Evergreen broadleaves (Regrowth)	Bamboo Forest	Mixed Wood-Bamboo Forests	Lime Stone Forests	Plantation	Total
Dien Bien	4,220	34,346	46,661	237,720	515	22,571	16,162	10,566	372,760
Lai Chau	84	28,513	59,792	182,536	958	10,521	12,539	32,266	327,209
Son La	9,799	28,754	29,662	256,641	15,895	138,603	91,321	27,573	598,247
Hoa Binh	53	9,999	15,380	65,682	1,338	10,676	78,187	136,213	317,529
Four Province	14,155	101,613	151,494	742,580	18,706	182,370	198,210	206,618	1,615,747

Source: NFI&S (2015) obtained in the provinces (adapted by the JICA Preparatory Survey (2016))

(4) Forest Land Allocation

The forest land allocation status in the target provinces is summarized below.

Forest Ownership in the Target Provinces

Unit: ha

Province	Dien Bien		Lai Chau		Son La		Hoa Binh	
	Area (ha)	%	Area (ha)	%	Area (ha)	%	Area (ha)	%
Management Boards	52,527	6.5	297,188	41.7	78,276	7.5	42,942	12.4
Forest Company	0	0.0	0	0.0	26,691	2.6	11,198	3.2
Households	6,253	0.8	7,835	1.1	197,808	19.0	143,004	41.2
Community groups*1	256,199	31.5	293,638	41.2	621,512	59.7	48,771	14.0
Other organizations	66	< 0.1	7,248	1.0	23,899	2.3	3,211	0.9
CPC*3	498,693	61.3	107,563	15.1	93,899	9.0	98,300	28.3

Source : (1) Dien Bien PPC by decision No 499/QĐ-UBND date on 8/4/2016
(2) Lai Chau PPC by decision No 347/QĐ-UBND date on 29/3/2016
(3) Son La PPC by decision No 1529/QĐ-UBND date on 29/6/2016
(4) Hoa Binh PPC by decision No 742/QĐ-UBND date on 28/32016

Note: *1 Community means the household groups or villages who are living adjacent to the forest.
*2 Other organizations include: i) economic organizations such as private entities operating its business in the sector, ii) army force, and iii) others such as police groups guarding the national borders.
*3 CPC means that the areas have not been allocated to owners yet.

Each province has different status of forest land allocation such as:

- Dien Bien still has about 498,693 ha of unallocated forest land.
- About 40% of the forest land (or about 143,004 ha) have already been allocated to households in Hoa Binh.
- A majority of the forest land (621,512 ha or about 60% of total forest land) are allocated to community groups in Son La.
- A significant part of the forest land is allocated to management boards (297,188 ha or 42% of total forest land) and community groups (293,638 ha or about 41%) in Lai Chau.

The similar tendency was confirmed in the status of forest land allocation in the target protection forests and nature reserves as shown below.

Land Allocation Conditions of the Proposed Areas

Province	Target PF/SUF	No. of commune	Areas allocated to MB	Areas allocated to HHs	Area unallocated	Total Area
Dien Bien	Dien Bien PF	3	1,301	0	5,211	6,512
	Muong Cha PF	1	4,953	0	453	5,406
	Tuan Giao PF	2	0	0	6,498	6,498
	Muong Phang SUF	2	1,004	0	1,768	2,772
	Sub-total	**8**	**7,258**	**0**	**13,929**	**21,187**
Lai Chau	Nam Ma PF	13	12,925	0	0	12,925
	Nam Na PF	8	15,958	0	0	15,958
	Tan Uyen PF	9	11,429	0	0	11,429
	Than Uyen PF	10	11,638	0	0	11,638
	Sub-total	**40**	**51,950**	**0**	**0**	**51,950**
Son La	Copia SUF	3	14,728	0	0	14,728
	Thuan Chau PF	3	7,343	0	0	7,343
	Quynh Nhai PF	5	0	0	9,163	9,163
	Xuan Nha SUF	4	22,943	0	0	22,943
	Sub-total	15	**45,014**	**0**	**9,163**	**54,177**
Hoa Binh	Da River PF	18<1	1,704	22,639	0	24,343
	Ngoc Son - Ngo Luong SUF	7<1	2,809	12,818	0	15,627
	Hang Kia-Pa Co SUF	8	5,252	0	0	5,252
	Phu Canh SUF	4<1	5,304	0	0	5,304
	Sub-total	**34<1**	**15,068**	**35,457**	**0**	**50,526**
Total	**Total**	**97**	**119,291**	**35,457**	**23,092**	**177,840**

Note: <1 Three (3) communes in Da River Watershed Protection Forest also relate to Phu Canh Nature Reserve; therefore, the total number of communes selected as target communes in Hoa Binh is 34.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

As shown above, parts of the target protection forests and special use forests in Dien Bien, namely Dien Bien Protection Forest, Tuan Giao Protection Forest, and Muong Phang SUF, are still unallocated and currently managed by CPCs concerned, while a significant part of Ngoc Son-Ngoc Luong SUF and almost all the areas of Da River Protection Forest are allocated to local communities and households.

(5) Drivers of Forest Degradation and Forest Fire

In general, i) illegal cutting, ii) forest fire, and iii) insect attack are considered as major causes of forest degradation in the country as stipulated in MARD Decision No.1267/QD-BNN-KL dated on May 5, 2009. Another study made by the Center for International Forestry Research (CIFOR)[1] also pointed out that i) conversion of forests into farms including plantations of high value perennial crops, ii) submergence caused by dam construction, iii) unsustainable legal and illegal logging, and iv) frequent forest fire are considered as the major drivers of forest degradation in the country.

Among others, forest fire is considered as the major cause of forest degradation in not only natural forests but also plantations in the target provinces except Hoa Binh. Accordingly, the risk of forest fire becomes high in the dry season between October and April. Since there was

[1] Pham,T.T., Moeliono, M., Nguyen,T.H., Nguyen, H.T., Vu, T.H. 2012. The context of REDD+ in Vietnam: Drivers, agents and institutions. Occasional Paper 75. CIFOR, Bogor, Indonesia.

no statistical data available on the number of forest fire from 2012 to 2015, the number of hotspots detected by the satellite monitoring system is substituted as the number of fire cases. The following table shows the frequency of forest fires taking place in the provinces for the last six (6) years.

Data on Forest Fire in the Target Provinces

Province	2010	2011	2012	2013	2014	2015	Average
Dien Bien (Hotspot) 1)	1,448	N/A	41	555	167	1,947	832
(Damaged area) 2)	29.60	1.20	57.60	7.07	22.90	N/A	23.80
Lai Chau (Hotspot) 1)	1,362	N/A	26	208	125	619	468
(Damaged area) 2)	346.3	67.3	613.7	79.6	211.00	N/A	265.58
Son La (Hotspot) 1)	1,909	N/A	54	492	175	2,048	936
(Damaged area) 2)	N/A	14.70	1.80	N/A	119.20	N/A	27.14
Hoa Binh (Hotspot) 1)	201	N/A	14	23	80	234	110
(Damaged area) 2)	33.40	N/A	15.4	N/A	4.40	N/A	10.64
Average of 4 Provinces	1,230	N/A	34	320	137	1,212	586
(Damaged area)	102.33	20.80	172.13	21.83	91.88	N/A	81.79

Sources: 1) Forest Protection Department, MARD (http://www.kiemlam.org.vn/firewatchvn/Tinh.aspx)
2) Statistical Year Book of Vietnam 2014

The data suggest that i) forest fires have frequently occurred in Son La and Dien Bien; ii) the frequency in Lai Chau is less than those of Dien Bien and Son La but its scale is large, iii) Hoa Binh has less threats of fire in general.

(7) Population

The total population in the four target provinces in 2015 is estimated to be around 3.0 million in total. The following table shows the total populations as well as average population growth rates of the respective provinces.

Population and Population Density in the Target Provinces

Province	Population (persons)	Share of rural population (%)	Average population growth	Population density (person/km^2)
1. Hoa Binh	824,325	85%	0.9%	179
2. Son La	1,192,100	86%	1.9%	84
3. Dien Bien	547,785	85%	1.8%	57
4. Lai Chau	430,960	83%	1.9%	48
National Level	91,713,300	66%	1.1%	277

Source: Provincial Statistical Yearbook of each province 2015, General statistic office of Vietnam

Furthremore, the total population in the 97 communes amount to 358,655, which accounts for around 30% of the total population of the 15 districts as shown below.

Population and Population Density in the Project Area

Province	Target district	Target district general					Project area				
		Area (km^2)	Population (persons)	Population density (person/km^2)	No. of commune	No. of village	No. of communes	No. of villages	Area (km^2)	Population (persons)	Population density (person/km^2)
Dien Bien	***Sub-Total***	***3,975***	***235,411***	**59**	***56***	***823***	***8***	***114***	***879***	***30,690***	**35**
	Dien Bien	1,639	113,584	69	25	463	5	85	513	18,753	37
	Muong Cha	1,199	42,380	35	12	123	1	11	171	3,807	22
	Tong Giao	1,137	79,447	63	19	237	2	18	195	8,130	42
Lai Chau	***Sub-Total***	***3,215***	***197,132***	***61***	***44***	***541***	***40***	***490***	***3,002***	***172,658***	***58***
	Sin Ho	1,526	79,720	52	22	233	21	223	1,445	71,741	50
	Tan Uyen	897	54,132	60	10	142	9	134	834.0	50,533	61
	Than Uyen	792	63,280	80	12	166	10	133	723.0	50,384	70
Son La	***Sub-Total***	***3,588***	***280,191***	***78***	***54***	***902***	***15***	***263***	***1,567***	***77,795***	***224***
	Thuan Chau	1,549	162,002	156	29	568	6	140	650.0	35,743	55
	Quynh Nhai	1,060	60,220	59	11	189	5	75	485.0	22,739	47
	Van Ho	979	57,969	67	14	145	3	25	340.0	11,085	33
	Mac Chau	1,074	107,200	99	15	221	1	23	92.0	8,228	90
Hoa Binh	***Sub-Total***	***2,722***	***375,448***	***731***	***108***	***1,034***	***34***	***251***	***1,140***	***77,512***	***68***
	Da Bac	778	53,106	68	20	163	11	88	450.0	25,835	57
	Mai Chau	571	54,333	95	23	138	12	69	339.0	24,406	72
	Tan Lac	530	87,060	164	24	245	5	29	143.0	8,416	59
	Cao Phong	256	43,212	169	13	124	2	13	62.0	4,510	73
	Lac Son	587	137,737	235	28	364	4	52	146.0	14,345	98
	Total	**13,500**	**1,088,182**	**81**	**262**	**3,300**	**97**	**1,118**	**6,588**	**358,655**	**54**

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(8) Ethnic Groups

Ethnic compositions of the target provinces are more diverse in contrast to the tendency at the national level, which indicates that Kinh occupies around 90% of the total population in the country. In fact, more than 80% of the population are ethnic minorities in the target provinces except Hoa Binh. Thai is the dominant group, whose shares ranges from 34% to 54% of the total population in the three provinces (Son La, Dien Bien, and Lai Chau), followed by Mong, Hmong, and other ethnic groups (10 to 20 groups in total) in the same provinces. In Hoa Binh, 74% of the population are ethnic minorities, of which the majority are Muong people.

Ethnic Composition of the Target Provinces

Dien Bien (2009)		Lai Chau (2014)		Son La (2015)		Hoa Binh (2014)	
Group	%	Group	%	Group	%	Group	%
Thai	38	Thai	34	Thai	54	Muong	63
Mong	35	Hmong	23	Kinh	16	Kinh	27
Kinh	18	Kinh	15	Hmong	16	Tay	3
Khu Mu	4	Dao	12	Muong	7	Thai	4
Others	5	Others	16	Others	7	Others	3
Total ethnic minority	82%	Total ethnic minority	85%	Total ethnic minority	84%	Total ethnic minority	74%

Source: Committee for Ethnic Minority Affairs of each province of the respective year

Like in the case of the four target provinces, ethnic minority groups are the majority populations in the 15 districts. The overall proportion of ethnic minorities to the total populations in the 15 districts is estimated at 86%. The composition of ethnic groups are diverse although the majority of them are classified into five groups as shown below.

Ethnic Composition of the Project Area

Province	District	Proportion of		Ethnic Minorities (%)									
		Ethnic minority	Kinh group	Tay	H'mong	Muong	Dao	Khu Mu	Tay	La Ha	Khang	Lu	Others
Dien Bien	*Province total*	*82%*	*16%*	*38*		*35*		*4*					*5*
	Muong Cha	91%	9%	16	66								9
	Tuan Giao	89%	11%										
	Dien Bien	70%	30%										
Lai Chau	*Province total*	*85%*	*15%*	*34*	*23*		*12*						*16*
	Sin Ho	95%	5%	30	33		23	2				5	2
	Tan Uyen	86%	14%	48	17		4						17
	Than Uyen	85%	15%	72	11		1	1					

Province	District	Proportion of		Ethnic Minorities (%)									
		Ethnic minority	Kinh group	Tay	H'mong	Muong	Dao	Khu Mu	Tay	La Ha	Khang	Lu	Others
Son La	*Province total*	*84%*	*16%*	*54*	*16*	*7*							*7*
	Quynh Nhai	96%	4%	83	4		2			2	4		1
	Van Ho	94%	6%	42	24	21	6						1
	Moc Chau	67%	33%	33	18								16
	Thuan Chau	93%	7%	76	11			1		2	3		
Hoa Binh	*Province total*	*74%*	*28%*	*4*		*63*			*3*				*2*
	Lac Son	90%	10%			90							
	Tan Lac	84%	16%	84									1
	Mai Chau	84%	16%	60	7	15	2						
	Da Bac	89%	11%			34	13		42				
	Cao Phong	72%	28%										
Average		86%	14%	-	-	-	-	-	-	-	-	-	-

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Although the details of ethnic groups at the commune level were not available, data shown above suggest that the tendency of ethnic composition varies from commune to commune. As a whole, Tay is the most dominant group whose share range from 16 to 83% in the 15 districts, followed by Hmong, Muong and Dao. As each ethnic group has unique lifestyle, farming tradition and different culture, which might influence on the use of forest lands and resources, it is worth understanding their uniqueness for effective implementation of the project.

(9) Average Income and Poverty Situation

The average monthly income levels in urban and rural areas are estimated at VND 2,999,000/person and VND 988,000/person, respectively. The income in Hoa Binh province is relatively high among the four provinces, particularly the one in rural area (VND 1,309,000/person), which is almost twice the amount of Lai Chau province.

Monthly Average Income per Capita at Current Prices by residence and Income Source

(Unit: Thousand VND)

Province	By residence (Thous.VND)		% of income source			
	Urban	Rural	Salary & wage	Agriculture, forestry & fishery	Non-agriculture	Others
Dien Bien**	2,810	969	41%	33%	19%	8%
Lai Chau**	2,964	769	31%	42%	18%	9%
Son La*	2,918	904	34%	48%	13%	5%
Hoa Binh*	3,304	1,309	44%	25%	22%	10%
Average	2,999	988	37%	37%	18%	8%
National average	3,968	2,041	-	-	-	-

Source: Provincial Statistical Year Book (2015), GSO (2014)
*Note: *=actual data in 2014; **= prel. data in 2015*

The results of the socio-economic survey conducted by the JICA preparatory survey team in 2016 also indicated that the average per capita annual income in the target communes was about VND 9,200,000, which was equivalent to VND 767,000 per month per person.

Average Annual Income per Capita in the Surveyed Communes

Province	District	Commune	Average Annual Income (VND/prs/year)
Dien Bien	*Provincial average*		*17,052,000*
	Dien Bien	Muong Nha	10,000,000
	Tuan Giao	Ta Ma	6,000,000
	Muong Cha	Muong Tung	10,000,000
Lai Chau	*Provincial average*		*19,086,000*
	Tan Uyen	Nam So	7,200,000
	Than Uyen	Pha Mu	N.A.
	Sin Ho	Phang So Lin	N.A.

Province	District	Commune	Average Annual Income (VND/prs/year)
Son La	*Provincial average*		*24,696,000*
	Van Ho	Chieng Xuan	6,000,000
	Quynh Nhai	Muong Giang	12,000,000
	Thuan Chau	Ban Lam	6,000,000
Hoa Binh	*Provincial average*		*28,404,000*
	Lac Son	Ngoc Lau	12,000,000
	Mai Chau	Pa Co	7,300,000
	Da Bac	Tien Phong	13,500,000
	Cao Phang	N.A.	N.A.
Average	Provincial average		*22,309,500*
	Average of target communes		*9,200,000*

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The poverty rate of the target district is still about four times higher than the latest national poverty rate of 6 % (2014), although the same has been drastically reduced from 38.9% to 22.24& from 2011 to 2014.

Poverty Rate of the Target Districts

Unit:%

Province	District	2011	2012	2013	2014	2015
Dien Bien	*Whole province*	***45.3***	***38.2***	***35.2***	***32.6***	***28.0***
	Dien Bien	25.2	20.8	17.6	15.7	14.6
	Tuan giao	54.8	47.8	45.3	42.3	39.3
	Muong Cha	60.6	56.4	53.5	50.7	46.1
Lai Chau	*Whole province*	***47.2***	***42.8***	***41.0***	***38.8***	***N.A.***
	Sin Ho	48.0	41.6	34.9	29.9	24.9
	Than Uyen	43.6	34.8	26.3	22.1	19.0
	Tan Uyen	39.3	28.0	22.2	20.1	16.0
Son La	*Whole province*	***31.9***	***28.0***	***27.0***	***23.9***	***22.4***
	Quynh Nhai	42.0	33.3	25.9	22.6	19,5
	Van Ho	-	-	57.3	53.0	51.0
	Moc Chau	18.0	16.0	14.0	13.0	12.0
	Tuan Chau	39.9	35.9	32.8	29.4	26.5
Hoa Binh	*Whole province*	***26.1***	***21.7***	***18.7***	***15.5***	***12.3***
	Da Bac	48.2	42.5	38.6	34.0	28.8
	Mai Chau	28.6	25.8	23.1	21.0	17.2
	Lac Son	47.2	38.4	27.8	22.3	18.3
	Tan Lac	33.4	26.9	23.2	17.0	11.8
	Cao Phong	23.7	21.9	19.8	15.8	12.1
Provincial average		***37.6***	***32.7***	***30.5***	***27.7***	***20.9***
Average of the target districts		38.9	33.2	29.0	25.7	22.4

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(10) Small Scale Rural Infrastructure (Roads)

There are 604 roads registered with total length of around 9,865 km in the four provinces. The average road density per 1,000 persons in the four provinces is 3.4 km/1,000 population, which is higher than the national average of 2.1 km/1,000 population.

Existing Roads in the Four Provinces (2015)

Type of Road	Dien Bien		Lai Chau		Son La		Hoa Binh		4 Provinces		Whole Country	
	No.	Length (km)	No.	Length (km)	No.	Length (km)	No.	Length (km)	No.	Length (km)	No.	Length (km)
1. Existing Road												
National	6	752	5	317	6	652	12	301	29	2,022	109	15,360
Provincial	22	607	4	217	18	912	21	441	65	2,177	n.a	36,225
District	108	1,220	62	981	131	1,997	66	685	367	4,883	n.a	129,259
Urban	9	206	15	149	7	143	112	285	143	783	n.a	6,650
Total	145	2,785	86	1,664	162	3,704	211	1,712	604	9,865	109	187,494
2. Road Density (km/km^2)												
Per 1,000 person		5.2		4.0		3.2		2.1		3.4		2.1
Per km^2 of used and forestry area		0.3		0.2		0.4		5.3		0.4		0.7

Note : n.a: not available

	Dien Bien	Lai Chau	Son La	Hoa Binh	4 Provinces	Whole Country
Used area and forestry land in 2014 (km^2)	7,977	8,413	9,517	326	26,233	286,838
Population in 2014 (1,000 person)	538	415	1,166	808	2,928	90,729

Source: DOTs, Provincial statistic

Commune level roads, which are not listed in the table above, are more important than national/provincial/district roads for local people's life in rural areas, especially in hilly and mountainous areas, since they directly link to the access to the social and extension services, market and any livelihood improvement opportunities. The following table shows the total length and conditions of the existing commune roads in the 15 districts concerned with the target protection forests and nature reserves.

Existing Rural Road in the Target Districts

Province	District	Length of Roads by pavement Type (km)					Road Dencity		Ratio of Soil Road (%)
		Asphalt	Concrete	Gravel	Soil	Total	per person (km/ 1000 person)	per area (km/ km2)	
Dien Bien	Dien Bien	25	29	47	1,366	1,467	12.9	0.9	93.1
	Muong Cha	0	1	0	309	310	7.3	0.3	99.7
	Tuan Giao	3	19	6	674	702	8.8	0.6	96.0
Lai Chau	Sin Ho	0	90	0	1,138	1,228	16.2	0.8	92.7
	Tan Uyen	0	36	20	192	248	4.6	0.3	77.4
	Than Uyen	8	131	7	255	401	6.3	0.5	63.6
Son La	Moc Chau	66	3	3	380	452	4.2	0.4	84.1
	Quynh Nhai	0	0	0	439	439	7.3	0.4	100.0
	Thuan Chau	47	10	44	885	986	3.2	0.6	89.8
	Van Ho	0	26	0	835	861	14.9	0.9	97.0
Hoa Binh	Da Bac	41	8	9	964	1,022	18.6	1.3	94.3
	Mai Chau	191	22	12	334	559	10.3	1.0	59.7
	Lac Son	0	310	82	1,269	1,661	12.3	3.1	76.4
	Tan Lac	48	99	59	727	933	10.7	1.8	77.9

Source: District offices

The total length of commune level roads in the district ranges from 248 km in Tan Uyen district in Lai Chau to 1,660 km in Tan Lac district in Hoa Binh. Most of the commune level roads are earth roads, which might not be passable during the rainy season. In particular, the ratio of earth roads in the 15 districts except Mai Chau, Lac Son, and Tan Lac in Hoa Binh is more than 80% of the total length of the commune level road.

(11) Small Scale Rural Infrastructure (Irrigation)

In the four provinces, there are 273 provincial and 5,415 district irrigation systems covering 28,907 ha and 76,461 ha, respectively. The total coverage of the potential irrigable area in the four provinces is 57%, which implies the necessity of improving the existing irrigation systems for increase of agricultural productivity.

Existing Irrigation Systems in the Four Provinces (2014)

Item	Dien bien		Lai Chau		Son La		Hoa Binh		4 Provinces		Whole Country	
	Province	District	Province	District	Province	District	Province	District	Province	District	Province	District
No of System (No.)	36	799	88	805	8	2,653	141	1,158	273	5,415	14,830	31,550
Service Area (ha)	8,245	10,698	8,101	15,742	491	15,636	12,070	34,385	28,907	76,461	4,125,391	1,375,130
Average (ha/system)	229	13	92	20	61	6	86	30	468	69	278	44
Cropping Intensity of irrigation service area (%)	164	124	157	119	174	158	155	129	158	132	174	
Potential irrigable area (ha)		27,247		29,162		24,548		51,820		132,777		5,610,892
Irrigated area (ha)		16,076		15,014		15,465		28,872		75,427		3,860,294
% to the potential		59		51		63		56		57		69

Source: MARD, DARD, IMC

In the 15 districts concerned with the target protection forests and nature reserves, the number of the small scale irrigation systems ranges from 11 to 880, while the irrigation areas of the systems range from the micro level (less than 1 ha) to the medium scale (more than 100 ha). The majority of them falls within the range from 10 to 20 ha/system on average as shown below.

Summary of Irrigation System Inventory in the Target Districts

Province	District	No. of System	Area of Irrigation				Average of Canal Length		Ratio of Soil Canal in Total
			Total (ha)	Minimum	Maxmum	Average	All Types of	Soil Canal (km)	
DienBien	Dien Bien	880	3,546	0.03	200.00	4.03	1.200	0.817	68.1
	Muoung Cha	61	268	0.33	16.67	4.40	1.562	1.157	74.1
	Tuan Giao	141	1,385	0.20	150.00	9.82	1.240	0.600	48.4
Lai hau	Sin Ho	129	2,576	2.00	215.00	20.00	1.650	1.190	72.1
	Tan Uyen	103	3,073	3.00	233.00	29.80	2.410	0.530	22.0
	Than Uyen	121	2,482	2.00	158.00	20.50	2.450	0.890	36.3
Son La	Moc Chau	157	1,329	0.75	66.60	8.47	0.942	0.537	57.0
	Quynh Nhai	11	1,309	9.03	328.73	118.99	13.950	6.190	44.4
	Thuan Chau	273	952	0.42	65.62	6.30	0.950	0.570	60.0
	Van Ho	130	1,311	1.10	40.96	10.10	1.640	0.910	55.5
Hao Binh	Lac Son	184	4,472	1.00	92.00	24.30	2.350	1.080	46.0
	Tan Lac	457	4,654	3.90	40.70	15.20	1.190	0.930	78.2
	Mai Chau	152	916	0.20	53.70	6.00	1.040	0.570	54.8
	Da Bac	255	1,340	0.20	48.50	5.30	0.700	0.330	47.1

Source: District offices

(12) Small Scale Rural Infrastructure (Water Supply)

In the four target provinces, 65 urban and 3,520 rural water supply systems have been developed as of 2014, which supply water to 530,239 and 1,422,646 population in urban and rural areas, respectively. The beneficiary population ratio is 94% in the urban but is limited to 76% in the rural area. The average design capacity per day of urban water supply system is 1,845 m^3/day/system, and the one of rural system is 57 m^3/day/system.

Existing Water Supply Systems in the four Provinces (2014)

Item	Dien Bien		Lai Chau		So n La		Hoa Binh		4 Provinces		Whole Country	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
No of System (No.)	10	946	9	807	34	1,456	12	311	65	3,520	-	-
Population (No.)	126,200	301,482	61,020	198,035	200,655	842,526	142,364	80,603	530,239	1,422,646	24,298,350	48,752,457
% of population to the total	91	75	87	56	99	87	99	85	94	76	95	75
Total Design Capacity (m3/day)	37,600	54,577	18,300	22,396	44,500	106,960	19,506	18,385	119,906	202,318	5,800,208	
Population per System (No/system)	n.a.	n.a.	6,780	245	5,902	579	11,864	259	n.a.	n.a.	-	-
Design Capacity per System (m3/day/system)	3,760	58	2,033	28	1,309	73	1,626	59	1,845	57	-	-

Note: Urban population includes the surrounding rural population under water supply
Source: Water supply companies and DARDs

The following table shows the existing small-scale water supply systems in the 15 districts concerned with the target protection forests and nature reserves. The number and size of the

water supply system vary with the districts from 7 units to 436 units and from 2 households to 2,589 households.

Summary of Water System Inventory in the Target Districts

Province	District	No. of System (No.)	Minimum No. of HHs per System (HH)	Maximum No. of HHs per System (HH)	Average No. of HHs per System (HH)	Total HHs (HH)	Remarks
Dien Bien	Dien Bien	436	2	345	115	8,128	
	Muong Cha	7	46	301	91	5,894	
	Tuan Giao	116	5	89	48	6,051	
Lai Chau	Sin Ho	162	8	386	69	9,123	29 of 162 systems have been broken.
	Tan Uyen	93	4	700	80	7,413	43 of 93 systems have been broken
	Than Uyen	107	11	861	104	10,681	
Son La	Moc Chau	102	14	1055	103	10,550	4 of 102 systems do not have data of No. of HHs
	Quynh Nhai	11	348	2589	1,085	11,934	
	Thuan Chau	281	8	1801	107	30,005	No. of HHs are estimated based on capasity of water.
	Van Ho	96	3	300	84	7,700	4 of 96 systems do not have HH data
Hoa Binh	Da Bac	-	-	-	-	-	There are no water supply system in the District.
	Mai Chau	13	36	266	103	1,336	
	Lac Son	28	292	2917	1,171	32,786	Data of 10 systems are omitted due to missing
	Tan Lac	-	-	-	-	-	There are no water supply system in the District.

Source: District offices

(13) Production and Marketing of Forest Products

The major forest products harvested and marketed in the 15 districts are timber, firewood and NTFPs (namely bamboo, medicinal plants and rattan) like in the case of the provinces. The socio economic survey identifies the types of forest resources collected by local communities in natural forests with the purposes as follows.

Major Use of Forest Resources in the Surveyed Communes

Major Forest Resource	Purpose	Frequency of exploitation	Sales or Domestic use	
			Domestic use	Occasional sales
1. Timber	For repairing/building house for domestic use,	Occasionally (1 to 3 times per year)	✓	✓
2. Firewood	Daily domestic use (cooking and heating	Everyday	✓	
3. Bamboo	For making fence, weaving mat, and broom making	Occasionally, but in average twice a year	✓	✓
4. Bamboo shoot	Both for home consumption and sale	June-August (once in each month)	✓	✓
5. Herbal plants	For home consumption (medicine, food for livestock, etc.)	Monthly (particularly common in Hoa Binh and Lai Chau)	✓	✓
6. Tiger grass	For making broom, picking out the particular worm living in the grass for eating/making alcohol drink	(popular particularly in Dien Bien province)		✓
7. Forest vegetable & mushroom	Home consumption	Once or twice a year	✓	
8. Honey	Mostly for sale	Once a year or in several years		✓

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

As shown above, forest resources most commonly exploited and used by the local communities are timber and firewood. The former is used for fixing and building houses, while the latter is collected for daily use. Bamboo is also commonly collected by local communities for various purposes such as building fence, weaving, broom making as well as for selling occasionally. Apart from those resources, a variety of NTFPs, such as bamboo shoot, medicinal and spice plants (turmeric, lac, cardamom, line leaves, etc.), forest vegetables, and mushroom are commonly used but likely in different ways from commune to commune in the districts.

Some of the forest resources are also marketed to the existing processing factories/middle persons/markets, such as, bamboo sold to a bamboo chop stick company in Mai Chau in Hoa Binh, medicinal/herbal plants sold to traders in Sin Ho district in Lai Chau, and medicinal herbs and mushrooms sold to pharmaceutical companies and/or traders in Hoa Binh, to name a few.

(14) Agriculture Production and Marketing

The main staple crops produced in the 15 districts are paddy rice, followed by upland rice, maize, and cassava. As shown below, some districts show higher production of paddy rice or maize (e.g., high yield of rice in Cao Phong, Dien Bien and Tan Lac, and high maize productivity in Dien Bien and Da Bac), while the production of the same crops in Tuan Giao, Muong Cha, Sin Ho and Tuan Chau are rather limited maybe due to low soil fertility and mountainous terrains in the districts.

Major Crop Produced in the Target Districts (2015)

Province	District	Paddy			Maize			Cassava		
		Planted area (thous.ha)	Production (thous.tons)	Yield (ton/ha)	Planted area (thous.ha)	Production (thous.tons)	Yield (ton/ha)	Planted area (thous.ha)	Production (thous.tons)	Yield (ton/ha)
Dien Bien*	***Sub-total***	***22.5***	***98.3***	***3.7***	***14.0***	***45.0***	***3.1***	***4.5***	***37.5***	***8.1***
	Dien Bien	13.4	71.1	5.3	4.7	22.5	4.8	2.0	20.8	10.2
	Tuan Giao	6.2	18.4	2.9	6.3	16.9	2.7	1.8	12.3	6.7
	Muong Cha	2.9	8.7	3.0	3.0	5.6	1.9	0.6	4.4	7.3
Lai Chau**	***Sub-total***	***17.0***	***72.0***	***4.3***	***9.3***	***21.7***	***3.0***	***1.3***	***14.0***	***10.7***
	Sin Ho	7.1	25.2	3.6	6.2	10.4	1.7	0.1	1.1	9.2
	Than Uyen	4.6	22.7	4.9	1.9	7.0	3.6	0.6	6.9	10.7
	Tan Uyen	5.4	24.1	4.5	1.2	4.4	3.7	0.5	6.0	12.0
Son La*	***Sub-total***	***16.1***	***55.5***	***3.7***	***47.7***	***187.6***	***3.7***	***11.5***	***143.2***	***12.9***
	Quynh Nhai	3.5	10.6	3.1	3.4	10.5	3.1	3.1	27.3	8.8
	Van Ho	2.8	12.3	4.4	12.1	51.5	4.2	0.9	11.2	13.1
	Moc Chau	2.5	11.4	4.6	23.3	93.1	4.0	0.5	8.5	16.0
	Thuan Chau	7.4	21.3	2.9	8.9	32.4	3.7	7.0	96.3	13.7
Hoa Binh**	***Sub-total***	***19.2***	***98.1***	***5.1***	***24.7***	***100.9***	***4.1***	***8.1***	***104.2***	***11.5***
	Da Bac	2.0	10.3	5.0	7.9	35.7	4.5	2.4	31.1	12.7
	Mai Chau	2.2	10.7	4.9	5.2	19.8	3.8	1.4	12.7	8.8
	Lac Son	9.0	45.7	5.0	5.7	19.8	3.5	2.6	44.9	17.0
	Tan Lac	4.6	24.3	5.2	3.9	17.2	4.4	1.1	11.6	10.6
	Cao Phong	1.3	7.0	5.4	2.0	8.4	4.2	0.5	3.9	8.3
Target district total		**74.8**	**323.8**	**4.2**	**95.8**	**355.2**	**3.5**	**25.3**	**299.0**	**10.8**

*Note: *= actual data in 2015; **=prel. data in 2015*
Source: Statistical Yearbook of each province, 2015.

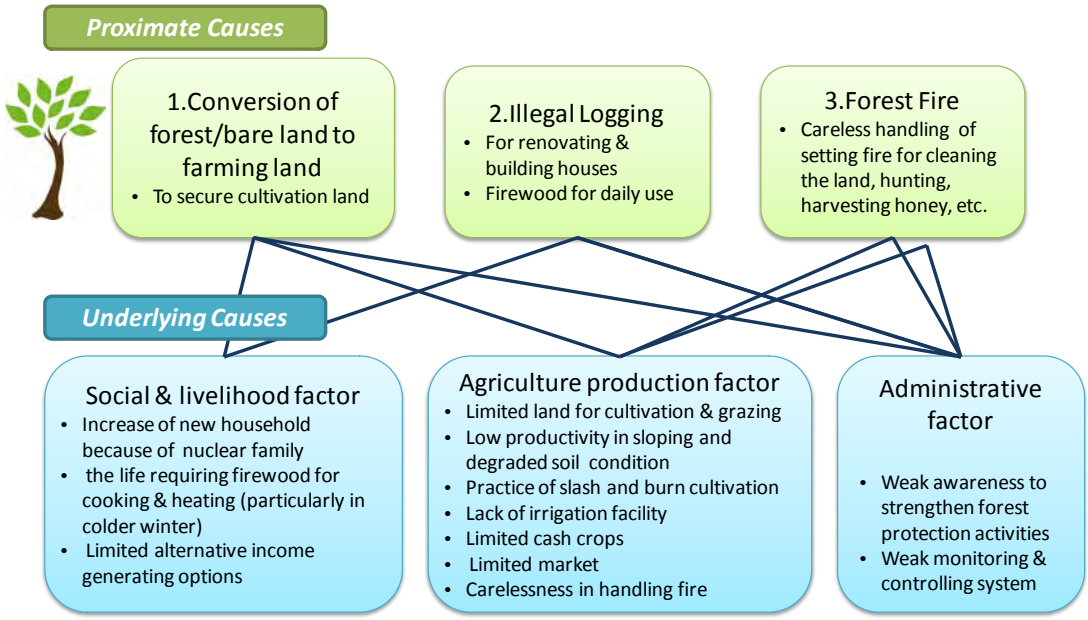
The results of the socio-economic survey, especially focus group interviews, made in the sampled communes indicate that local communities still practice swidden cultivation but has gradually stopped the practice due to the limitation of cultivation areas as well as strong instructions from DPCs and CPCs concerned. This tendency is particularly confirmed in the communes under the PFES scheme.

The staple crops are generally used for self-consumption in the 15 districts, but some of them are occasionally sold to traders/middlemen who come to their places for purchase. In fact, it is commonly observed in the districts that communities often get necessary farm inputs such as improved seeds and fertilizer from traders in exchange for the sales of their products at rather lower prices set by traders. Since they also need to repay the interest to traders, it is not easy for them to accumulate savings from crop production. The lack of post harvesting facilities, such as drying yard, rice mill, and/or corn sheller, is another difficulty that they face in the post harvesting period.

J.2.2.2 Issues and Problems

(1) Drivers of Deforestation and Forest Degradations

The major of deforestation and forest degradation in the target protection forests and nature reserves are: i) illegal logging, ii) conversion of forests to farms, and iii) forest fire. Underlying causes of the major drivers are further analyzed and categorized into three factors as illustrated below.



Proximate Causes of Deforestation and Underlying Causes

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Conversion of forests to farms is the most prevailing cause found in the sampled communes. Landless household, such as newly established or transmigratory families, and/or poor households who have less alternative sources of generating income other than farming are the main players in conversion of forests as they need to secure food to support their family members. In many cases, conversion of forests takes place in the upper part of hilly and mountainous areas which no one has used for farming and forest patrolling can hardly reach. As farming in such marginal areas, which generally are steep sloping, rocky, and low fertile, is less productive or sustainable in combination with their conventional farming practices (e.g., swidden farming), such landless/poor farmers tend to enlarge their farms or open other forests for secure daily food.

Illegal logging caused by exploitation of timber for house construction and collection of firewood for daily consumption has been widely practiced by local communities. Socio-economic survey reports that local communities have realized the reduction of native timber species in natural forests but have paid less attention to the impact of firewood collection on forests. The survey also suggests that the consumption of firewood has increased recently because of cooling in winter due to climate changes.

Forest fire is particularly predominant in Dien Bien and Lai Chau. A variety of causes were identified in the survey, such as carelessness when handling fires for slash and burn cultivation or harvesting honey, littering of cigarette butts, and natural fires. Although its

frequency is less, its impact is significant as compared to the other causes. It is important to take proactive approaches to i) the reduction of occurrences of fires and ii) the minimization of damaged areas by early extinction.

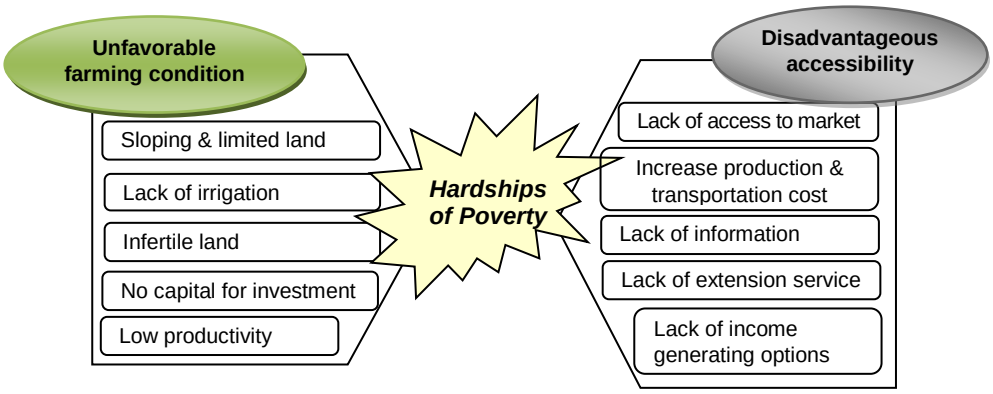
(2) Issues on Sustainable Forest Management

In addition to drivers (direct causes) of forest degradation and their underlying causes described above, the following issues are confirmed as hindrances to sustainable forest management in the target protection forests and nature reserves in the four provinces.

- Parts of the target protection forests and nature reserves have been allocated to communities, villages, and/or households in Hoa Binh, while some in Dien Bien and Son La are still under the unallocated status. It may not be easy to use bare lands/grass lands in such areas for forest development, as local communities residing in and around the target protection forests/nature reserves may use them for farming.
- Even in the areas allocated PFMBs/NRMBs, local communities living in and around the target areas have customarily used parts of the areas for farming. Likewise, it may not necessarily be easy to use such areas (bare lands/grasslands) for afforestation.
- Demarcations of lands allocated to local communities, households, PFMBs, and NRMBs are not clear especially on the ground. Such situations hinder PFMBs/NRMBs from effectively protecting and managing forests in the target areas.
- It is difficult to regulate illegal activities, such as illegal exploitation and conversion of forests into farms, as these activities are generally attributed to livelihood activities done by poor households living in the remote areas.
- The amount of payment from the PFES scheme is not necessary high enough to motivate local people to protect natural forests in the target areas, especially in Son La and Hoa Binh.
- In some areas, local communities and/or households who enter into the forest protection contracts do not properly protect forests due to the lack of incentive, limited knowledge, and poor accessibility in the areas.
- Forests are scattered in the target protection forests and nature reserves, and many of them are located in remote and mountainous/hilly areas with poor infrastructure, especially poor access roads. These situations hinder PFMBs/NRMBs from efficiently managing forests and carrying out forest improvement activities.
- Financial and managerial capacities of PFMBs and NRMBs are not necessary capable enough to manage and protect their assigned areas.
- Public awareness of necessity and importance of forests is still low particularly among local communities living in remote hilly and mountainous areas.

(3) Issues in Livelihood Development

The issues of livelihood development in the 15 districts closely relate to the underlying causes of forest degradation and deforestation. They are diverse, inter-linked with each other, but generally derived from two fundamental conditions in the districts, namely, i) poor accessibility, and ii) unfavorable farming conditions.



Issues in Livelihood Development

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The target protection forests and nature reserves are generally located in hilly and mountainous areas, which are far more remote and less accessible from commune and district centers. These conditions make it difficult for local communities to improve their livelihoods, and if anything, constrain them to follow the conventional farming practices, since they are isolated from markets, information, and extension services, and also obliged to bear higher production and transportation costs for their farming and other economic activities. Although local communities in the districts have been able to earn cash income from the sales of cassava and maize, most of them are sold to middle persons/traders at lower prices due to the limited marketing outlets, the lack of post-harvesting facilities (drying yards and storages), and the dependency on informal loans provided by middle persons/traders.

The unfavorable farming conditions, such as a lack of irrigation systems, low soil fertility, and difficult geographical conditions (i.e., steep slopes and rockiness), keep crop productivity low, which further compels local communities to live at subsistence level.

Understanding these difficulties, GoV has provided various supports through poverty reduction programs, such as provision of agriculture inputs (e.g., seeds, fertilizer and chemicals), facilitation of access to rural credit programs particularly conditioned for poor societies through the existing banking system, and improvement of basic infrastructure. However, as these supporting programs have just focused on the "provision" of materials/services without enhancing their capacities or developing a sustainable mechanism where local communities could improve their livelihoods on their initiatives, local communities ironically tend to increase their dependency on external interventions.

It is therefore important to emphasize the development of an enabling environment that could encourage local communities to continue livelihood developing activities even without external supports, when designing the livelihood improvement component.

(4) Issues on Small Scale Infrastructure Development

Low quality and low durability of the facilities are common issues found in the small scale infrastructure facilities in the 15 districts: namely commune/village roads, village irrigation systems, and village water supply systems. These issues are mainly caused by a lack of budget allocated to small scale rural infrastructure. The following table shows the major typical issues and difficulties found in the small scale infrastructure.

Issues in Livelihood Development

Infrastructure	Issues and difficulties
Commune/village road	The majority of them are earth roads and have been severely damaged by heavy rains, floods and inundation, and land slide during the rainy seasons over years. Hence, they are not easily passable during the rainy season. It is necessary to upgrade them to concrete roads to improve the accessibility of local communities especially in hilly and mountainous areas.
Village irrigation system	In general, the system is composed of i) earth-fill dam/embankment or rock-fill dam/embankment and ii) earth canals, which are not durable for a long period of time. Particularly, the main and branch canals have been deformed/damaged by heavy rains and floods/inundations during the rainy seasons. Such key facilities need to be renovated and upgraded to concrete canals to improve irrigation efficiency.
Village water supply system	Some existing water supply systems were developed without a treatment tank due to a lack of budget. There is a need to install a treatment tank to provide hygienic water to users. Some have malfunctioned since their intakes and/or distribution pipes were too old or damaged by natural disasters. It is not easy for local communities to fix such problems, the replacement of parts is fairly costly.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(5) Issues on Forest Monitoring

Although GoV has made effort to improve the forest monitoring system technically, the national monitoring system still has the following issues:

i) Lack of verification step for quality assurance and quality control (QA/QC): There is no verification process to secure the transparency, robustness, and verifiability of data collected at the field level. The validity of data collected in the field should be checked as it is the most important factor that affects the quality of the whole monitoring system.

ii) Errors and bugs in the database system: There are still a lot of bugs and errors remaining in the database system and software. MARD plans to fix such errors in the coming two years.

iii) Compatibility of the new forest inventory data: NFI&S 2015 data are considered as the most updated and reliable data to be used as new baselines. However, it is also judged that the completeness of the data is not sufficient to be integrated into the new database system and there is still a need to correct and standardize the data for integration.

The Provincial Forest Monitoring Systems (PFMS) improved by SUSFORM-NOW can contribute to the improvement of the verification process and accuracy of the reported data.

The PFMS database has already been introduced in Dien Bien Province with support from SUSFORM-NOW; however the same database has not been established in the other provinces so far. SNRMP, the on-going JICA-T/C, plans to introduce the same database in the remaining provinces, namely Lai Chau, Son La, and Hoa Binh, together with provision of tablet-PCs and technical training to forest rangers in the districts concerned, so that the target provinces can operate the PFMS database system as a tool for forest monitoring. It is, therefore, expected that the forest monitoring system in the target provinces will be improved by SNRMP by the middle of the project period. Consequently, the same procedures for forest monitoring should be employed in the project so that the results of forest monitoring could be incorporated into the PFMS database systems developed at Sub-FPDs in the respective provinces.

J.2.2.3 Selection of the Project Areas

(1) Proposed Areas and Potential Target Sites for Improvement of Watershed Forest

After the initial assessment of the target protection forests and nature reserves proposed by DARDs of the four provinces, the following areas were selected as the potential target sites for improvement of watershed forests.

Results of the 1st Selection of the Potential Target Sites

Province	Proposed Areas	Protection <1	ANR <2	Afforestation <3	No. of communes
Dien Bien	Dien Bien PF	3,330	640	1,570	3
	Muong Cha PF	0	860	800	1
	Tuan Giao PF	4,850	340	790	2
	Muong Phang NR	2,220	190	0	2
Sub-total		**10,400**	**2,030**	**3,160**	**8**
Lai Chau	Nam Ma PF	0	1,640	1,610	13
	Nam Na PF	0	2,950	1,810	8
	Tan Uyen PF	0	3,750	1,380	9
	Than Uyen PF	0	3,560	1,810	10
Sub-total		**0**	**11,900**	**6,610**	**40**
Son La	Copia SUF	3,300	1,070	820	3
	Thuan Chau PF	2,890	650	1,750	3
	Quynh Nhai PF	2,960	510	500	5
	Xuan Nha SUF	3,420	280	240	4
Sub-total		**12,570**	**2,510**	**3,310**	**15**
Hoa Binh	Da River PF	17,490	1,000	2,130	18<4
	Ngoc Son – Ngo Luong SUF	6,090	90	520	7<4
	Hang Kia – Pa Co SUF	2,700	0	70	8
	Phu Canh SUF	3,300	150	550	4 <4
Sub-total		**29,580**	**1,240**	**3,270**	**34**
Total		**52,550**	**17,680**	**16,350**	**97**

Note: <1 The areas which are currently under PFES scheme but whose payment is rather lower are considered to be potential sites for protection of natural forest in response to the request from DARDs.

<2 ANR is to be applied to woodlots or areas categorized as 1c.

<3 Afforestation is to be applied to not only bare lands/grasslands but also bushes with an aim to restore vegetation cover smoothly and motivate local communities to take part in the project activities.

<4 Three (3) communes in Da River PF also relate to either Hang Kia-Pa Co NR or Phu Canh NR, hence the total number of communes relating to the potential sites in Hoa Binh is 34.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(2) Prioritization of the Potential Target Sites

In order to examine an optimum plan of the proposed project, the 97 communes concerned with the target protection forests and nature reserves were assessed and evaluated in terms of i) size of the potential area for afforestation, ii) size of natural forests, iii) proportion to the protection forests/nature reserves, iv) trend of forest degradation, and v) poverty ratio in the commune for prioritization. Based on the results of the assessment/evaluation, the 97 communes were prioritized and classified into three classes: i) high priority communes, ii) medium priority commune, and iii) low priority commune. The result of the prioritization is summarized below.

Results of Prioritization of the Potential Target Sites

Province	Priority Class	Communes	Targets for Forest Development and Improvement			
			Protection	ANR	Afforestation	Total
Dien Bien	High	4 communes	6,750	1,540	2,480	10,770
	Medium	4 communes	3,650	490	680	4,820
	Low	Nil	0	0	0	0
	Sub-total	**8 communes**	**10,400**	**2,030**	**3,160**	**15,590**
Lai Chau	High	1 commune	0	380	410	790
	Medium	21 communes	0	7,120	6,140	13,260
	Low	18 communes	0	4,400	60	4,460
	Sub-total	**40 communes**	**0**	**11,900**	**6,610**	**18,510**

Province	Priority Class	Communes	Targets for Forest Development and Improvement			
			Protection	ANR	Afforestation	Total
Son La	High	3 communes	4,650	1,480	1,910	8,040
	Medium	8 communes	5,250	650	1,310	7,210
	Low	4 communes	2,670	380	90	3,140
	Sub-total	**15 communes**	**12,570**	**2,510**	**3,310**	**18,390**
Hoa Binh	High	2 communes	1,950	150	410	2,510
	Medium	23 communes	22,930	690	2,670	26,290
	Low	12 communes	4,700	400	190	5,290
	Sub-total	**34 communes <1**	**29,580**	**1,240**	**3,270**	**34,090**
Total	High	10 communes	13,350	3,550	5,210	22,110
	Medium	56 communes	31,830	8,950	10,800	51,580
	Low	34 communes	7,370	5,180	340	12,890
	Total	**97 communes <1**	**52,550**	**17,680**	**16,350**	**86,580**

Note: <1 Three communes relate to two target areas at the same time; therefore the total number of communes in Hoa Binh is 97.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(3) Project Areas

Having examined the optimum size of the project in terms of physical and financial aspects, the preparatory survey team, in close consultation with MBFPs/MARD, selected the target sites relating to communes classified into high and medium priority as the project areas. The following table shows the selected project areas in the respective taget protection forests and nature sreserves in the four provinces.

Results of the 1st Selection of the Potential Target Sites

Province	Proposed Areas	Protection	ANR	Afforestation	No. of communes
Dien Bien	Dien Bien PF	3,330	640	1,570	3
	Muong Cha PF	0	1,080	800	1
	Tuan Giao PF	4,850	400	790	2
	Muong Phang SUF	2,220	190	0	2
Sub-total		**10,400**	**2,310**	**3,160**	**8**
Lai Chau	Nam Ma PF	0	1,030	1,610	7
	Nam Na PF	0	2,840	1,750	6
	Tan Uyen PF	0	3,270	1,380	6
	Than Uyen PF	0	360	1,810	3
Sub-total		**0**	**7,500**	**6,550**	**22**
Son La	Copia SUF	3,300	1,270	820	3
	Thuan Chau PF	2,890	790	1,750	3
	Quynh Nhai PF	960	130	410	2
	Xuan Nha SUF	2,750	280	240	3
Sub-total		**9,900**	**2,470**	**3,220**	**11**
Hoa Binh	Da River PF <1	14,910	600	2,060	14 <1
	Ngoc Son – Ngo Luong SUF	5,670	90	470	6
	Hang Kia – Pa Co SUF	1,000	0	0	1
	Phu Canh SUF <1	3,300	150	550	4 <1
Sub-total		**24,880**	**840**	**3,020**	**23 <1**
Total		**45,180**	**13,120**	**16,010**	**64**

Note: <1 Two communes in Da River Protection Forest also relate to Phu Canh Nature Reserve, hence the total number of communes relating to the potential sites in Hoa Binh is 23.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Moreover,t he following table shows a list of communes relating to the project areas selected in the target provinces.

List of the Communes relating to the Project Areas

Province	Proposed Areas	District	Communes
Dien Bien	Dien Bien PF	Dien Bien	Na Tong, Phu Luong, Muon Nha
	Muong Cha PF	Muong Cha	Muong Tung
	Tuan Giao PF	Tuan Giao	Phinh Sang, Ta Ma
	Muong Phang SUF	Dien Bien	Muong Phang, Pa Khoang
Sub-total	**3PFs and 1** SUF	**3 districts**	**8 communes**
Lai Chau	Nam Na PF	Sin Ho	Hong Thu, Nam Cuoi, Nam Han, Nam Tam, Pa Khoa, Phang So Lin, Pu Sam Cap
	Nam Ma PF		Chan Nua, Lang Mo, Pa Tan, Sa De Phin, Ta Ngao, Tua Sin Chai
	Tan Uyen PF	Tan Uyen	Ho Mit, Muong Khoa, Nam Can, Nam So, Ta Mit, TT.Tan Uyen,
	Than Uyen PF	Than Uyen	Muong Mit, Pha Mu, Ta Mung
Sub-total	**4PFs**	**3 districts**	**22 communes**
Son La	Copia SUF	Thuan Chau	Chieng Bom, Co Ma, Long He
	Thuan Chau PF		Nam Lau, Muong Bam, Bam Lam
	Quynh Nhai PF	Quynh Nhai	Muong Giang, Muong Sai
	Xuan Nha SUF	Van Ho	Chieng Xuan, Tan Xuan, Chieng Son
Sub-total	**2PFs and 2** SUF **s**	**3 districts**	**11 communes**
Hoa Binh	Da River PF <1	Da Bac	Dong Nghe, Dong Chum, Don Ruong, Murong Chien, Murong Tuong, Suoi Nanh, Tien Phong, Vay Nura
		Tan Lac	Trung Hoa, Ngoi Hoa
		Mai Chau	Ba Khan, Tan Dan, Tan Mai
		Cao Phong	Thung Nai
	Ngoc Son–Ngo Luong SUF	Lac Son	Ngoc Lau, Ngoc Son, Tu Do
		Tan Lac	Ngo Luong, Nom Son, Bac San
	Hang Kia– Pa Co SUF	Mai Chau	Hang Kia
	Phu Canh SUF <1	Da Bac	Dong Chum, Tan Pheo, Dong Ruong, Doan Ket
Sub-total	**1PF and 3 SUF s**	**5 districts**	**23 communes**
Total	**10PFs and 6 SUF s**	**11 districts**	**64 communes**

Note: <1 Two (2) communes in Da River Watershed Protection Forest are also those relating to Phu Canh SUF.
Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.2.3 Study on the Proposed Project Components

J.2.3.1 Reviews of Similar Projects

The preparatory survey team made the literature reviews of the following forestry projects similar in nature to the project to draw important lessons learned from those project for the formulation of the proposed project.

- Rural Infrastructure Development and Living Standard Improvement Project III (so-called "SPL-III Afforestation Project");
- Protection Forests Restoration and Sustainable Management Project (so-called "JICA 2 Project");
- Project for Sustainable Forest Management in the Northwest Watershed Area (SUSFORM-NOW); and
- Forest Development in Hoa Binh and Son La Project (so-called "KfW 7 project").

<u>Lessons from the SPL-III Afforestation Project</u>

a. Extensive information dissemination should be done for the local government and people at the commencement of the project.

   Dissemination of information on the project and project policies should be done for local governments and local people before detailed planning in the field. Through providing information on the project, the local governments and the people concerned could

understand the importance of forest protection and development, the benefits from the project as well as their responsibilities regarding forest protection and development.

b. Local community should be fully involved in the preparatory and planning stage of the project.

In the SPL-III project, detailed designs of forestry development components were hastily prepared in all the provinces because there were only four years remaining to the end of the project when the project activities started in 2002 (the project was originally scheduled to end in 2006, but it was extended by 2 years later.). The "rushed preparation" was not able to ensure enough community participation in the planning of the forest development activities, which resulted in uncooperative or reluctant attitude of communities and adversely affected the project implementation throughout the project. It is, therefore, essential to fully involve local communities in the process of detailed planning of forest development activities. Among others, participatory land use planning is an essential step to lay the foundation for agreement on the project activities with local communities.

c. Contractor of the project working in forest development component should be public institutions.

The project utilized public institutions, such as PFMBs, forest protection agency, provincial agricultural extension centers, consulting centers, universities, etc., for implementing the project activities. Because of the nature of the project, which required specific technical expertise and whose target areas were remote, not easy to access, and often scattering, it would have been difficult for private firms to implement the project activities in proper and timely manners even if they had been hired. In general, the public institutions are technically and financially capable to perform as contractors for the project activities and have sufficient experiences in conducing and managing similar activities under the contract with other government funded projects.

The procurement of those organizations was done by direct appointment in principle. This procurement method was quite appropriate and efficient, as there was no other organization competent to take the works from technical and financial points of view.

d. Ceiling of the budget for infrastructure construction and livelihood development should be increased.

Budget ceiling rates for rural infrastructure construction and livelihood extension activities were set at 6% and 2% of the total project budget, respectively, in SPL-III. However, the budgets allocated for both components were not sufficient to make a positive impact for improvement of livelihoods of local communities. To heighten the effect of both components, the ceiling rates were re-examined and revised.

e. Benefit sharing mechanism should be piloted during the Project period.

SPI-III developed its own benefit sharing mechanism to be applied to the protection forests developed under the project. Since the mechanism was developed in the final stage of the project, there was no time to test and pilot the mechanism in the course of the project. Hence, the mechanism ended up just as a new concept for sustainable management of protection forest as it was quite difficult for local governments to scale up the same in the field without a clear-cum-detailed guideline. It is necessary to test the benefit sharing mechanism as a pilot project in the JICA2 project for improvement and

finalization of the mechanism, and institutionalize the same as an operating system with its technical guidelines over the course of the project.

Lessons from the JICA 2 Project:

a. Commencement of the consulting services should not be delayed largely.

One of the key tasks of the consulting services is to lay the foundation for smooth implementation and operation of the project by i) development of technical regulations/guidelines, ii) dissemination of the same to relevant stakeholders, iii) assistance in development of an overall project management system at CPMU, and iv) development of modalities and tools to plan, implement, monitor, and evaluate the project activities in a systematic manner for CPMU/PPMUs. Since those activates need to be completed prior to the commencement of the project activities in the field, it is necessary for the consultant team to start its services as originally scheduled. Delayed procurement of the consultant would cause the delay in the commencement of consulting services, which would further affect the progress of the project.

b. Forest inventory data and GIS maps should be updated at the commencement of the Project.

In JICA2, forest inventory and mapping, which was programmed as an activity of the preparatory works, was skipped due to time constraints. Hence, detailed planning and designing were carried out on the basis of rather outdated data, which caused the following difficulties in implementation of the forest development activities.

- Vegetation status indicated in the plan/design did not represent the actual conditions on the ground; therefore, the design of the forestry development needed to be changed or alternative lands needed to be identified.
- The target site was already used for other purposes on the ground; therefore, alternative sites needed to be identified.

It is necessary to update the forest inventory data and maps with the latest information in the early part of the preparatory stage.

c. PPMUs should be responsible for the conducts of the surveys and detailed designs, which are implemented by sub-contractors at the local level, during the preparatory works.

Under the JICA2 project, the consultant team is responsible for the conducts of several surveys (e.g., perimeter survey and socio-economic survey) and detailed designs of forestry development and small scale infrastructure development components. It is judged that this kind of arrangement has affected the quality of detailed designs, lowered the accountability and responsibility of PPMUs about the results of the designing works, and affected the quality of the consulting services.

In general the surveys and detail designing have been carried out by design centers under DARD in the respective provinces. Hence, PPMUs/DARDs are in the right position to efficiently and effectively supervise the contractors' works rather than the consultant team that stations at Hanoi. It is also rather unrealistic or inefficient that the consultant team should supervise all the survey and designing works in the different provinces simultaneously. Furthermore, PPMUs/DARDs have often tended to be irresponsible for or negligent of the results of the surveys and designs as they are not involved in the

sub-contracting works. If PPMUs/DARDs are involved in the sub-contracting works as a contractee (as project owner), they could closely check the sub-contractors' works and be responsible for their results.

On the other hand, the experts of the consulting team got caught up in the procurement and management of the sub-contracting works in the provinces. A load of works have prevented the experts from fulfilling their original tasks as planned since there was no specialist allocated for this task under the contract for the consulting services.

d. Physical targets of the forestry development component should not be ambitious but feasible.

MBFPs/CPMU tends to impose PPMUs to set ambitious physical targets of the forestry development component, which apparently exceed the capacity of PPMUs as well as PFMBs. As a result, the annual physical accomplishments made by PPMUs have often become far lower than the targets set by MBFPs/CPMU. It has further caused a delay in achievement of physical targets in the following years. More importantly, it might lead to indifference or irresponsibility of PPMUs to/for the achievement of the targets. It is, therefore, necessary to set realistic physical targets based on the capacity of local stakeholders and conditions in the field.

e. It takes a certain period of time to make disbursement from the time when a payment request is submitted to CPMU.

In the beginning of the project, the payment to contractors was often delayed due to incompleteness of a payment request prepared and submitted by PPMUs. The quality of the documents has been improved gradually as the staff of PPMUs has learned the procedures and been familiar with the formats. However, it still takes more than 3 months, sometimes 6 to 9 months in the worst case, for the verification process not only in CPMU but also in MOF.

Under the circumstances, contractors, such as PFMBs, have often obtained temporary financial assistance from DARD so that they could continue the project activities while waiting for the payment from the central level. Although they have managed a difficult situation, many of them have faced difficulties in operations of the project activities.

Considering the situations described above, the preparatory survey team learn the following lessons:

- It is essential to provide full guidance and support to PPMUs in the preparation of a payment request so as to avoid unnecessary delay in the process of disbursement.
- The contractor should be financially capable enough to continue the project activities without having the payment for 6 to 9 months, or should be public institutions which can obtain temporary financial support from the state government like in the case of JICA 2.

<u>Lessons from the Forest Development in Hoa Binh and Son La Project (KfW 7 Project)</u>

a. Necessity of Guidelines and Manuals for Implementation

It is necessary to develop a set of guidelines and manuals for project implementation in the early stage of the project. The late preparation of the guidelines and manuals has hampered the implementation of the components of KfW 7. Clear and detailed

guidelines/instructions could be helpful for project staff and other stakeholders (e.g., contractors and local communities) to execute project activities, especially when they are not familiar with the project activities technically and operationally.

b. Difficulty in Identification of the Project Sites

The project faced difficulties in the identification and reservation of lands for the project, since the holders of land certificates preferred not to use their lands for the project. It might not be easy to use forest lands allocated to individual households, especially those in production forests, for the proposed project, unless the project could provide substantial financial support to motivate them to use their lands for the project.

c. Cost Norms for Forest Development and Management Components

One of the recommendations and also agreements made by the mid-term review team and MBFPs for the KfW 7 Project was to increase the cost norms for FE and CFM in consideration of i) inflation, ii) increase of labor cost, and iii) adjustment with other programs. In particular, it was necessary for the project to make the cost norms more attractive to local communities as they targeted production forests allocated to individuals. The same can be said for the proposed project as part of the project sites might be the lands allocated to households/villages or those that local communities have customarily used for a long time.

d. Difficulty in Allocation of Counterpart Funds

The project structured the project management units from the national to commune levels as described above. Although the Vietnamese side has recruited sufficient staff with adequate qualifications on time, it was pointed out in the mid-term review report that a shortage of counterpart funds allocated by the provincial government had affected the operation of the project management units. It is necessary to develop the project implementation framework considering the financial capacity of the target provinces.

e. Necessity of Capacity Development

The project has conducted and arranged a number of training courses for the project staff and participating farmers covering the following topics: i) land use planning, ii) site mapping and plantation design, iii) silvicultural techniques, iv) nursery management, v) community forest management, vi) participatory community development planning, viii) participatory forest inventories, viii) project and financial management, and ix) training of staff of the nature reserve management boards (NRMBs) on various topics. It was judged that capacity development was essential to effective and efficient implementation of the project as the majority of the project staff were not familiar with the principles, procedures and techniques introduced in the project. It may be true for the proposed project that sufficient and effective capacity development would be requisite to the smooth operations of the project. The experiences of the KfW 7 suggests that the following points should be taken into account in designing the capacity development component.

- Combination of Off-JT type and OJT type training courses
- Introduction of in-country study tours to help project staff have a clear picture of the project
- Identification and allocation of sufficient number of qualified trainers
- Arrangement of sufficient opportunities of quality training courses

f. Weakness in Nature Reserve Management

The mid-term review report on the KfW 7 Project pointed out the following difficulties in management of nature reserves in both provinces.

- Existence of villages and farms within the territories of the nature reserves
- Limited capacity of the NRMBs
- Lack of operational funds of NRMBs
- Unclear boundaries of the nature reserves
- Lack of the management system

As it was difficult for the project (KfW 7) to iron out all the difficulties due to time constraints, it has mainly focused on capacity development of NRMBs and community development of villages located within the nature reserves. This suggests that development of a mechanism for sustainable protection of forests in the nature reserves from further encroachment and forest degradation caused by local communities would be one of challenges that the proposed project should cope with.

g. Effectiveness of the Use of Saving Account

The project helped the contractors (groups of local communities) for FE and CFM open their saving accounts in Agribank and made the payments to their accounts directly from NPMU. This system has helped the project i) keep correct and verifiable transaction of money, ii) avoid misuse or embezzlement of project funds, iii) make the payments early, iv) reduce administrative and transaction costs, and v) provide additional incentive to local communities in the form of an interest on saving deposits.

Lessons from SUSFORM-NOW

a. Utilization of provincial forest monitoring system (PFMS)

The project improved the provincial forest monitoring system (PFMS) to reduce the burden and expenditure of forest monitoring in the field. The improved system was proved effective and considered as a potential monitoring system to be adopted for MRV of REDD+ in the future. The possibility of utilization of the improved PFMS should be sought in the planning.

b. Selection of rural development activities

The project assisted local communities in the introduction of several types of livelihood development activities. However, the results of the livelihood development support did not necessarily motivate local communities to protect and manage forests in a proper manner. It is important to set criteria to select those directly link to forest and/or land resources so that communities could be encouraged to protect and use forest and land resources in a sustainable manner.

c. Improvement of the village development fund

The project also assisted local communities in the establishment and management of the village development funds, which had dual functions as a temporal pool of PFES payment and a seed fund for revolving credit for communities. As the village development fund can be used for a funding source for forest protection activities by villagers, its aims and functions along with its operation and management methods should be examined and deliberated in designing its mechanism prior to the introduction. The necessity of the

village development fund should also be examined as it is not necessary easy for communities to operate and manage such a fund in a proper manner.

d. Necessity of improvement of management of special use forest

The project had worked in communes overlapped with the Muong Phang Nature Reserve, of which significant parts were used by local communities for farming as the designation of special use forest came into effect recently. The situation is obviously the same with other nature reserves; therefore, it would not be necessarily easy to manage and protect forests in the nature reserves in a sustainable manner.

For instance, forest protection in nature reserves is likely not attractive to local communities since extraction of forest resources, such as thinning and harvesting of forest products, even non-timber forest products, are not allowed in principle. It is, however, essential to involve them, especially those who have vested land use rights, in management and protection of forests in the nature reserves. There is a need to figure out and introduce a mechanism for sharing benefits from protection of forests with local communities so as to protect existing natural forests left in special use forest in a sustainable manner.

J.2.3.2 Results of the Study on the Project Components

Prior to the planning of the project design, the project components were examined in terms of efficiency, effectiveness for REDD+, consistency with relevant policies, practicability of components/activities under the current circumstances, and sustainability of the project effects. In the examination, the experiences and lessons learned from the past and on-going forestry projects were fully referred. The results of the assessment of the project components are summarized below.

Summary of the Results of the Study on the Project Components

Components	Key Points
Forest Inventory	◆ It is necessary to identify and demarcate the target sites for forest development/improvement activities in a participatory manner especially in the areas where forest owners are households/groups of communities/villages or land allocation has yet to be completed. ◆ Hence, the process of the planning and designing of forest development activities in the areas owned by households/communities should differ from the same in the areas owned by the management board. ◆ Participatory land use planning will be the essential step to identify and determine the target sites for forest development/improvement activities. The results of the land use planning should also be used for determination of livelihood development options.
Training and extension	◆ Prior consent to the project activities must be taken from forest owners (villages/communes) and/or de facto land users of the potential target sites. ◆ Enhancement of the capacity of key players is essential for implementation of the respective project components. ◆ There is a need to introduce a collaborative management system with a benefit sharing mechanism, especially in nature reserves where no PFES payment is expected, so that the target sites could be protected in collaboration with local communities. DARDs, SubDFPs, and MBs concerned should be fully guided and given necessary tools and guidelines for them to properly collaborate with communities. ◆ In principle, provision of training in management of the project should be covered by the counterpart fund in accordance with the new decree on management and use of ODA and concessional loans granted by foreign sponsors (Decision No. 16/2016/ND-CP dated March 16, 2016).
Improvement of watershed	◆ It may not be easy to convert the areas currently categorized as “bare lands” into forests, as the majority of them are used or have been used for farming purposes. Hence, it is likely

Components	Key Points
forest	unrealistic to use all the available bare lands for afforestation in the proposed areas in the target provinces except Lai Chau, where land use conflict seems to be rather less likely to happen. ◆ Support for regeneration of degraded forests and protection of natural forests are considered essential for sustainable forest management in the field. Furthermore, such activities are judged as "low risk ones" from the safeguard point of view. ◆ The unit costs for forest development and improvement activities should be reviewed and revised.
Construction of silvicultural infrastructure	◆ There is a need to strengthen the existing silvicultural infrastructure of the target sites for effective operations and management.
Construction of small scale rural infrastructure	◆ All communes in the districts have high needs of small scale rural infrastructure development, such as i) rehabilitation/construction of rural roads, ii) rehabilitation/construction of small scale irrigation system, and iii) rehabilitation/installation of water supply system.
Forest Fire Control	◆ As forest fire is one of the main drivers of forest degradation in the target provinces, it is essential to strengthen the capacity for forest fire control at the local level. ◆ The component should put its focus on the capacity at the commune/grass-root level since the community-based approach is effective in forest fire control and in line with the government strategies.
Livelihood development	◆ Support for livelihood improvement is requisite for sustainable forest management in the target provinces as the main drivers of forest degradation are likely linked to socio economic conditions of local communities. ◆ It is also important to develop a benefit sharing mechanism synchronized with effective livelihood support in nature reserves/protection forests, especially where the PFES payment is expected to be limited.
Project Management	◆ The establishment of DPMUs should be carefully deliberated as some DARDs pointed out that the establishment of DPMUs would cause additional financial burden for the provincial government. One of the difficulties observed in KfW 7 was also the allocation of the counterpart funds for operations of PPMUs and DPMUs. ◆ It is essential to arrange training courses and workshops for the project officers to implement the project in an efficient and effective manner based on the lessons learned from JICA 2.
Consulting services	◆ Roles, responsibilities, and scope of the consulting services should be defined and clarified through reviews of those for JICA 2, their performance, and lessons learned from their activities.
Project Cost	◆ Cost and work norms for forest development, silviculture infrastructure development, and small scale infrastructure development should be reviewed and formulated in consideration of the geographical constraints, latest labor cost, and recent inflation rate.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Furthermore, the recommendable scopes of the respective components/activities as summarized below.

Activities recommended in the Project Components

Component	Recommendable Activities	Remarks
Survey and detailed planning	◆ The component should include the following activities: ✓ Procurement of high resolution satellite images covering the target sites ✓ Forest inventory survey in the target sites ✓ Participatory land use planning and determination of target sites for the forest development/improvement activities as well as small scale rural infrastructure development ✓ Group formation of local communities who hold land use certificates of the target sites and are	◆ Group formation of land use certificate holders is proposed as a part of the entry activities to determine the target sites for the project in the areas allocated to households/villages. ◆ This activity aims to identify a certain size of consolidated area (as one block) which can be used for forestry development (e.g., afforestation) to minimize the

Component	Recommendable Activities	Remarks
	willing to participate in the project through a series of consultations and meetings with local communities ✓ Development of rules on the use of the areas allocated to households and communities ✓ Perimeter surveys with set-ups of land marks ✓ Ground surveys of the proposed areas for small scale rural development infrastructure ✓ Detailed designing of forest development and small scale infrastructure development	transaction costs for planning, management, and monitoring of the forest development activities in such areas.
Extension and Information Dissemination	◆ The activities under the component should be re-allocated to the component of "Project Management." ◆ Under such a component, the following activities should be carried out to give orientation and guidance to the project stakeholders, disseminate project information, and clarify the baseline of the project reas. ✓ Information dissemination ✓ Socio-economic baseline survey ✓ Training needs assessment of key players ✓ Coordination with JICA-TA (SNRMP) or JICA2 Project to arrange study tours for key players ✓ Introduction of project guidelines and manuals developed by the CPMU with technical assistance from the consultan	◆ As ODA loan should not be used for training of the project officers, be s activities of the component will not be aligible to be financed by ODA loan. ◆ It is important to effectively use the expertise as well as experiences of JICA TA (SNRMP) and JICA 2. ◆ Day-to-day coaching by CPMU with project consultants is also essential for effective cpcity development of the project stakeholders.
Improvement of watershed forests	◆ The major activities to be carried out in the component are as follows. ✓ Afforestation in bare lands and bushes in 3 types of forest ✓ Protection of natural forests in protection and special use forests ✓ Assisted natural regeneration without enrichment in degraded forests in protection and special use forests	◆ Design of afforestation in bare land should be different from that in bushes. ◆ Afforestation in production forest should be considered as a model for production of value-added timbers. Hence it should be combined with the assistance in prolonging a harvesting period in the areas allocated to the management board in Hoa Binh.
Construction of silvicultural infrastructure	◆ Ground surveys and designing of silviculture infrastructure should be conducted.	◆ Due consideration should be given to soil and slope protection when forest roads are designed, rehabilitated, and/or constructed.
Construction of small-scale infrastructure	◆ Construction of small scale rural infrastructure development according to the detail designs of the same.	◆ Likewise, due consideration should be given to slope and soil protection as well as other environmental aspects when rural roads are designed, rehabilitated, and constructed.
Forest fire control	◆ Procurement of forest fire equipment, which will be placed at CPCs concerned. ◆ Arrangement and conduct of forest fire fighting drills for local communities as well as forest rangers	◆ The government has formed a forest fire fighting group at the village level; therefore, communes are considered as front-lines for controlling forest fires.
Livelihood improvement	◆ Provision of a series of hands-on training courses on priority income generating activities selected by local communities ◆ Provision of tools and materials so that local communities can conduct the priority income generating activities by replicating the techniques	◆ Identification of the priority income generating activities and formation of income generating groups can be based on the results of the activities under Forest Inventory and Planning,

Component	Recommendable Activities	Remarks
	that they learn through the training courses without difficulties.	especially Participatory Land Use Planning and Group Formation.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(4) Review of Institutional Arrangements made for Implementation of Similar Forestry Projects

In order to examine the institutional arrangement for implementation of the proposed project, the institutional set-ups of the following forestry projects were reviewed.

- SPL III Afforestation Project
- Forest Sector Development Project (WB)
- KfW 7
- JICA 2 Project

The following points should be taken into account in the examination of the organizational set-up for the proposed project.

a. The establishment of steering committees is commonly found in the structures except for SPL-III. As pointed out in the lessons learned from SPL-III, it is apparently effective in facilitation of inter-ministerial or sectoral coordination and arrangement at both central and provincial levels.

b. Forest Sector Development Project (WB) and KfW 7 Project established the management units at the district level, while SPL-III and JICA 2 just established the project management units at the provincial level. As the former projects targeted production forests allocated to individual households for afforestation with financial assistance (subsidies) from the projects, it was necessary to establish the project management units at the district level to closely monitor and manage the project activities. However, SPL-III and JICA 2 have hired the public institutions (e.g., forest management boards) as contractors for forest development activities, therefore, such an arrangement was not necessarily required.

c. Likewise, Forest Sector Development Project (WB) and KfW 7 Project also developed commune level working group or allocated field officers to contribute to the smooth implementation of the projects. Formation of community groups at the village level for forest development and/or income generating activities should be considered in the examination of the organizational set-up of the proposed project in addition to the involvement of DPCs and CPCs in the implementation of the project activities.

J.3 Design of the Project (including the Size of the Invetment Project)

J.3.1 Basic Approaches to the Execution of the Project

The following basic approaches are to be taken for efficient implementation of the proposed project and effective achievement of the project objectives.

(1) Community-centered

Local communities residing in and around the project areas will be the key actors in the implementation of the proposed project, not only the forest development and improvement activities during the project period, but also protection and management of natural and restored forests in the post-project period, as they have legitimate or customary land use rights over the majority of the project areas. Community-centered approach should be employed as the overarching concept of the proposed project for ensuring the long term sustainability as well as efficient implementation of the project. At the same time, such an approach is essential for minimizing the adverse social impacts on local communities in the target communes relating to the project areas.

The full and effective participation of local communities, especially ethnic minorities, in the project from its planning stage is requisite to meeting the requirements for REDD+ safeguard. In particular, close consultations with local communities, which are scheduled to be arranged in the beginning of the project to identify the project areas and associated households/individuals with recognition of their substantive land use rights, are crucial for avoiding potential adverse social impacts on local communities.

As described in the previous chapter, the economic activities of local communities are considered as the main drivers of forest degradation, it is, therefore, essential to i) enhance their awareness of the importance of forests, ii) foster a sense of ownership of the project outputs, such as forests, small scale rural infrastructures and livelihood development options, and iii) develop their capacity for not only sustainable forest management but also improvement of their livelihoods. To this end, local communities should be involved in a wide range of the project activities, such as orientation and guidance, survey and planning, implementation of forest development activities, and development of livelihood options.

Furthermore, collaborative management with local communities with a benefit sharing mechanism is expected to be an essential scheme to ensure the sustainable management of natural forests and plantations in the project areas in the post-project period. The mechanism should be examined and refined in the course of the project in close consultation with local communities.

(2) Introduction of Benefit Sharing Mechanisms

Economic and farming activities of local communities living in hilly and mountainous areas are considered as the main drivers which directly or indirectly lead to deforestation and forest degradation in the target provinces. It is, therefore, necessary to develop a mechanism where local communities can get economic benefits from forests so that they are motivated to protect forests from further degradation even after the end of the project.

PFES has been an effective scheme to encourage local communities to engage in forest protection and management in the target provinces. However, the amount of payment in the provinces except Lai Chau is not necessarily high and only existing forests in the watersheds

for hydropower plants are eligible for the payment. Therefore, additional benefit sharing schemes are needed for those with less amount of PFES and newly established plantations to motivate local communities to protect forests in the post-project period.

The benefit sharing mechanism that JICA2 plans to develop can be fully used in the proposed project for management of plantations developed in the protection forests. Another benefit sharing mechanism suitable for nature reserves should be examined and developed in the course of the project for sustainable management of forests in the ecosystem restoration sub-zone of nature reserves in collaboration with local communities. The benefit sharing mechanisms will be one of the crucial schemes to ensure the sustainable protection and management in the target protection forests and nature reserves in addition to PFES.

(3) Integration of Livelihood Development with Forest Development and Improvement

In addition to the benefit sharing mechanism, livelihood development is another crucial element for ensuring the sustainability of the project effects. As mentioned above, local communities' economic activities, such as firewood collection, slash and burn farming, animal grazing, and forest fires caused by NTFPs collection, are considered as the major causes of forest degradation in the provinces. Without any interventions that could encourage them to change their practices by providing alternative sources of income or introducing new techniques to lessen adverse impact on forests, it would be difficult to maintain improved forest resources in the post project period.

Consequently, the proposed project should emphasize not only the improvement of forests but also development of local livelihoods through rehabilitation of small scale rural infrastructure and provision of agriculture and forestry extension services and/or skill training to local communities living in and around the target protection forests and nature reserves. At the same time, the project will help local communities to wisely use and manage the payments made by the project for additional income generating activities as well as forest protection activities in the post project period.

(4) Contribution to REDD+ Activities in the Provinces

As specified in **Chapter J.1 (specifically Section J.1.2),** one of the aims of the proposed project is to reduce GHG emissions through reduction of deforestation and forest degradation in the target provinces. It is, therefore, necessary to pay attention to the provincial REDD+ action plans (PRAPs), which will be developed or revised in the target provinces with technical cooperation from SNRMP for promotion of the REDD+ activities in the provinces.

Specific focus of the proposed project is given to protection forests and nature reserves (or special use forests) in the selection of the project areas, as there are still substantial natural forests remaining in these forest lands, but significant parts of forests have faced a constant threat of forest degradation caused by local communities residing in and around the forest areas. The project will also give due consideration to forest monitoring in the project areas so that relevant offices can collect, accumulate, and report forest monitoring data, which are required for development of the MRV system at the provincial level in the future.

(5) Capacity Development of the Relevant Stakeholders

All the relevant stakeholders at every level of the project structure need to enhance their technical and managerial skills and knowledge necessary for implementation and management

of the project in the beginning of the project, so that the proposed project could be operated and managed in a proper, effective, and efficient manner. Capacity development of the relevant stakeholders is a crucial cross cutting issue to be addressed in the respective components. Learning-by-doing through the implementation of the respective components should be the main approach to effective and efficient capacity development of a wide range of the stakeholders. Hence, on-the-job-training (OJT) and periodic coaching by CPMU with assistance from the project consultant will be the key capacity development activities to be carried out in the project. This approach is also in line with the latest government policy which indicates that any training of the government officers for project implementation should not be financed by loan. As mentioned above, it is expected that the project consultant will pay an important role in OJT and periodic coaching of the government officers, especially those of CPMU and PPMUs.

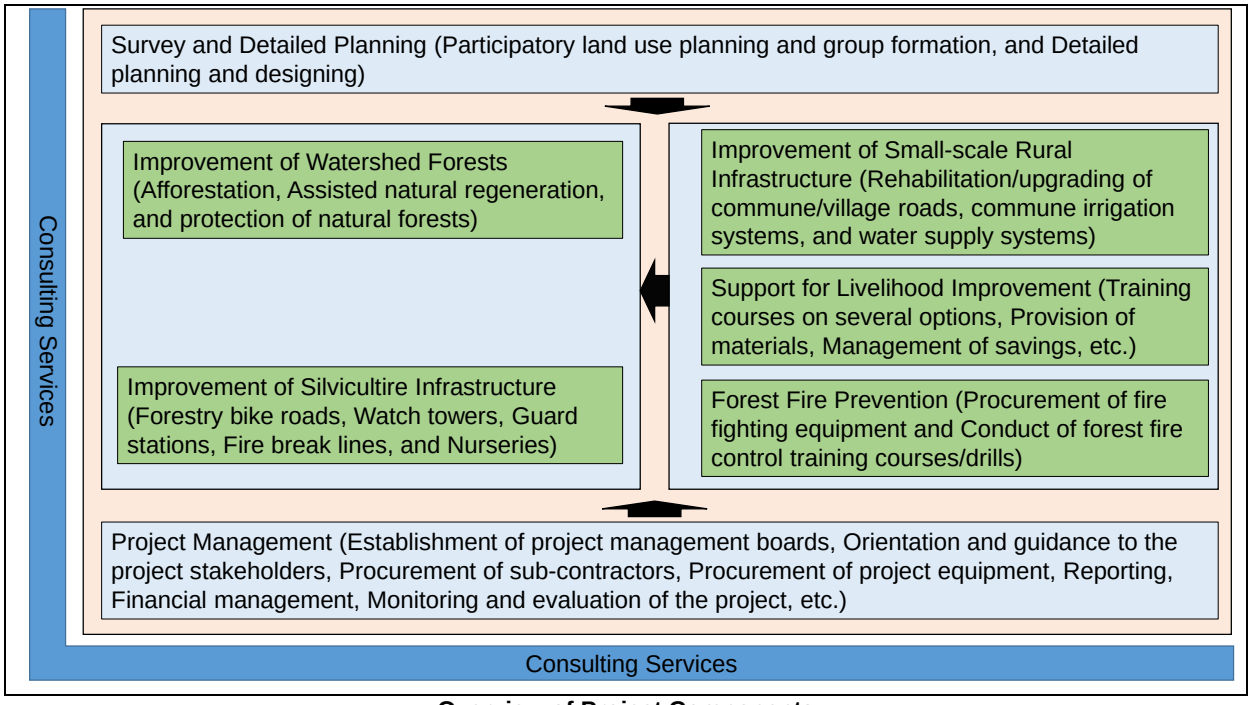
(6) Synchronization with JICA-T/C

The main objective of the preceding JICA technical cooperation project, namely the Sustainable Natural Resource Management Project (SNRMP), is to help the target provinces develop the provincial REDD+ action plans (PRAPs), implement REDD+ pilot activities, and enhance the capacities of relevant stakeholders in the provinces. As there are many similarities between SNRMP and the proposed project in terms of activities as well as target areas, the experiences gained and lessons learned by SNRMP can be fully utilized for the proposed project. In particular, SNRMP is expected to i) produce technical manuals and guidelines based on field experiences, ii) develop potential income generating models which can be introduced in the project areas, and iii) enhance the capacities of relevant stakeholders mainly at the district and commune levels in the target provinces. Consequently, the proposed project should be implemented in close coordination and synchronization with SNRMP especially in the beginning of the project to make full use of the knowledge and experiences gained by SNRMP for smooth operation of the project.

J.3.2 Project and Component Projects

J.3.2.1 Overall Framework

The proposed project is composed of eight components: namely, i) survey and detailed planning; ii) improvement of watershed forests; iii) development of silviculture infrastructure, iv) improvement of small scale rural infrastructure, v) support for livelihood improvement, vi) forest fire control, vii) project management, and viii) technical cooperation/consulting services. The project components will interrelate and interact with each other to generate synergy as shown below.



Overview of Project Components

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The following table shows the purposes of each component proposed in the project.

Major Purposes of the Project Components

Component	Main purposes
Survey and detailed planning	- to purchase high resolution satellite images covering the target protection forests and special use forests. - to develop photo-like maps covering the target communes for the participatory land use planning (PLUP) - to conduct PLUP in the communes geographically relating to the target protection forests and special use forests to determine the project areas in a participatory manner. - to select local households and communities who will take part in the project and organize them into village working groups. - to prepare detailed plans of forest development/improvement activities
Improvement of watershed forests	- to restore forests in bare lands/grasslands/bushes in the target protection forests and special use forests located in critical watersheds in a participatory manner. - to improve degraded forests and protect natural forests in the target protection forests and special use forests located in critical watersheds in a participatory manner. - to prepare regulations and decisions on benefit sharing mechanism and collaborative management system.
Improvement of silviculture infrastructure	- to develop and construct silviculture infrastructure, such as motorbike roads, watch towers, guard stations, fire break lines, and information boards, to enable forest owners to manage the target protection and special use forests in a proper and efficient manner.
Improvement of small-scale rural infrastructure	- to improve small-scale rural infrastructure, such as village roads, communal irrigation systems, and water supply systems, which could improve the marketing conditions and increase productivity or profitability of existing or potential income generating activities and/or contribute to the improvement of living conditions in the target communes/villages.
Support for livelihood improvement	- to identify priority potential income generating/livelihood development activities in the target communes. - to develop strategies for marketing major forestry and agricultural products in the target provinces. - to develop the capacity of local communities to introduce new techniques and skills for improvement of agricultural production, sustainable forest management, utilization and processing of NTFPs, and production of any marketable commodities. - to help the village working groups/group members save a certain amount of payments made by the project for forest development, improvement and protection activities and to effectively use the savings for livelihood improvement of the members and forest protection in the post project period.
Forest fire control	- to capacitate forest rangers and local communities to prevent and control forest fires by provision of fire extinction equipment and training on forest fire control.

Component	Main purposes
Project management	- to establish organizational structures at both the central and provincial levels and deploy/hire project officers for project implementation and management. - to prepare the project implementation guidelines/regulations for CPMU and PPMUs. - to prepare technical handbooks for PFMBs, SUFMBs, and village working groups. - to procure project equipment for CPMU and PPMUs. - to develop a GIS-based monitoring system. - to make CPMU, MBFPs, PPMUs, DARDs, PFMBs, and SUFMBs understand the project concept, guidelines/regulations and procedures for project implementation - to help CPMU, MBFPs, PPMUs, and DARDs implement and manage the project in a proper and effective manner. - to make CPCs and local communities in the target communes/villages aware of the project (outlines, concepts, activities, expected benefits and obligations of the communities). - to help PFMBs, DPCs, CPCs, and extension workers provide technical assistance to local communities. - to check physical and financial progress of the project and detect issues/problems that would affect the project implementation at an early stage. - to provide adequate data and information to the project owners and project implementation agencies for proper project management on a timely manner. - to support the relevant forest management boards (PFMBs/SUFMBs) concerned in monitoring the changes of forest cover in the project areas and reporting the annual changes to DARDs/PPCs. - to evaluate the impact of the project.
Technical cooperation / Consulting services	- to assist CPMU and PPMUs in the implementation and management of the project in an effective and proper manner. - to provide necessary coaching and guidance to the relevant stakeholders, especially CPMU and PPMUs, for improvement and enhancement of their managerial, administrative, and technical capacities.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Proposed work quantities for the respective project components are summarized below.

Work Quantity of the Project Components

Component	Major works
Survey and detailed planning	◆ Procurement of the latest high resolution satellite images covering 4,681 km^2 ◆ Conduct of participatory land use planning activities with formation of village working groups in 64 communes ◆ Demarcation of about 16,010 ha of sites for afforestation with set-ups of land marks ◆ Conduct of baseline surveys in 64 communes ◆ Preparation of detailed designs for forest development and improvement activities
Improvement of watershed forests	◆ Conduct of the following forest development and improvement activities in 10 protection forests and 6 special use forests in the four provinces - Afforestation in 16,010 ha of bare lands, grasslands, and bushes - Assisted natural regeneration of 13,120 ha of degraded forests - Protection of 45,180 ha of natural forests ◆ Provision of guidance on silviculture techniques to PFMBs and SUFMBs each in the four provinces ◆ Provision of guidance on collaborative management to PPMUs, DARDs, PFMBs, and SUFMBs ◆ Arrangement and organization of workshops for development of a forest management plan with 64 communes in the four provinces
Improvement of silviculture infrastructure	◆ Development and improvement of silviculture infrastructure: - Motorbike roads: 121.5 km - Footpaths: 30 km - Fire break lines (FBL): 278 km - Fire watch towers: 29 units - Forest management board office: 1 units - Forest guard station: 33 units - Information boards: 59 units - Sign boards: 71 units - Nurseries: 10 units ◆ No physical development within areas designated as special use forest
Improvement of small-scale rural infrastructure	◆ Planning of improvement of small scale rural infrastructure in 64 communes in the four provinces, such as: - Rehabilitation of village roads: 61.4 km - Rehabilitation of irrigation systems: 28.3 km of canal - Rehabilitation of water supply systems: 14 units ◆ Conduct of ground surveys and detailed designing of the improvement of small scale rural infrastructure ◆ Construction for improvement of small scale rural infrastructure

Component	Major works
	◆ Provision of guidance on O&M of small scale rural infrastructure and livelihood development activities to CPCs, commune extension workers, and users' groups in 64 communes in the four provinces
Support for livelihood improvement	◆ Arrangement and organization of workshops for identification and selection of priority livelihood development options in 64 communes in the four provinces ◆ Arrangement and conduct of a marketing survey to develop marketing strategies for major agricultural and forestry products ◆ Development of demonstration/model plots for selected priority livelihood development options in 64 communes in the four provinces ◆ Provision of training courses on selected priority livelihood development options to i) DAECs and commune extension workers in 11 districts, ii) local communities at the demonstration/model plots developed in 64 communes in the four provinces ◆ Provision of guidance on the management of payments made by the project and the use of saving capitals for forest management and livelihood development in 64 communes in the four provinces ◆ Arrangement and organization of training courses on financial management for the village working groups organized in 64 communes in the four provinces ◆ Arrangement and organization of workshops on the preparation of business plans on potential income generating activities
Forest fire control	◆ Provision of equipment for forest fire control to 11 District Forest Ranger Offices and 16 PFMBs/SUFMBs in the four provinces ◆ Arrangement and organization of training courses on forest fire training for i) forest rangers in each province and ii) village leaders and members of the village working groups in 64 communes in the four provinces ◆ Assist trained forest rangers in the organization of forest fire drills twice in 64 communes in the four provinces in the course of the project
Project management	◆ Establishment of one CPMU and four (4) PPMUs at the central and provincial levels, respectively ◆ Allocation and employment of the project staff ◆ Development of a GIS-based monitoring system and forms/formats for regular monitorig ◆ Preparation and establishment of regulations and guidelines for implementation of the project ◆ Procurement of project equipment ◆ Development of draft TORs for the works to be contracted out to contractors for implementation of the project components ◆ Arrangement and organization of project orientations for i) CPMU and relevant departments of MARD, ii) PPMUs and DARDs of four provinces, iii) 10 PFMBs, 6 SUFMBs, 11 DPCs, and 64 CPCs in the four provinces ◆ Arrangement and organization of annual planning workshops with i) CPMU and ii) PPMUs in the four provinces ◆ Provision of orientation and guidance on annual work plan to i) 10 PFMBs, 6 SUFMBs and 11 DPCs and ii) 64 CPCs and the associated village working groups ◆ Provision of orientation and guidance on benefit sharing mechanism to i) CPMU and the relevant department of MARD, ii) PPMUs and DARDs of the four provinces, 10 PFMBs, and 6 SUFMBs, and iii) 11 DPCs, 64 CPCs, and the associated village working groups ◆ Production, publication, and distribution of project documents, such as project brief (overall and provincial projects), project newsletters (overall and provincial projects), and awareness raising materials. ◆ Arrangement and conduct of the following study tours twice each: - study tour to JICA2 sites for PPMUs, PFMBs, and SUFMBs - study tour to SNRMP target communes for PFMBs, SUFMBs, and village working groups - overseas study tours for CPMU/MBFPs and PPMUs and DARDs ◆ Provision of guidance on PLUP and use of GIS and GPS to PFMBs and SUFMBs each in the four provinces ◆ Arrangement and organization of bi-annual review meetings with i) CPMU and ii) PPMUs in the four provinces ◆ Establishment of monitoring, supervision and evaluation systems for the project ◆ Conduct of progress monitoring on a regular basis (monthly and quarterly) ◆ Conduct of periodic monitoring and evaluation of the project (initial, mid-term and terminal evaluation) ◆ Monitoring of forest resources (changes in forest resources) by using PFMS and its associated devices introduced by SNRMP in 11 districts
Consulting Service	◆ Assistance in development and preparation of technical manuals, forms, and systems for proper and efficient implementation of the project ◆ Assistance in supervision and management of the project activities contracted out to contractors ◆ Provision of OJT and periodic coaching to the relevant stakeholders, especially CPMU and PPMUs, on the implementation and management of the project components

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

More details of the work quantities and work plan of the respective project components are described in the following sections.

J.3.2.2 Survey and Detailed Planning

(1) Participatory Land Use Planning (PLUP) and Formation of Village Working Groups

Given that significant parts of the target protection forests and special use forests may have been used by local communities for farming with either legitimate land use rights or de facto/customary land use rights, close consultations with local communities and households who have been using the areas is a requisite step for determination of the project areas without any future conflict with local communities.

The participatory land use planning (PLUP) is proposed as a process of helping local communities assess the current land use and tenure status in the locality and develop a future land use plan of a village including the use of the target protection forests and special use forests in a participatory manner. The same process has been adopted by many community-based forest and natural resource management projects not only in Vietnam but also other Asian countries and proved effective in community involvement in forest management and development of a framework for collaborative forest management.

a. Objectives

The main objectives of "PLUP and formation of village working groups" are: i) to select the project areas for forest development and improvement activities in close consultation with local communities who have legitimate or customary land use rights over the protection / special use forests, ii) to have prior consents to the use of the project areas from these communities, and iii) to organize those who are willing to participate in the project and/or who agree to use their areas for the project into village working groups.

Specifically, the work aims to: i) develop present land use maps of villages including the project areas based on GIS-based photo-like maps, ii) develop future land use maps of villages with determination of areas which can be used for forest development and improvement, iii) identify and select households who have vested land use rights over the project areas and who are willing to participate in the project activities, iv) verify if the project areas can be used for the project on the ground with households/communities concerned, v) organize households who are willing to participate in the project into village working groups which will be sub-contractors for forest development and improvement activities, and vi) make agreements with village working groups on forest development and improvement activities in the project areas.

b. Procedures

PLUP and formation of village working groups will be carried out according to the following procedures in the target communes.

i) Procurement of Satellite Images

Prior to the field activity, CPMU will purchase a set of the latest-cum-high resolution satellite images covering the project areas in the target provinces to develop photo-like maps covering the target 64 communes, which will be used as base maps for determination of the project areas in consultation with local communities in the participatory land use planning. Considering the purposes of use and its purchasing

prices, the preparatory survey judges that the following satellite images are suited for this purpose.

Satellite Images recommended for Forest Inventory and Mapping

Satellite images	Resolution	Target Area	Supplier
Pleiades (Pan sharpened and colored images)	1.0 m	4,681 km^2	The National Remote Sensing Department

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The procurement of satellite images will be done in the second year (2018/2019) of the project by CPMU with technical assistance of the project consultant. The activity can also be contracted out to the contractors which will implement PLUP and formation of village working groups.

ii) Development of photo-like maps
Photo-like base maps covering the target communes will be developed and prepared on a scale of 1/5,000~1/10,000 by overlaying the existing GIS data of the topographic maps (such as contour lines, roads, rivers/streams, and boundaries of communes) collected from FIPI or DARDs concerned and those of the boundaries of the target protection forests/special use forests collected from PFMBs/SUFMBs concerned on the high resolution satellite images. Development of photo-like maps should be completed by the end of the second year so that the same maps can be fully used for PLUP. This activities will be incorporated into the activities contracted out to the contractor for PLUP and formation of village working groups.

iii) Consultation with commune leaders and leaders of villages
A one-day meeting will be held at the commune center with the participation of commune leaders and heads of villages in the commune to have prior consent to the project and PLUP activities from the leaders and to identify villages geographically relating to the target protection/special use forests. In the meeting, the participants will identify village(s) whose territories are overlapped with the target protection/special use forests after having introduction of the project (objectives, major activities, expected benefits, and potential restriction on the use of forests) and outline of PLUP (objectives and major activities).

iv) Preparation of present land use maps of the villages relating to the target protection/special use forests
A one-day meeting will be held each at the villages geographically relating to the target protection/special use forest to help local communities prepare a present land use map using a photo-like map covering each village. Village leaders, representatives of mass organizations, and other communities, especially those who have legitimate or customary land use rights over the areas overlapped with the target protection/special use forest will participate in the meeting.

iv) Determination of the project areas with development of a future land use map
Another one-day meeting will be held each at the same villages with the same participants and PFMB/SUFMB concerning to the target protection/special use forest. In the meeting, the participants will discuss and examine if the areas located in the target protection/special use forest can be used for forest development activities, such as afforestation and ANR. Clear explanation about restrictions on the land use and

benefits from the project along with rights and obligations of households/communities who participate in the project should be made before the discussions. The participants will also be encouraged to select a certain size of consolidated area for the project, so as to make the operation and management of the project activities in the village rather easy.

After determination of the project areas for afforestation, ANR, and protection of natural forests, the participants will also identify communities/households who have either legitimate land use rights or costmary land use rights over the areas in the village. At the same time, they will also discuss and determine the future land use of the village by discussing: i) whether natural forests but outside the protection/special use forest could be protected as they are, ii) whether shifting cultivation and upland crop farms could be improved and converted into sustainable forms of use, iii) how sparse forests and shrubs could be improved, and vi) whether rice field could be maintained as rice field in the future.

v) Organization of a village working group
A one-day meeting will be further held at the same village with village leaders and communes/households identified as land users/stakeholders of the project areas to organize them into a village working group, visit the selected project areas to measure the boundaries of the areas with GPS, and get stakeholders' consent on the draft agreement on forest development and improvement activities.

c. Expected outputs

The following outputs are expected to be produced through the activities described above.

- Present land use maps and future land use maps on a scale of 1/5,000~1/10,000 of villages relating to the project areas in the target communes
- Rules on forest management and land use in the target communes
- List of households with rules of the village working groups organized in the target communes/villages
- Draft agreements with village working groups on the forest development and improvement activities in the project areas

d. Implementation method and timeframe

The activities will be carried out in all the target communes and villages relating to the project areas from the second to the fourth years (2018/2019 to 2020/2021) of the project. Each PPMU will hire a contractor capable to carry out the activities. In case there is no competent institute/organization found in the provinces, CPMU will contract out the work to an institute or organization at the national level.

e. Necessary arrangement for ensuring the quality of the work

In order to ensure the quality of the work, CPMU with technical assistance of the project consultant will provide technical guidance and orientation on the process of and procedures for PLUP and formation of the village working groups to PPMUs, PFMBs/SUFMBs concerned, and contractors (in the case when PPMUs hire the contractors for the work at the provincial / regional level) prior to the field works. A two-day workshop outlined below will be organized and held in the respective provinces. In addition to PLUP, the participants will be given technical guidance on the use of GPS as part of the sessions in the workshop.

Guidance on PLUP and Use of GPS

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Guidance on PLUP and GPS	PPMUs, PFMBs / NRMBs, and contractors (about 30 persons)	Outline of PLUP, Procedures for PLUP, Expected outputs of PLUP, and Use of GPS	Provincial Capital	2 days x 1 time/ province	2nd / 3rd years (2018/2019)	By administration or Contract out

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Moreover, CPMU with the project consultant will assist PPMUs in the monitoring and supervision of the field works of the contractor/s so that the project areas would be selected through full consultations with local communities in a proper manner.

(2) Site Demarcation and Set-ups of Land Marks

a. Perimeter Survey and Set-ups of Land Marks

PFMBs/SUFMBs together with members of the village working groups will conduct perimeter surveys at the selected project areas by using GPS. During the perimeter surveys, they will also set wooden poles on the boundaries of the project areas for afforestation and put marks on standing trees or rocks along the boundaries of those for ANR and protection of natural forests at regular intervals. The locations of the landmarks (either wooden poles/marks on trees or rocks) will also be recorded by GPS so that data can be converted into GIS data and reflected to the base map of the GIS-based monitoring system.

The draft specification of the perimeter survey with set-ups of land marks is outlined below.

Specification of the Perimeter Survey with Set-ups of Land Marks

Activities	Target	Method
Perimeter survey	Contiguous project areas in the respective villages/communes within the target protection/special use forests	To walk through the boundaries of the project areas with GPS
Set-ups of land marks	Same as above.	Area for afforestation Pile wooden stakes at 50 meter intervals on the boundaries of the project areas in parallel with the perimeter surveys Area for ANR and protection of natural forests Make marks on standing trees or big rocks along the boundaries of the project areas in parallel with the perimeter surveys

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

b. Guidance on the use of GIS

In order to help PFMBs/SUFMBs use the results of the perimeter survey for management of the assigned protection/special use forests, PPMUs with the assistance of the project consultant will organize and hold a two-day workshop on the use of GIS for technical officers of PFMBs and SUFMBs. The outline of the workshop is summarized below.

Guidance on Use of GIS

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Guidance on use of GIS	PFMBs / SUFMBs (20 participants / session)	Management of data of the perimeter survey using GIS	Provincial Capital	2 days x 1 time/ province	3rd year (2019/2020)	By administration or Contract-out

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(3) Socio-economic Baseline Survey

A socio-economic baseline survey will be carried out in the target communes with the aim of: i) grasping the socio-economic conditions of local communities living in the target communes,

ii) developing baselines of socio-economic indicators of households targeted by the project, and iii) clarifying the gender differences in forest management and protection in the communes. The socio-economic baseline survey will comprise the following activities.

i) Consultation with and interview to commune and village leaders
A one-day meeting will be held at the center of the commune with commune and village leaders to collect general socio-economic information of the commune and select sampled households and women in the commune. Socio-economic data to be collected from the interview to commune and village leaders shall include, but not limited to, the following:

- Demographic conditions
- Agricultural, forestry, and fishery production and other sources of livelihoods
- Access to rural finance or existence of village funds
- Existing rural and social infrastructure
- Existing mass organizations
- Existing activities and organizations for forest management
- Development needs of the commune

A total of 24 households and six women will be selected from the different socio-economic strata for a household interview survey and a gender sensitive analysis, respectively, in consultation with commune and village leaders.

ii) Interviews to households for the household interview survey
A set of questionnaires, which cover the following topics, will be developed and prepared prior to the interview survey in the field.

Topics to be covered by the Interview Survey

Topics	Survey Items
General background	Size of family, Ethnicity, History of family, Information of family members (age, educational background, occupation, etc.)
Assets and facilities, and access to social services	Major assets owned by household, Type and size of house, Access to water supply system, electricity, healthcare services, etc.
Income and expenditures	Annual (or monthly) income level, Main sources of income, Annual (or monthly) expenditure
Land tenure	Land holding size, Land tenure
Agricultural production	Cropped areas, Farming types (shifting cultivation/permanent farms), Major staple and cash crops, Production, Yields, Selling prices, Farm inputs, etc.
Forest use and management	Forest areas owned by household, Major forestry products (including NTFPs), Selling prices, Forest management activities, Collection of fire wood
Livestock and fisheries	Number of livestock animals owned, Selling prices, Any fishery activities and production, etc.
Any concerns about the project activities	Any foreseeable conflicts which might be caused by the project with their socio-economic/livelihood activities, Any suggestions to the project, etc.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The household interview survey will interview each of the selected 24 households in all the target communes using the pre-set questionnaires.

iii) Interviews to selected women for the gender sensitive analysis
Likewise, a set of questionnaires for interviews to women shall be developed and prepared prior to the field survey. The survey points in the questionnaires shall include, but not be limited to, the following.

- Main roles played by women in forest use and management
- Gender differences in access to and control over forest resources

- Gender differences in decision making processes relating to forest management
- Prioritized points given by women to forests and forest management
- Possible benefits that women might be able to obtain from forest management and protection
- Possible impacts caused by the project to women

The survey will interview each of the selected six women in all the target communes with the pre-set questionnaires.

The socio-economic baseline survey will be conducted by the contractor hired by CPMU in the third and fourth year (2019/2020 and 2020/2021) after the project areas are determined and the village working groups are formed in the course of PLUP.

(4) Detailed Designing of Forest Development and Improvement Activities including Improvement of Silviculture Infrastructure

After determination of the project areas through PLUP, PPMUs will package detailed design works for the forest development and improvement activities and improvement of silviculture infrastructure per management board and contract them out to contractors that have experiences in designing of forest development and improvement activities in the respective provinces. The contents of the detailed design should include, but not be limited to, the following.

Forest Development and Improvement Activities

- Location map based on the latest NFI&S Maps
- General information (location, area, slope, elevation, soil type, and other natural conditions) of the project areas
- Lists of compartments/divisions with associated information (e.g., compartment/division ID, areas, location, present land use/forest status, proposed design) per sub-contract package which will be further contracted out to village working groups
- Design of plantation to be developed by afforestation
- Lists of silvicultuel activities to be carried out in afforestation, ANR, and protection of natural forest
- Unit costs for each forest development/improvement sub-component
- Costs for the respective contract packages to village working groups and total cost for all the activities in the management board

Sivicultuel Structures Development and Improvement Activities

- Location map
- Results of necessary ground surveys
- Specification of each silvicultuel structure
- Designs of silvicultuel structures (plan view drawing, Cross section drawing, longitudinal profile, and structure drawing, etc.)
- Material and work quantity calculation for each silvicutuel structure
- Unit cost estimation for each silvicutuel structure

The detailed design works will be divided into three batches in accordance with the schedule of the forest development and improvement activities. The first batch of the design work will

be conducted in third year (2019/2020) of the project, while the last batch of the work is scheduled to be done in fifth year (2021/2022) of the project.

(5) Detailed Designing of Improvement of Small Scale Rural Infrastructure

Likewise, PPMUs will outsource detailed design works for improvement of small scale rural infrastructure, namely community road, irrigation systems, and water supply systems, to contractors based in the respective provinces. Technical design centers, consulting service centers of DARDs, and private consulting firms are likely the potential contractors for the works. The contents of the detailed design should include, but not be limited to, the following.

- Location map
- Results of necessary ground surveys
- Specification of each small-scale infrastructure
- Designs of small-scale structures (plan view drawing, line distribution drawing, Cross section drawing, longitudinal profile, and structure drawing, etc.)
- Material and work quantity calculation for each small-scale structure
- Unit cost estimation for each small-scale structure
- Unit cost estimation for each small-scale structure

Types of small scale rural infrastructure and procedures for implementation of the component including detailed designing are described in detail in **Section J.3.2.5** of this report.

J.3.2.3 Improvement of Watershed Forests

(1) Proposed Technical Interventions and Physical Targets

With the aim to improve and maintain the functions of forests in critical watersheds in the target provinces, the following technical interventions are proposed based on the existing MARD technical guidelines and experiences of the past and on-going forestry projects.

- Afforestation
- Assisted natural regeneration (ANR) without enrichment planting
- Protection of natural forests

Afforestation is to be applied to bare lands/grass lands and bushes/scrubs, which are categorized as “Ia” and “Ib”, respectively, in the classification of the National Forest Inventory in 2012 (2012 NFI)[2], while ANR without enrichment planting is to be applied to woodlots categorized as “Ic” in the same classification. All the types of natural forests, namely, regenerating/recovering young forests, natural forests impacted by human activities, and mature secondary forests/primary forests, which are categorized as “II (IIa or IIb),” “III (IIIa or IIIb),” and “IV (IVa or IVb)” in the 2012 NFI classification, are considered as potential targets for protection of natural forest.

The following table shows the technical interventions proposed and the forest status/vegetation types of the 2012 NFI classification.

[2] National Forest Inventory and Statistics in 2015 has not been officially approved by MARD by the time when the preparatory survey conducted the field survey and prepared the draft final report; therefore, the team used the classification of the National Forest Inventory in 2012 for determination of the proposed technical interventions.

Review Meetings at the Central and Provincial Levels

2012 NFI Category	Characteristics	Proposed Technical Interventions		
		Afforestation	ANR w/o enrichment	Protection
Group I	Lands without forest or with less forest cover (less than 30%)			
Ia (bare lands / grass lands)	Bare lands and grass land with or without bushy vegetation	Applied	-	-
Ib (bushes / scrubs)	Bushes and grass lands with sparse scrubs and small native trees or bamboo	Applied	-	-
Ic (woodlots)	Woodlots with small timber trees around 1 meter high Atmore than 1,000 tress/ha	-	Applied	-
Group II	Regenerating/recovering forests with small trees			
IIa	Regenerating/recovering after shifting cultivation	-	-	Applied
IIb	Regenerating/recovering after over exploitation	-	-	Applied
Group III	Natural forests impacted by human activities			
IIIa	Forests impacted and fully damaged by over exploitation	-	-	Applied
IIIb	Forests impacted by selective cutting	-	-	Applied
Group IV	Primary forests or matured secondary forests			
IVa	Primary forests	-	-	Applied
IVb	Matured secondary forests	-	-	Applied

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

As described in **Section J.2.2.3** in this chapter, the physical targets of the respective technical interventions in the respective provinces are shown below.

Physical Targets of the Technical Interventions

Province	Protection	ANR	Afforestation
Dien Bien	10,400	2,310	3,160
Lai Chau	0	7,500	6,550
Son La	9,900	2,470	3,220
Hoa Binh	24,880	840	3,080
Total	45,180	13,120	16,010

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(2) Afforestation

Afforestation aims to proactively restore forests of indigenous species in bare lands, grass lands, bushes, and lands with scattering scrubs. As the project areas are located in both protection forests and special use forests, two types of standard design of afforestation are developed in accordance with MARD technical guidelines (MARD Decision No. 38/2005/QD-BNN, 06/07/2005). The following table shows the outline of the standard designs proposed for afforestation in protection forests and special use forests.

Standard Designs of Afforestation in Protection Forests and Special Use Forests

a. Afforestation in Protection Forests

Design/Specification	Description
1. Target forest status	Bare lands, Grass lands, and Bushes (Ia and Ib according to 2012 NFI classification)
2. Density of trees planted	1,600 trees/ha
3. Tree species planted	◆ Mixed planting of indigenous (main) species and fast growing (subordinate) species ◆ Indigenous species: *Alnus napalensis, Canarium album, Chukrasia tabularis, Docynia indica etc. Pinus massoniana, Schima walichii* ◆ Subordinate species: *Acacia auriculiformis, Acacia hybrid, Acacia mangium, Manglietia glauca, Pinus massoniana,* etc. ◆ Proportion of indigenous species and subordinate species: 600: 1000
4. Tending and protection	Spot weeding and clearing are continued for three years after planting.
5. Replanting	10 % of the total seedlings planted in the first year will be replanted in the second year.
6. Target at maturity	Multi-layered forest of indigenous species at the density of 400~600 trees/ha
7. Remarks	Subordinate species are planted to make the favorite conditions for the growth of indigenous species in the initial stage. They will be gradually harvested by thinning

Design/Specification	Description
	from the 7th year after planting.

b. Afforestation in Special Use Forest

Design/Specification	Description
1. Target forest status and target areas	Bare lands, Grass lands, and Bushes (Ia and Ib according to 2012 NFI classification) in the ecosystem restoration sub-zone in special use forest
2. Density of trees planted	600 trees/ha
3. Tree species planted	Mono-planting of indigenous species: *Alnus nepalensis*, *Canarium album*, *Chukrasia tabulris*, *Schima walichii*
4. Tending and protection	Spot weeding and clearing are continued for three years after planting.
5. Replanting	10 % of the total seedlings planted in the first year will be replanted in the second year.
6. Target at maturity	Multi-layered forest of indigenous species at the density of 400~600 trees/ha
7. Remarks	Existing shrubs in the target areas will be maintained and used as shade for indigenous species planted. Planting of fast growing species and cutting/extracting of standing trees are prohibited in special use forests in principle.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Forest development and improvement activities will be contracted out to PFMBs/SUFMBs like in the case of the JICA2 project. Likewise, afforestation activities will be further sub-contracted to the village working groups composed of local households who have vested land use rights over the project areas. PFMBs/SUFMBs will provide necessary technical guidance to the village working groups before and during the establishment of plantations and also conduct field validation to check the accomplishments made by the groups periodically.

(3) Assisted Natural Regeneration (ANR) without Enrichment

Assisted natural regeneration (ANR) without enrichment is to be applied to woodlots or severely damaged forests where there are still a number of small indigenous trees remaining in the plots. Based on the lessons learned from the JICA 2 project as well as PASCA 2, which suggest that ANR with enrichment might not necessarily be cost-effective as compared to other activities, ANR without enrichment is proposed as the technical intervention to upgrade woodlots to recovering forests (class II) or forests impacted by human activities (class III). The standard design of ANR without enrichment in protection forests and special use forests is outlined below.

Standard Design of ANR without Enrichment in Protection Forests and Special Use Forests

Design/Specification	Description
1. Target forest status	Woodlots (1c according to the 2012 NFIS character) in protection forests and the same in the ecosystem restoration sub-zone in special use forests
2. Major silviculture activities	◆ Clearing climbers and insects affect trees, ◆ Spot weeding and clearing for existing indigenous trees ◆ Protection of the areas
3. Period	Two years for ANR and three years for protection
4. Target at maturity	Multi-layered-cum-mixed forest of indigenous species at the different densities (Conversion of the forest status from "Ic" to "II" or "III")
5. Remarks	ANR will be introduced only in the ecosystem restoration sub-zone in special use forests.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

ANR will also be carried out in the same manner as afforestation activities will be done. The village working groups who have vested land use rights over the project areas will be the main field implementers. Proper guidance and technical assistance should be provided by PFMBs/SUFMBs in a timely manner along with periodic field validation.

(4) Protection of Natural Forests

Protection of natural forests will target the existing natural forests classified into "II," "III," and "IV" in the 2012 NFI classification, with an aim to protect natural forests from forest degradation caused by forest fire, illegal exploitation, collection of fire wood, and animal grazing.

In general, the majority of the project areas are under the PFES scheme; therefore forest owners, either PFMBs/SUFMBs or communities/households, have received the financial incentives from PFES in exchange for protection of forests. However, the amount of PFES paid in 2015, which ranges from VND 10,000 to VND 260,000/ha/year in most of the areas except Lai Chau, are rather lower for local communities to get motivated to engage in forest protection activities. Furthermore, the new PM decree on "Mechanism and Policy of Forest Development associated with the Policy on Sustainable and Rapid Reduction and Assistance to Ethnic Minorities for the Period 2015-2020" (PM Decree No. 75/2015/ND-CP) clearly states that the contracted amount for forest protection in mountainous or poor areas should be set at VND 400,000/ha/year. Consequently, the project will aim to fill in the gap between the existing PFES payments in the project areas and the amount set by Decree No. 75/2015/ND-CP, so that PFMBs/SUFMBs could make forest protection contracts with the village working groups at a rate of VND 400,000/ha/year.

The standard works for protection of natural forests are summarized in the following table.

Standard Works for Protection of Natural Forests

Design/Specification	Description
1. Target forest status	Regenerating/recovering forests with small trees (II), Natural forests impacted by human activities (III), and Primary forests or matured secondary forests (IV)
2. Major Silviculture Activities	◆ Patrolling and reporting ◆ Maintenance of the sign board for forest protection
3. Period	Five years
4. Target at maturity	Improvement and upgrading of degraded forests, namely from class II to class III and/or from class III to class IV
5. Remarks	◆ Members of village working groups should be allowed to collect and use non-timber forest products from their assigned areas under the collaborative management agreement between the working groups and PFMBs/SUFMBs. ◆ Natural forests in the ecosystem restoration sub-zone are the considered as targets for protection of natural forests in special use forest, as those in the strict conservation zone should be protected and conserved from any human interventions.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(5) Implementation of the Component

a. Implementers of the Component

Forest development and improvement activities under the component will be contracted out to PFMBs or SUFMBs concerned with the project areas. PFMBs and SUFMBs are responsible for development, management, and protection of the target protection forests and special use forests in the target provinces in principle. It is, therefore, reasonable that PFMBs/SUFMBs responsible for the project areas will carry out the forest development and improvement activities in the respective jurisdictions. In fact, the SPL-3 Afforestation Project and the JICA 2 Project have been implemented in the same manner and proved that such an arrangement would be not only effective for ensuring the quality of the works but also efficient in project management as PFMBs/SUFMBs could play the same function as the district-level project management board will do.

As described in the previous sub-section the field activities of the forest development and improvement, namely afforestation, ANR, and protection of natural forests, will be sublet to local communities, especially the village working groups organized by local communities who have vested land use rights over the project areas. These arrangement will be the basis of the collaborative management agreement, which will be proposed by the project for the sustainable management of forests in collaboration with local communities in the post-project period.

b. Phased Implementation

- As local communities in the target communes have less experience in large scale forest development and improvement activities but will be the main field implementers of the component, it is necessary to give due consideration to their capacity and experience when the project plan is designed. In fact, it may be impossible for one household to develop several hectares of plantations in a year as it requires considerable amount of laborers. In order to ensure the quality of plantations, the workload should be split into reasonable and managerial sizes which local communities can handle and also PFMBs/SUFMBs can manage in a year.
- Considering the experiences of the JICA2 Project and past achievements made by PFMBs and SUFMBs of the target protection forests and special use forests under the Provincial FPDPs as well as other past afforestation programs, the preparatory survey team proposes to implement the component in a phased manner by allocating the targets according to the following manner.
  - 4th year: 20% of the targets
  - 5th year: 40% of the targets
  - 6th year: 40% of the targets

By doing this, it is also expected that local communities and PFMBs/SUFMBs will enhance their technical and managerial knowledge and capacity as they could learn a lot through the implementation of the activities in the 4th year.

(6) Necessary Arrangements for Ensuring the Quality of the Work

PFMBs and SUFMBs need to provide technical assistance and guidance to the village working groups so that they could establish quality plantations and manage assigned woodlots/forests by applying silviculture techniques properly. To ensure that PFMBs and SUFMBs could fulfill their expected roles, the following technical guidance should be arranged and organized for them at the provincial level.

Guidance on on Silviculture Techniques

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Guidance on Silviculture techniques	PFMBs, SUFMBs, and commune extension workers (50 participants)	Major silviculture techniques for afforestation and ANR (process, procedures, key techniques, and field practices)	Provincial capital and field	2 days x 1 time/ province/batch	4th year (2020/ 2022)	Contract-out

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(7) Phase-out/phase-in activities

The phase-out/phase-in activities aims to help PFMBs/SUFMBs, CPCs concerned, and the village working groups prepare themselves in the post-project period. Since part of the forest

management and protection activities are expected to be handed over to local communities, especially the village working groups, in the post-project period, the following activities will be carried out to lay the foundation for introduction of the benefit sharing mechanism and collaborative management system in the project areas.

- Guidance on Collaborative Management to PPMUs, DARDs, and PFMBs/SUFMBs
- Workshops for Development of Forest Management Plan at the Commune/Village Level

Furthermore, commune and village leaders will be given the guidance on the operation and maintenance (O&M) of small scale rural infrastructure so that they could enhance their understanding of the necessity of O&M and their responsibility for long-term use of the facilities. The following table shows the outline of the phase-in and phase-out activities to be carried out in the course of the project.

Phase-in and Phase-out Activities

Title	Participants/time	Topics	Venue	Duration & Frequency	Timing	Impl. Method
Guidance on collaborative management (CM)	PPMUs. DARDs, PFMBs, and SUFMBs (50 participants)	Objectives, concepts, and necessity of CM Roles, responsibilities, obligations, and rights of communities and PFMBs/SUFMBs	Provincial capital	1 day x 1 time/ province	8th year (2024/2025)	By administration (CPMU/project consultant)
Workshop for development of forest management plan	Communes and village working groups (50 participants)	Confirmation and update of the future land use map of the village and development of forest management plan	Village	2~3 days x 1 time/ village	8th year (2024/2025) and 9th year (2025/2026)	Contract-out (PAEC/University /NGOs, etc.)
Guidance on O&M of small scale rural infrastructure	CPC and village leaders, users' groups (50 participants)	Necessity of O&M, roles and responsibilities of CPCs and users of the facilities	Commune center	1 day x 1 time/ commune	8th year (2024/2025)	By administration (PPMUs) or Contract-out (PAEC/University /NGOs, etc.)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.3.2.4 Improvement of Silviculture Infrastructure

To facilitate the implementation of the forestry development and management activities and sustainable management of the project areas, several types of silviculture infrastructure need to be newly constructed or upgraded in the target protection forests and special use forests. After a careful review of the proposals submitted by the PFMBs/SUFMBs and DARDs of the four provinces, the volume of the works relating to the improvement of silviculture infrastructure in the respective protection forests and special use forests were determined as follows.

Province	District	FMB	Motorbike /Forestry Road	Foot Path	Fire Break Line	Fire Watch Tower	Forest Management Board Office	Forest Guard Station	Information Board	Nursery
			km	km	km	no.	no.	no.	no.	no.
Dien Bien	Dien Bien	Dien Bien PFMB	13.8	0.0	28.0	0	0	2	3	0
		Muong Phang NRMB	0.0	0.0	0.0	0	0	4	0	0
	Muong Cha	Muong Cha PFMB	0.0	0.0	16.0	0	0	2	3	1
		Muong Cha PFMB (Unallocated)	20.6	0.0	0.0	0	0	3	0	0
	Tuan Giao	Tuan Giao PFMB	13.6	0.0	16.0	4	0	3	4	0
	Subtotal		48.0	0.0	60.0	4	0	14	10	1
Lai Cahi	Sin Ho	Nam Ma PFMB	12.0	0.0	27.0	4	0	2	7	0
		Nam Na PFMB	12.0	0.0	30.0	2	0	2	2	1
	Than Uyen	Than Uyen PFMB	12.0	0.0	36.0	3	0	1	2	1
	Tan Uyen	Tan Uyen PFMB	12.0	0.0	21.0	2	0	3	3	2
	Subtotal		48.0	0.0	114.0	11	0	8	14	4
Son La	Thuan Chau	Copia SUFMB	2.0	6.0	11.0	3	1	2	9	0
	Xuna Nha	Thuan Chau PFMB	11.5	0.0	30.0	3	0	1	0	3
	Moc Chau Van Ho	Xuan Nha SUFMB	0.0	18.0	0.0	2	0	1	4	0
	Quynh Nhai	Quynh Nhai PFMB	0.0	6.0	7.0	2	0	1	4	0
	Subtotal		13.5	30.0	48.0	10	1	5	17	3
Hoa Binh	Da Bac	Phu Canh SUFMB	0.0	0.0	11.0	1	0	2	0	1
		Da river PFMB	12.0	0.0	36.0	0	0	1	11	1
	Lac sonTan Lac	Ngoc Son - Ngo Luong SUFMB	0.0	0.0	9.0	1	0	2	6	0
	Mai Chau	Hang Kia - Pa Co SUFMB	0.0	0.0	0.0	2	0	1	1	0
	Subtotal		12.0	0.0	56.0	4	0	6	18	2
Total			121.5	30.0	278.0	29	1	33	59	10

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Aside from the above-listed infrastructure, PFMBs in Lai Chau and Son La proposed the installation of signboard and the survey team confirmed that a total of 71 signboards needed to be installed in the project areas (23 units for Nam Na PFMB in Lai Chau and 48 units for Da Ba River PFMB in Hoa Binh). However, the preparatory survey team judges that such an intervention should be covered by the management fee of PFMBs since it is part of the daily management activities and also its cost is minimal.

(1) Types of Silviculture Infrastructure

a. Motorbike road

Forest access road is inevitable for smooth operations of the forest development and improvement activities, especially for transportation of seedlings for afforestation. Hence, construction of forest road is one of the requisite activities for any afforestation projects. It is, however, not recommendable to adopt the standard design of forest road in the target protection forests in principle as they are located in mountainous areas with steep terrains, where slope failure easily occur unless proper slope protection measures are introduced.

Instead, motorbike roads are considered more suitable for the target protection forests and special use forests considering its cost effectiveness and environmental soundness. In order to prevent slope failures or soil erosion during and after the construction of forest roads in steep sloping areas, a significant part of slopes should be cut and proper slope protection measures should be applied. The former causes a large size of deforestation, while the latter leads to high construction costs which is not suitable for forest roads.

The proposed motorbike road is a pave road made of crushed stones 2.5 m wide and 0.5 m thick. The total width of the road should be 3 m considering 0.5 m of road shoulder. Drainage

canals with a culvert should be introduced in the steep sloping parts at 250 m intervals to protect the road from being damage caused by land slide, flash flood, and inundation.

It is judged that PFMBs/SUFMBs could transport seedlings to the target areas for afforestation according to the following ways even though the forest road is only for passing of motorbikes.

- Seedlings are transported from a permanent nursery to a temporary nursery located at the boundary of the target protection/special use forest by truck through provincial/district road.
- They are transported from the temporary nursery to points near from the target areas for afforestation by motorbike through the motorbike road.
- Member of the village working group will manually carry seedlings from the point where they are unloaded to the target area for afforestation.

Although the motorbike road is generally recommendable from the environmental point of view, it is also possible to apply the standard design of forestry road in the areas where no adverse environmental impact is foreseen or no huge construction cost for protection works are required. In such cases, the standard design for Grade IV forestry road as showb below should be applied in consideration of the sloping conditions of the target areas.

The Standard Design of Forest Road

Item	Grade of forest road			
	I	II	III	**IV**
Speed (km.hr) (not steep mountain - steep mountain)	25 - 30	20 - 25	15 - 20	**10 - 10**
Slope (%) (not steep mountain - steep mountain)	8- 9	9 - 10	10 - 11	**11 -12**
Lane	2	1	1	**1**
Wide (m)	3.0	3.5	3.0	**-**
Road shoulder (m) x 2	0.5	0.5	0.75	**-**
Total width (m)	7.0	6.5	4.5	**4.5**

Source: TCVN 7025, 2002, the Directorate for Standards, Metrology and Quality proposal, the Ministry of Science, Technology and Environment

Unless the following conditions can be fulfilled, the forestry road, even Grade IV, should be avoided but the motorbike road is advisable instead.

- There is no forest vegetation in the proposed route;
- There is no resettlement, loss of livelihood, or land acquisition caused by development of the forest road; and
- The sites where the proposed route is planned are not too steep to develop the 4-meter wide road.

b. Footpath

The construction of the motorbike road is not recommendable in the special use forests in consideration of its potential environmental impact to the ecosystem of the special use forest. As the main purpose of the roads in the special use forest is to support monitoring and patrolling of the SUFMBs and the village working groups/forest protection groups, it is more advisable to construct footpaths in the special use forests from economic and environmental points of view. No earthwork is required for construction of footpath as it is just an open path 80 cm wide. In some areas, clearing of bushes and grasses may be required.

c. Forest Firebreak line

Forests in the target provinces are always exposed to risk of wild fire. As farms and residential areas are located in and around the target protection forests and special use forests, the risk of wild fire is considered rather high in the target areas.

Among forests, young plantations (less than five years) are particularly vulnerable to fire damage. In fact, the high mortality in newly established plantations has been often caused by wild fires. As the areas for afforestation are located adjacent to existing farms or residential areas, it is particularly necessary to apply a fire break line, which is a cleared line 10m wide, in the newly established plantations. The total estimated area of fire break lines to be developed in the target protection forests and special use forests is estimated at 2% of the total area for afforestation.

d. Fire watch tower

The main purpose of the construction of fire watch tower is to detect fire in the early stage to extinguish forest fire before its spreading out to the adjacent areas. Fire watch towers should be constructed at strategic locations where the surrounding areas can be viewed from. It will be 10 m high and made of reinforced concrete frame.

e. Forest guard station

Forest guard station will be used for a site office-cum-rest house for the staff of PFMB/ SUFMBs and the place for meetings with local communities (e.g., forest protection groups, village working groups). It should be built at the strategic locations adjacent to or within the project areas. One story building with bed room, meeting room, office room, kitchen and toilet is the standard design for the station.

f. Forest management board office

The forest guard office will be built only for Copia Special Use Forest Management Board in Son La, which has no own office so far as the SUFMB has been just established recently.

g. Information board

Information board will be set up around the project site to notify the public that the area is classified as either protection forest or special use forest and being protected/managed by PFMB/SUFMB. The information board to be installed will be about 3 m wide and 2.5 m high with the foundation 0.5 m high. The regulations or rule defined by PFMB/SUFMB and any rules on forest management defined by the communes/villages concerned will be displayed in the board.

h. Nursery

Afforestation will require a large quantity of seedlings at a time. Most of the seedlings will be purchased from the seedling providers. However, some afforestation sites located in a remote area require temporary nurseries to prevent the damages caused by long transportation from existing nurseries. Nurseries should also be constructed at strategic locations so that seedlings produced can be transported to the project areas efficiently. The standard capacity of the nursery is about 60,000 seedlings per annum.

(2) Implementation of Silviculture Infrastructure

The component will be implemented by contracting out to PFMBs/SUFMBs concerned from the third year (2019/2020) to the sixth year (2022/2023). Like in the case of the component of

"Improvement of Watershed Forest," construction works will be divided into three batches with the following workload allocation.

- 1st batch: 20% of the works
- 2nd batch: 40% of the works
- 3rd batch: 40% of the works

Each batch of the work will be implemented in the following manner:

i) PPMUs in collaboration with PFMBs and SUFMBs concerned will develop a plan/proposal of silviculture infrastructure development in the respective protection and special use forests and submit the same to CPMU;
ii) CPMU with technical assistance from the project consultant will review and assess the necessity and validity of the plans/proposals submitted by PPMUs and revise/finalize the plans/proposals for submission to JICA for concurrent;
iii) PPMUs will contract out the survey and detailed design works to local contractors; and
iv) PFMBs and SUFMBs will be responsible for construction and improvement of silviculture infrastructure packaged for the respective areas,

(3) Typical Designs and Estimated Unit Costs

The typical designs and standard work quantities of the respective types of silviculture infrastructure were developed based on the existing silviculture infrastructure in the target provinces and the experiences of the JICA 2 project. The unit costs of the respective types of silviculture infrastructure were also estimated by using the construction unit prices based on the government cost norms.

(4) Environmental Aspects

No physical development, such as construction of motorbike road and building of forest guard stations, will be made within the areas designated as special use forests. As the alignments of motorbike roads will be placed on the existing paths and/or abandoned areas, the size of forest clearance would be minimal (less than 5 ha per site) even if the allighnments are placed within the terriotiries of protection forests. Furthermore, land acquisition will not be basically required as all the areas of the target protection forests except Da River Watershed Protection Forest are either the allocated areas to PFMBs or managed by CPCs concerned. In the case of the Da River Watershed Protection Forest, all the proposed sites for forestry/motor bike roads are existing village roads or those planned to be used for village roads; therefore, no compulsory land acquisition is expected to occur at this moment.

It is, however, necessary to assess potential risks caused by development and improvement of silviculture infrastructure when the alignments of motor bike roads and locations of the other types of silviculture infrastructure are decided after the project areas are selected in the beginning of the project. The Site-level Implementation Plan Environmental Checklist will be used for screening of the potential risks.

J.3.2.5 Improvement of Small-Scale Rural Infrastructure

(1) Long-list of the Potential Small-Scale Infrastructure Development proposed by the Districts

A variety of the development needs for rural small-scale infrastructure, such as commune/village roads, commune/village irrigation systems, water supply systems, electricity supply system, village meeting hall, and school building, were confirmed in the target districts during the field surveys. Among others, the following types of small-scale infrastructure are selected as priority ones in consideration of their effectiveness in the improvement of local livelihoods and contribution to forest protection and management activities.

- Commune/village roads
- Commune/village irrigation system
- Commune/village water supply system

The total number of proposals submitted by the respective district offices is 1,741 for 64 target communes in the 15 districts as shown below.

Summary of Long List if Rural Small-Scale Infrastructure

Province	District	No. of Target Commune	Road Works		Irrigation Works		Water Suplly Works		Total
			No. of sub-projects	Qt (km)	No. of sub-projects	Qt (canal) (km)	No. of sub-projects	Qt (system)	No. of sub-projects
Dien Bien	Dien Bien	5	396	506	96	90	4	16	496
	Muong Cha	1	38	81	22	8	0	0	60
	Tuan Giao	2	89	115	6	7	2	2	97
	Subtotal	8	523	702	124	105	6	18	653
Lai Chau	Sin Ho	13	125	515	42	81	9	9	176
	Tan Uyen	6	52	84	33	73	7	7	92
	Than Uyen	3	6	15	3	3	4	4	13
	Subtotal	22	183	614	78	157	20	20	281
Son La	Moc Chau	1	7	12	0	0	0	0	7
	Quynh Nhai	2	7	47	5	7	5	5	17
	Thuan Chau	6	370	6,611	118	252	102	102	590
	Van Ho	2	7	144	3	6	16	44	26
	Subtotal	11	391	6,814	126	265	123	151	640
Hoa Binh	Cao phong	1	11	62	7	NA	1	1	19
	Da Bac	10	51	197	3	4	4	4	58
	Lac Son	3	10	39	4	4	0	0	14
	Mai Cahu	4	38	26	12	8	12	12	62
	Tan Lac	5	11	45	2	1	1	1	14
	Subtotal	23	121	369	28	17	18	18	167
Total		64	1,218	8,499	356	544	167	207	1,741

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(2) Short-listing of the Priority Project Activities

a. Criteria for short-listing

The following points were considered and discussed for short-listing the potential small scale infrastructure development options proposed by the districts.

- ◆ Upgrading of existing facility is prioritized than new construction

The priority is given to "upgrading of the existing facilities" rather than "new construction of the facilities" since it is more cost effective and environmentally friend. In fact, there are many proposals of upgrading the existing small scale infrastructure facilities, especially commune/village roads and village irrigation systems. The majority of commune/village roads are earth roads as described in **Section J.2.2.1**; therefore, they get easily damaged by heavy rains, floods, and landslides. Village irrigation systems are generally composed of a small reservoirs with stone gabion dikes and earth canals. They are also easily damaged by heavy rains and seasonal floods/inundations. Rehabilitation and upgrading of those malfunctioned facilities are expected to produce the same results as the new construction can

bring. Furthermore, the potential environmental impact caused by rehabilitation and upgrading of facilities is far smaller than the potential adverse impacts caused by new construction. For instance, the construction of a new commune road might cause a certain size of deforestation and/or land acquisition, while no land acquisition or large-scale clearing is expected to occur in upgrading/rehabilitation of existing facilities, such as village/commune roads, irrigation systems (or canals), and water supply system.

It is, however, necessary to assess the potential environmental and social risks when the proposed sub-projects of the component are determined. In addition to the prior screening of potential impacts/risks, the environmental code of practice (ECOP) proposed by the preparatory survey made by JICA in 2016 will be applied during the construction period to minimize the potential adverse environmental and social impacts caused by construction works for small scale rural and silviculture infrastructure.

◆ Location of the sub-projects

Any infrastructure development planted within the territory of the special use forests, even rehabilitation/upgrading of the existing facilities, should be rejected to avoid any adverse environmental impact on the ecosystems in the special use forests.

◆ Budget ceiling

The total budget to be allocated to the component is less than 10% of the total project budget. As such budget allocation needs to cover the development needs of 64 communes, the budget will be dispersed to each commune. Hence, a large-scale intervention, such as rehabilitation/upgrading of long length of commune/village road, is given lower priority.

◆ Provision of support to as many communes as possible

Although the budget allocated to the component is rather limited, the component should cover all the 64 communes, at least one option for one commune, unless there is no appropriate option available in the commune. Even though the scale of the intervention is small, the component is essential for encouraging local communities to actively participate in the forest management activities.

◆ Length of road and canal:

The total length of commune/village road or irrigation canal proposed for upgrading might be shorten in the case where a certain positive effect on livelihood improvement is expected, so that the total budget for proposed option can fit in the budget allocation.

b. Selection of the priority options

All the long-listed options were evaluated and classified into three categories: A (high), B (medium), and C (low), and those classified as A were selected as priority options. The following guidelines were employed in the evaluation.

i) Any project which meets any of the following conditions shall be classified as C.
- The project area is located within or adjacent to special use forests.
- The project includes new construction of facilities.
- The project can be classified as higher categories in terms of its scale (e.g., district/provincial roads and large scale irrigation systems).
- The project meets more than two condition of Class B described below.

ii) Any project which meets any of the following conditions shall be classified as B.
- The total length of roads to be improved is more than 2 km.
- The total irrigation command area is more than 100 ha.
- The total length of irrigation canals to be improved is more than 2 km.
- The total number of households covered by a water supply system is more than 250 households.

iii) Any project which does not meet any of the conditions listed above shall be classified as A.

As a result, a total of 104 development options were short-listed as priority ones in the 64 target communes as summarized below.

Summary of Short List if Rural Small-Scale Infrastructure

Province	District	No. of Target Commune	Road Works		Irrigation Works		Water Suplly Works		Total
			No. of sub-projects	Qt (km)	No. of sub-projects	Qt (canal) (km)	No. of sub-projects	Qt (system)	No. of sub-projects
Dien Bien	Dien Bien	5	10	4.5	5	3.2	0	0	15
	Muong Cha	1	2	0.6	2	0.9	0	0	4
	Tuan Giao	2	5	2.4	1	0.7	0	0	6
	Subtotal	8	17	7.5	8	4.8	0	0	25
Lai Chau	Sin Ho	13	9	10.1	2	5.0	3	3	14
	Tan Uyen	6	2	2.5	3	6.1	3	3	8
	Than Uyen	3	3	3.0	1	0.7	0	0	4
	Subtotal	22	14	15.6	6	11.8	6	6	26
Son La	Moc Chau	1	1	1.5	0	0.0	0	0	1
	Quynh Nhai	2	2	2.0	0	0.0	1	1	3
	Thuan Chau	6	3	2.4	4	5.6	4	4	11
	Van Ho	2	1	2.5	0	0.0	0	0	1
	Subtotal	11	7	8.4	4	5.6	5	5	16
Hoa Binh	Cao phong	1	1	1.0	0	0.0	1	1	2
	Da Bac	10	9	15.0	0	0.0	1	1	10
	Lac Son	3	3	3.5	2	1.8	0	0	5
	Mai Chau	4	7	3.9	4	3.1	1	1	12
	Tan Lac	5	5	6.5	3	1.2	0	0	8
	Subtotal	23	25	29.9	9	6.1	3	3	37
Total		64	63	61.4	27	28.3	14	14	104

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(3) Main Features of the Short-listed Infrastructure Improvement Options

The main features of the short-listed infrastructure improvement options are summarized below.

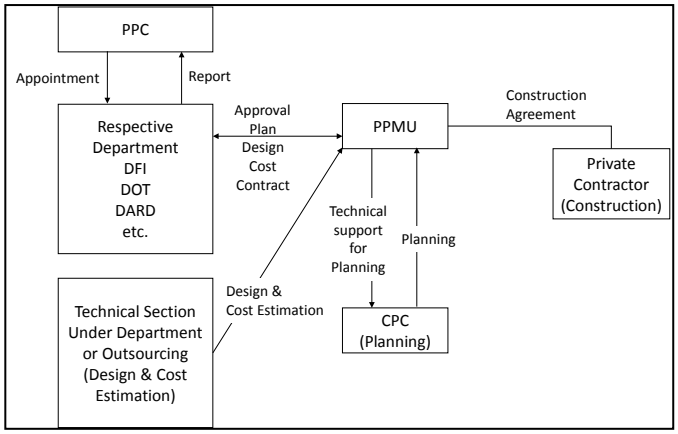
Main Features of the Short-listed Infrastructure Development Options

Type of options	Typical Component of the Work
1) Road works	(1) Stripping of top soils by motor grader and removal of soils in the defective portion (2) Replacement of road bed material by macadam and then compaction of the surface (3) Formation of the existing road and placement of the concrete pavement with 3.0 m width and 0.16m thickness on the surface of the existing road (4) Construction of necessary side drains to drain rain water and/or inundated water when a flood takes place (5) Construction of new culverts and installation of retaining walls on the proper location if necessary
2) irrigation	(1) Replace the stone and soil check dam to concrete check dam on the mountain stream with a scouring sluice and wooden stop log (2) Installation of concrete steep slope straight canals with three supports to lead the water to gentle slope area (3) Installation of retention pool to reserve water tentatively before distribute it to the main canal (4) Construction of rectangular open concrete lining canals for irrigation (5) Construction of necessary related canal structures such as drop, culvert and turnout on the irrigation canal (6) Drainage arrangement, if necessary
3) Water supply works	(1) Replace existing concrete intake to new one (type 1) or installation of the pumping system on the reservoir (type 2) (2) Replace damaged or simple treatment tank to improved tank (3) Replace damaged PVC pipes (main pipes, sub-pipes and distribution pipes) to new ones (4) Replace damaged connectors between pipe to pipe

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(4) Implementation Procedures for Small Scale Infrastructure Development

The construction of rural infrastructure is to be implemented in accordance with "Law on Construction (No. 50/2014-QH13)," "Decree on Management of Construction Projects (No.59/2015/ND-CP), and "Law on Tending (No.32/2015/ND-CP)" and their relevant decrees. As shown in the drawing right, several departments are involved in the process of approval of infrastructure development on a provincial level. It is, therefore, recommended that the capacity of the relevant departments in the provinces should be enhanced to make decisions and approval to shorten the time for the approval process.



a. Planning

Although the short-listed small-scale rural infrastructure development options are selected from the proposals submitted by the district offices concerned in the four provinces, the development needs of small-scale rural infrastructure should be reviewed and re-examined with local communities in the target communes in the beginning of the project. To this end, PPMUs will arrange and hold meetings with local communities and CPCs as well as PFMBs/SUFMBs concerned to determine the priority infrastructure development in the respective communes. It is possible to incorporate this process in the workshop to be held by external contractors for identification of priority livelihood improvement options under the component of "Support for Livelihood Improvement."

Infrastructure development options which directly link to the priority income generating activities introduced in the target communes should be prioritized. PPMUs will prepare proposals/development plans of small-scale rural infrastructure development options of the respective target communes based on the discussions with local communities. CPMU should review the proposals/development plans and endorse the final version of the plans to JICA Vietnam for its approval.

b. Detailed design

The survey and detailed designing works with cost estimation of the selected small-scale rural infrastructure development options will be outsourced to contractors. Since all the options short-listed are small and rather simple, existing potential contractors at the provincial level, such as the technical design centers or consulting service centers of DARDs, are judged capable enough to fulfill such tasks.

c. Tender

In accordance with Law on Bidding (No. 43/2013/QH13), the open tendering or designated tendering should be adopted for the nature and scale of the short-listed development options in principle. As tendering is considered as a time-consuming process, it is necessary to capacitate PPMUs to prepare the necessary documents and follow the proper procedure. It is also

important for the project consultant to provide technical assistance and coaching to PPMUs so that they can select the contractors in an appropriate and timely manner.

d. Construction

The construction of the small-scale rural infrastructure are mainly composed of earth and concrete works without any special equipment, machines, or highly skilled laborers. Hence, the works can be undertaken by contractors at the local level (either provincial or district level). Utilization of local contractors may also be effective in maintenance and operations of the infrastructure facilities developed by the project in the post-project period. The duration for construction of short-listed infrastructures will range from two to six months depending on the availability of machineries and equipment required for construction.

e. Overall implementing schedule

The small-scale rural infrastructure development will be implemented in a phased manner. The options will be divided into three batches evenly. The following table shows the draft work schedule of the above-mentioned options in the respective batches.

Overall Schedule of the Component

Work Items	Duration	Timing		
		1st batch	2nd batch	3rd batch
Survey and DD	3~6 months	4th year (2020)	4th/5th year (2020/21)	5th/6th year (2021/22)
Tendering	3~4 months	4th year (2020)	5th year (2021)	6th year (2022)
Construction	3~6 months	4th/5th year (2020/21)	5th year (2021)	6th year (2022)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(5) Operation and Maintenance Plan

The operation and maintenance of rural small-infrastructures will be carried out based on the relevant regulations stipulated by the PPCs concerned. In general, local government units, namely CPCs, and local communities who would have benefit from the infrastructure facilities will have the primary responsibility for O&M of the facilities developed especially in the post-project period. In particular, local communities will play a vital role in the operations and daily maintenance of the irrigation and water supply facilities, while CPCs will take the initiative in O&M of commune/village roads in collaboration with leaders of the villages concerned with the road.

The following table shows the ownership and responsibilities for O&M of the respective types of the small-scale rural infrastructure development options.

Ownership and O&M Responsibility of Short Listed Infrastructure

Type of Infrastructure	Ownership	Operation	Overall maintenance	Daily maintenance
Commune/Village Road	CPC	CPC	CPC	CPC
Irrigation System	CPC	Community group	CPC	Community group
Water Supply System	CPC	Community group	CPC	Community group

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The costs for O&M will be shouldered by CPCs which will be the main users of the facilities. The following table shows the estimated O&M costs and the assumptions made for the estimation.

Estimated O&M Costs of the Types of Infrastructure

O&M Activities	Estimated O&M Cost	Responsibility	Assumption made
Daily maintenance	No financial cost	Communities (users of	Community/user groups in communes/villages shall be responsible for daily maintenance, such as cleaning of canals, removing/weeding

O&M Activities	Estimated O&M Cost	Responsibility	Assumption made
		facilities)	grasses, etc.
Minor replacement	1% of construction cost	Communes	Communes shall be responsible for minor repair and replacement of parts of the facilities. Minor repair and replacement will be made from one year after the installation of the facilities (from the 7th year of the project).

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Prior to the hand-over of the responsibility for O&M of infrastructure facilities to CPCs concerned, PPMUs will provide guidance on the O&M of small-scale rural infrastructure to CPCs and village leaders of the concerned communes as well as local communities which will use and benefit from the facilities in the eighth year (2024) of the project.

J. 3.2.6 Support for Livelihood Development

(1) Basic Concepts for the Component

This component is requisite for achievement of sustainable protection and management of forests in the target protection forests and special use forests as this aims to address the major drivers of forest degradation and their underlying causes along with improvement of small scale rural infrastructure. To effectively bring about positive and direct effects for sustainable forest management, the component is designed with the following basic concepts:

- ✧ Minimization of human pressures on forest resources;
- ✧ Enhancement of local communities' motivation to protect and manage forests; and
- ✧ Creation of an enabling environment for community participation in sustainable forest management.

a. Minimization of human pressures on forest resources

Human pressures, namely conversion of forests to farms, forest fires caused by slash and burn farming, and illegal exploitation of firewood and logs, are the major drivers of forest degradation in the target protection forests and special use forests as described in **Section J.2.2.2**. They are closely related to the current livelihoods and lifestyle of local communities, particularly ethnic minorities who have customarily used forest resources and generally live at subsistent level. As it is not easy for local communities to give up their livelihoods or change their lifestyles immediately, a special emphasis in the selection of livelihood options is placed on the reduction of adverse effects on forests without drastic changes in the local livelihoods/lifestyles.

Introduction of a fuel saving stove and installation of a household biogas system are possible options to reduce firewood consumption of local communities. They are also effective in lessening the burden imposed on women by reducing the time spent for firewood collection and improving health conditions of family members by reducing the chance of being exposed to smoke.

Introduction of agroforestry techniques along with sloping agriculture techniques is another option to be considered to prevent local communities from converting forests for farming by guiding local communities toward sustainable agriculture in fixed plots.

b. Enhancement of local communities' motivation to protect and manage forests

It is important to give local communities a good incentive to protect and manage forests in the framework of livelihood improvement, so that they could regard forests their valuable assets

which could generate substantial profits for them in the long run. It is, therefore, advisable to design and introduce forest/natural resource-based livelihood options to motivate local communities to protect and wisely use forest resources in their localities.

In addition to the use of forest and natural resources for livelihood improvement, a market-oriented approach will be introduced. A market survey or research to be carried out in the initial stage of the project is expected to identify market needs for major forestry products and clarify the current business environment associated with potential forestry products. Consequently, the livelihood options, which are based on forests and natural resources available in the localities and rather promising in terms of marketing, are expected to be selected by local communities as potential options.

The payment from the PFES scheme is one of the crucial incentives for local communities to protect and manage natural forests. In order for them to sustainably manage and protect forests and wisely use the PFES payment, it is also essential to enhance the capacity of local communities for proper use and management of the payments so that they could continue forest protection activities after the completion of the project and even invest in any promising livelihood development/income generating activities which can contribute to the reduction of human pressures on forests.

c. Creation of an enabling environment for community participation in sustainable forest management

Sustainable forest protection and management will not be realized without local communities' participation as well as strong support from local government agencies concerned. However, under the difficult circumstances, the participation of the local communities in forest management has been limited so far. Hence, the component will aim to ease financial burden of local communities by providing them necessary technical training and opportunity to engage in alternative income generating options by themselves.

A participatory approach will be employed in the selection of income generating options in consideration of lessons learned in the past experiences where a top-down approach did not necessarily meet the needs of local communities.

In order to ensure that local communities could develop alternative sources of income by engaging in livelihood development/income generating options proposed by the project, small-scale rural infrastructure, especially commune/village roads, should be improved effectively. Improvement of small scale rural infrastructure is another crucial component that could create an enabling environment for successful livelihood improvement and also sustainable forest management eventually.

(2) Overall Framework of the Component

The component will focus on the enhancement of the capacity of local communities rather than provision of materials/input, so that they could operate livelihood improvement /income generating activities in a sustainable manner even without external support and large input after the project. The overall framework of the component is summarized below.

- ✧ Local communities will identify and long-list potential options necessary for improvement of local livelihoods and suitable for the respective localities based on the results of the participatory land use planning.

- ✧ Local communities will evaluate and prioritize the long-listed potential options in a participatory manner, considering the availability of resources needed, technical feasibility, marketability of products/commodities, and their preferences.
- ✧ In particular, due consideration should be given to the marketing potential of products/commodities to be developed or produced by operations of potential livelihood development options.
- ✧ Two to three priority options will be selected at the commune level based on the results of the evaluation/prioritization above.
- ✧ Hands-on technical training courses on the selected options will be arranged and conducted for local communities along with the development of demonstration/model plots where local communities can observe and confirm the effectiveness of skills/techniques that they have learned in the training courses.
- ✧ Financial management capacity of local communities will also be enhanced by the component. The training module contains i) the overall guidance on the mode of payments from PFMBs/SUFMBs, ii) training on financial management including bookkeeping, and iii) budget planning for their activities for forest protection and management as well as income generating.

  The target communes will be divided into two batches. Those which can complete the process of PLUP by the middle of the fourth year (2020/2021) will be grouped as batch one communes, while the rest, where PLUP will be completed by the end of the fifth year (2021/2022) will be grouped as batch two. About 50% of the total target communes are expected to be grouped as batch 1 communes.

(3) Target of Livelihood Improvement Support

As the principal aim of the component is to contribute to the enhancement of forest protection and management, the first priority should be given to local communities who participate in forest protection and improvement activities of the project. It is however essential to involve other communities who will not participate in forest development and improvement activities in the livelihood development activities, to lessen the pressures on forests and also to develop a framework for sustainable forest management at the commune/village level. In particular, due attention should be given to the economically and socially vulnerable and women in the selection of the target groups. Hence, the training courses will be open to anybody in communes/villages in principle so that any households, even marginalized families, such as the poor and woman-headed families, can take part in the courses as long as they have interest in the topics.

(4) Long-list of Potential Livelihood Improvement Support

Possible options for livelihood improvement are tentatively identified as listed in the table below in consideration of the possible effect to forest protection and the needs of local communities. As shown below, the potential activities are categorized into four groups: i) reduction of firewood consumption, ii) diversification of sources of income, iii) introduction of alternative livelihood improvement options, and iv) improvement of financial management capacity.

Long-list of potential livelihood improvement support

Objectives	Potential livelihood improvement support	Justification & Notes
i) Reduction of firewood consumption	i)-1 Introduction of fuel saving stove	✧ It will contribute to not only minimizing firewood consumption but also improving living conditions of local communities by reducing their time spent for collection of firewood and the chance to be exposed to smoke. ✧ It will be suitable for the lifestyle of Thai group, but not for H'mong group as they tend to live a large family over generations and require a big fire place.
	i)-2 Introduction of household biogas facility	✧ To install the biogas facility, various conditions for installation (i.e., sufficient number of animals for securing raw materials, location and area suitable for installation of the facility, masons for construction, etc.) should be satisfied. ✧ The users should be responsible as well as capable enough to conduct proper and frequent maintenance of the facility for sustainable use of the same.
ii) Diversification of sources of income	ii)-1 Technical training in producing and marketing spice/ medical plant/ indigenous fruit tree	✧ Market needs should be determined prior to the selection of target products. ✧ Bamboo, rattan and indigenous fruit also are popular NTFPs produced in the target communes. Recently, cardamom and its co-specific species have been marketed in the areas owing to a high demand for the same product in China. Market needs for medicinal plans has been increasing in the domestic market in response to the increase of health conscious consumers. ✧ The variety of spice/medical herbs/indigenous fruits should be identified on the basis of the market needs and opportunities in the respective target communes/districts. ✧ It will be effective in forest protection as forests need to be protected for continuous harvest of the products.
	ii)-2 Technical training in keeping honey bee and producing honey	✧ Honey is one of the valuable NTFPs to generate income and increase nutrition of families. ✧ Introduction of apiculture may also contribute to the reduction of forest fires as harvest of wild honey by using fire is one of the causes of forest fires.
	ii)-3 Technical training in producing and marketing cash crops	✧ Production of cash crops by contracting with private companies is one of the potential options for income generating. A variety of crops should be examined on the basis of the marketing potential as well as suitability in the target communities/district. For example, purple garlic is one of the potential crops, which is in demand and suitable in Hoa Binh.
	ii)-4 Technical training in post-harvesting	✧ It is reported that local communities tend to sell maize and cassava at lower prices due to a lack of post-harvesting facilities (drying yard and storage). ✧ Value-added ways, such as installation of a drying yard and other simple processing methods, will be introduced in the technical training course. ✧ In case that a certain facility is installed as a pilot case, the communal land for the facility should be available to avoid future conflict over land use.
iii) Introduction of alternative livelihood improvement options	iii)-1 Technical training in introduction of a home vegetable garden model	✧ The life of local communities in the target communes is at subsistence level in general, and poor households face a shortage of food for several months in a year. Stable production of vegetables can increase the food for family and reduce the expenses for food. ✧ The vegetable garden model can be introduced even by landless households; hence, the option can be effective in improving livelihoods of landless farmers. ✧ Likewise, the option does not require a large scale of investment and requires only simple techniques, which can be easily introduced by a wide range of local communities to improve nutritious condition of families.
	iii)-2 Technical training in introduction of fodder grass planting model	✧ As cattle free grazing is one of the causes of forest degradation in the target communes/districts, introduction of the stall feeding method with production of fodder grasses is highly recommended from the view point of sustainable forest management. ✧ Planting fodder grasses on sloping land (particularly along the contour lines) can also be one of the soil conservation measures to prevent soil erosion in farmland.
	iii)-3 Technical training in introduction of agro-forestry	✧ Agro-forestry model in combination with cash crops and fruit trees may be an effective way to improve agricultural productivity in sloping land and increase alternative income of upland farmers.

Objectives	Potential livelihood improvement support	Justification & Notes
	model (combination of economically valuable trees with cash crops)	✧ Peanut is one of the potential crops used for the agroforestry model in the target area. Other potential crops should be identified in consideration of the market needs and crop suitability in the areas.
iv) Improvement of financial management capacity	iv)-1 Guidance and training on financial /fund management	✧ Local communities will be guided on how to manage and use the payments made for forest development and improvement activities. Use of a saving account for management of the payments is one of the options to be introduced. ✧ They will be given the training courses on financial management and business planning to enhance their capacity for use and management of the payments in a wise and proper manner. ✧ All communities who participate in the project will be targeted by the training courses.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Various existing programs and projects have provided livestock such as cow, buffalo, and pig to support local people, as this type of support is considered crucial for improvement of livelihoods of local communities. Nevertheless, the provision of animals is not recommendable for the proposed project, since it may cause the increase of animal grazing and there are potential risks of failure caused by high mortality of animals due to diseases, cold damage, and malnutrition as many cases have reported. Rather, introduction of value-added agriculture and forestry products should be examined as an essential alternative livelihood option from market-oriented point of view.

(5) Draft Scopes of the Potential Livelihood Options

Although the target communes will select their priority livelihood options in a participatory but systematic manner in the beginning of the project, the following livelihood options are recommended by the preparatory survey team as effective means of not only improving local livelihoods but also reducing the causes of forest degradation.

i) Introduction of fuel saving stove
ii) Production of spices/medical herbs/indigenous fruit trees
iii) Introduction of simple post-harvest techniques/facilities
iv) Introduction of apiculture/honey bee keeping
v) Development of home vegetable garden
vi) Production of fodder grasses

The draft scope of the respective activities are summarized below.

Scope of the Major Potential Livelihood Improvement Options

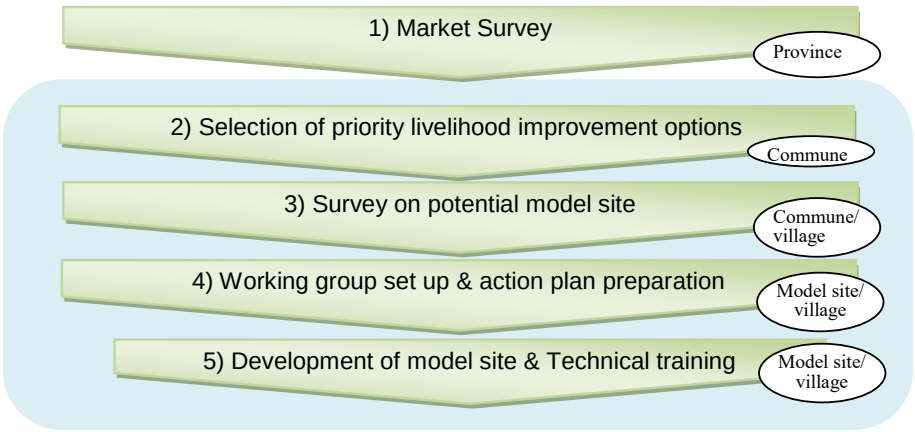
Potential livelihood improvement support	Scope of activities
i) Introduction of fuel saving stove	50 households/model site, 1 model site/commune
ii) Production of medical plant (Morinda officinalis)	5ha/model site, 30 households/model site
iii) Introduction of honey bee keeping	120 hives of native bee, 40 households (3 hives/household) in 2 plots
iv) Introduction of simple post-harvest techniques/facilities	60 m^2/site (4m x15m)
v) Development of home vegetable garden	50 farmer's garden/model (equivalent to 1ha in total)
vi) Production of fodder grasses	1.5ha /model site, 30 households/model site

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Assistance in business matching and promotion of contact farming will also be provided along with the training courses on ii), iii), and iv) to help local communities earn cash income from operating such livelihood development options after the training courses.

(6) Implementation Procedure

The process of the component at the commune level is illustrated below.



Procedure of the Livelihood Improvement Support

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Basically, the training courses will be held at the demonstration/model plots in the target communes. Commune and village leaders will select the most visible sites as the demonstration/model plots.

a. Selection of priority livelihood improvement options

Each target commune will identify priority livelihood improvement options based on the future land use map developed through the participatory land use planning (PLUP) process. The results of the market survey/research will also be fully reviewed in the evaluation and prioritization of the potential livelihood options. Each commune will select three types of options at the maximum from the long-listed options. The following table outlines the workshop to be held for selection of the priority livelihood improvement options at the commune level.

Outline of the workshop for Selection of Priority Livelihood Improvement Options

Title	Participants	Objectives	Venue	Duration & Frequency	Timing	Impl. Method
Selection of priority livelihood improvement options	● Commune leaders ● Village leaders ● Representative of mass organizations ● PFMB/SUFMB ● DAEC (70 participants)	● To identify the priority activities ● To select the potential model sites ● To reach a consensus among communes and village representatives	Commune center	1 day x 1 time/ commune	Fourth year (2020/2021) for 1st batch Fifth year (2021/2022) for 2nd batch	Contract-out

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

b. Market Survey

The main objectives of the market research are: i) to understand the current marketing conditions of agriculture and forest (wood and non-timber) products in the target provinces, ii) to identify potential marketable products, and iii) to make strategies for promoting the potential products and business models, which would be considered as potential livelihood development activities to be introduced in the target communes. Specifically, the market survey aims to collect the following data and information listed below.

Major items to be surveyed in the Market Research

Theme	Major items	Information source
Policy	✧ Government policies/decisions/circulars on socio-economic development, support for agricultural and forestry production, processing, and marketing of the products	✧ Ministry of Trade and Industry and MARD ✧ DARD and Department of Industry and Trade of the target provinces
Production and Trading data	✧ Major agricultural and forestry products (crops, fruits, other agricultural products, wood, NTFPs, and their processed commodities) in the country and in the target provinces. ✧ Volumes of trade of major products at the national, provincial, and district levels	✧ Sub-department of DARD ✧ Processing factories ✧ Trading companies and middle persons ✧ Raw material suppliers
Major market information	✧ Value chain of the major agricultural and forestry products in the target provinces ✧ Key players in marketing the major agricultural and forestry products (such as raw material suppliers, middle persons, processing factories, trading companies, etc.) in the target provinces and also the potential marketing areas ✧ Companies which may make contract farming arrangements for procurement of raw materials ✧ Accessibility to potential markets from the project areas ✧ Marketing prices of the major agricultural and forestry products from farm gate to consumers (prices at each players in market chain) ✧ Market trend of the major agricultural and forestry products in the target provinces for the recent years ✧ Potentials and issues	✧ Processing and trading companies and middle persons at the national, provincial and district levels and in the Red-river delta region ✧ Raw material suppliers
Others	✧ Experiences gained and lessons learned from on-going and past programs/projects aiming to promote the major agriculture and forestry products	✧ DARD, private companies, funding institutions/donors, & NGOs concerned

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Collection of secondary data on the items listed above and interviews to key informants will be carried out at the provincial and district levels in the target provinces and in the potential marketing places, namely Hanoi and Red River Region.

The market survey is expected to clarify the whole picture of value chains of the selected potential agricultural and forestry products in the target provinces and the potential marketing places. Furthermore, marketing strategies for promotion of the selected potential agricultural and forestry products will be developed. The contents that the market survey should cover will include, but not be limited to, the following:

- Current conditions of major agricultural and forestry products in the target provinces;
- Value chains/marketing flows of the major agricultural and forestry products;
- Assessment of the value chains (overview, main players, constrains, socio economic and environmental concerns, etc.) of the major agricultural and forestry products;
- Suggestions for improvement of value chains of the major agricultural and forestry products; and

- Marketing strategies for promoting the major agricultural and forestry products considering i) introduction of contract farming, ii) development of market linkages with potential buyers, and iii) promotion of the products to the potential marketing provinces

The market survey will be carried out by a contractor for 10 months in the third year of the project (2019/2020).

c. Survey on the potential/ model demonstration site

As mentioned above, three types of models will be selected by each target commune. Model/ demonstration sites will be selected in consultation with commune and village leaders. In the selection of the model/ demonstration sites, due consideration will be given to the accessibility and visibility of the sites from villages in the commune to ensure the demonstration effects.

To assess the feasibility of the priority livelihood options and the adequacy of the selected model/ demonstration sites, the following meeting/workshop will be held at the target communes from the fourth year (2020/2021) to sixth year (2022/2023) of the project. The following table summarizes the outline of the meeting/workshop held at the respective communes.

Outline of the survey on the potential model site

Title	Participants	Objectives	Venue	Duration & Frequency	Timing	Impl. Method
Survey on the potential model sites	● Village leaders ● Potential participants for the livelihood improvement activities in the selected site ● Commune representative ● DAEC (30 participants)	● To confirm the feasibility of the site (natural condition, access to market, etc.) ● To confirm the capacity and responsibility of the participants	Commune center (potential model sites)	1 day x 1 time/ commune	Fourth year (2020/2021) for 1st batch Fifth year (2021/2022) for 2nd batch	Contract-out

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

d. Working group set up and action plan preparation

After identifying the potential model site, a livelihood working group will be organized each for the livelihood models introduced. Local communities should be involved in all the processes from planning to implementation, so that they could: i) select the most appropriate input for sustainable operation of the models/options, ii) learn the procurement process (including potential market, etc.), and iii) enhance the sense of ownership of the livelihood development models/options. The working group will also discuss and prepare an action plan of the livelihood development model including a cost-sharing mechanism with assistance of external facilitators. The following table summarizes the outline of the workshops to be held for group formation and action planning.

Outline of the Working Group Set Up and Action Plan Preparation

Title	Participants	Objectives	Venue	Duration & Frequency	Timing	Impl. Method
Action plan preparation	● Participating HHs. ● Respective village leaders ● PFMB/SUFMB ● DAEC (30 participants)	● To establish a working group at each site ● To conclude the membership and discuss internal regulation	Commune center (potential model sites)	0.5 day x 1 time/ commune	Fourth year (2020/2021) for 1st batch Fifth year (2021/2022) for 2nd batch	Contract-out
Action plan preparation	● Participating HHs. ● Respective village leaders ● PFMB/SUFMB ● DAEC (30 participants)	● To visit a potential market to confirm the market needs ● To discuss and prepare business plan	Commune center (potential model sites)	0.5 day x 1 time/ commune	Fourth year (2020/2021) for 1st batch Fifth year (2021/2022) for 2nd batch	Contract-out

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

e. Development of model/demonstration site and technical training of the livelihood options

Model/ demonstration sites for the livelihood development options will be developed at the commune or village level with technical assistance of contractors employed by PPMUs for this work. Simultaneously, the model sites will be used as the venues for training; therefore, a series of technical training courses will be organized for the working groups at the model/demonstration sits. The standard content of the technical training courses is composed of five sessions as outlined below. Nevertheless, detailed contents will vary with the types of livelihood development options selected.

Outline of the Technical Training at Model Sites of Livelihood Options

Title	Participants	Objectives	Venue	Duration & Frequency	Timing	Impl. Method
On-site technical training	● Participating HHs. ● Respective village leaders ● PFMB/SUFMB ● DAEC (20-50 participants)	S1: Introduction and guidance S2: Preparation of the site (including procurement of inputs) S3-S4:On-site technical training S5: Wrap up for diffusion	Potential model sites)	1 day x 1 session/ commune x 5 sessions	2020~2021 for 1st batch 2021~2022 for 2nd batch	Contract-out

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(7) Guidance and Training on Financial Management

In order to enable the working groups to pool and save certain amount of payments made by the project for future livelihood improvement or forest management activities in the post project period, the following guidance and training sessions will be held at the target communes. The sessions contain: i) guidance on fund saving, ii) discussion on the use of saving funds, iii) training on financial management, and iv) training in making a business plan. The following table shows the outline of the sessions.

Outline of the Guidance and Training on Financial Management

Title	Participants	Objectives	Venue	Duration & Frequency	Timing	Impl. Method
Guidance and training on financial management	● Commune leaders ● Village leaders ● Representative of mass organizations	S1: Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups S2: Discussion on the use of saving fund of the	Commune center	1 day x 1 session/ commune x 4 sessions	Fourth year (2020~202) 1 for 1st batch Fifth year	Contract-out

Title	Participants	Objectives	Venue	Duration & Frequency	Timing	Impl. Method
	● PFMB/SUFMB ● DAEC (70 participants)	village working group (setting rule, future vision, etc.) S3: Training on financial management (basic accounting knowledge) S4: Business plan preparation			(2021~2022) for 2nd batch	

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

In addition to the use and saving of the payments made by the project, the savings from the cost sharing mechanism, which will be introduced in one of the potential livelihood improvement options, namely "introduction of fuel saving cooking stove", should be discussed in the workshops mentioned above. In the option, the users of fuel saving cooking stove will shoulder 50% of its cost; therefore, the payments made by the users can be saved for operations of other livelihood activities or communal purposes.

(8) Inter District/Province Cross Field visits

Inter-provincial cross visits will be organized to provide local communities opportunities to learn from each other by observing other groups' activities and exchanging experiences and lessons from the livelihood development activities. It would be one of the most effective ways to motivate local communities to learn from other communities' activities. The outline of the inter-provincial cross visit is shown below.

Outline of Inter District/Province Cross Field Visit

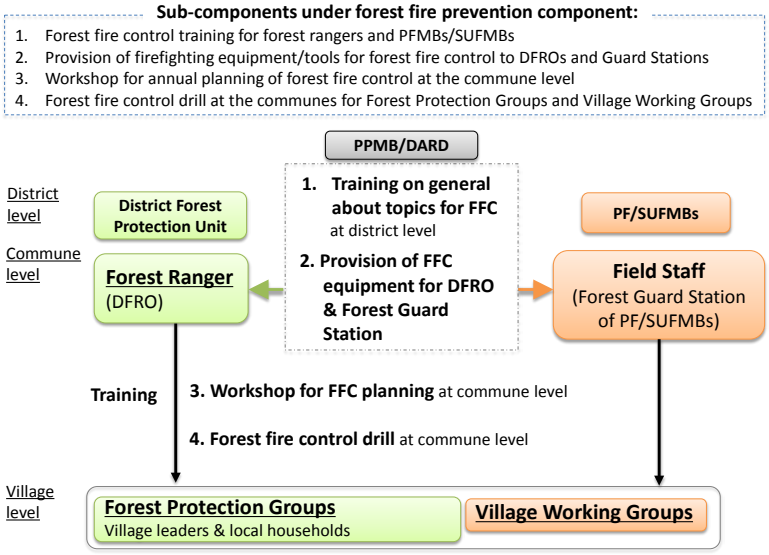
Title	Participants	Objectives	Venue	Duration & Frequency	Timing	Impl. Method
Inter-district/ province Cross field visit	● Respective livelihood option's working group members (30 participants)	● To learn from good practice, and exchanging experiences among participants	One of the target communes	1 night & 2 days x 1 time/year x 4 years	Sixth to Eighth year (2020~2023)	Contract-out

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.3.2.7 Forest Fire Control

(1) Basic Concepts of the Component

As forest fire has frequently occurred and been major drivers of deforestation in the northwest region, forest fire control (FFC) is important, if anything, more important than that in the JICA2 project. In order to effectively control and prevent forest fires in poor accessible areas, the specific focus of forest fire control should be placed on the enhancement of the capacity of stakeholders at the field level. The basic concept of forest fire control of the proposed project is illustrated below.



Outline of FFC Component

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

It is necessary to address the factors that cause combustion, such as "oxygen," "combustible or dry matter," "chances of ignition," and "environment that continues high temperature or heating," when enhancing local capacities for fire control. Among others, the emphasis should be given to the application of temporary fire break lines to isolate the fire point from combustible matters as it may not be necessarily easy for local communities to use water for fire extinction in the field due to its terrain conditions.

(2) Outline of the Component

a. Activities of the Component

The following activities will be carried out in the component to strengthen the capacity of local stakeholders for fire control and extinction.

- Training of forest rangers/guards of District Forest Ranger Offices (DFROs) and PFMBs/SUFMBs concerned to become trainers for local communities on forest fire control,
- Provision of initial firefighting equipment/tools at the local level, and
- Training of village leaders and members of the forest protection groups on forest fire fighting

b. Target groups of the activities

This component will target two groups: i) forest rangers of DFROs and forest guards of PFMBs/SUFMBs responsible for management of the project areas and ii) village leaders, members of the forest protection groups and/or village working groups, and other local households. Forest rangers and guards are to be responsible for fire control in their jurisdiction; therefore, they should function as mobile fire fighting team to help local people extinguish fires and also as trainers/coaches in forest fire drills/field training on forest fire control for the forest protection groups/village working groups. The following table shows the summary of the target groups of the component.

Target Groups of the Activities

Target Group	Expected Function	Project Activates
District Forest Ranger Offices	◆ Mobile fire team ◆ Trainers for forest	◆ Provision of fire control equipment and tools for training on forest fire control and spare tools for any deficit at the village

Target Group	Expected Function	Project Activates
	fire drills for local communities	level ◆ Provision of training of trainers for fire drills / forest fire control
Forest protection groups (5-20 members/group), and village working groups	◆ Frontline teams against forest fires	◆ Provision of fire control equipment and tools for suppression of forest fires ◆ Provision of forest fire drills/training on forest fire control

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

c. Provision of forest fire control tools and equipment

PPMUs will procure different a set of first fire control equipment and tools each for DFROs and PFMBs/SUFMBs concerned with the project areas in the respective provinces. Types and specification of forest fire control equipment and tools to be provided to each office are shown below.

Amount of FFC Equipment/Tools per One Set for each FRO/Guard Station of FMB

Unit: piece/set

No.	Equipment/Tool	Amount	Purpose of use	Remarks
1.	Vegetation cutting machine	3	For making fire break lines	-
2.	Chainsaw	3	Ditto	Compact size easy to carry
3.	Clearing knife	20	Ditto	-
4.	Swatter	20	For prevention of fires from spreading	Compact size easy to carry
5.	Portable Shovel	20	For making fire break lines	-
6.	Hand Fire Extinguisher/ Water Sprayer/Jet shooter	3	For firefighting and extinguishment	Compact size easy to carry
7.	Portable water container (for personal use)	20	For making fire break lines	1 litter
8.	(Handy) Loud Speaker	3	For firefighting/extinguishment and training	-
9.	Protection clothes+ shoes+helmet+torch+bag	20	For firefighting and extinguishment	-
10.	Binoculars	1	Ditto	-
11.	Binoculars (Night)	1	Ditto	-
12.	GPS Digital Camera	1	For firefighting/extinguishment and training	-

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The tools and equipment are selected in consideration of the use in hilly and mountainous areas; hence, those easy carrying and usable should be selected as the equipment and tools unlike the conventional ones that the DARD have procured.

The following table shows the total set of the equipment and tools to be provided to DFROs in the four provinces.

Set Amount Options for Targeted DFROs/Guard station of FMBs

Unit: set

Province	No. of sets to be provided to DFROs	No. of sets to be provided to PFMBs/SUFMBs	Total
Dien Bien	3	4	7
Lai Chau	3	4	7
Son La	3	4	7
Hoa Binh	4	4	8
Total	11	16	29

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

In addition to the above-listed equipment, the following transportation equipment will be procured for each PPMU.

Transportation Equipment for Each PPMU

Unit: piece/set

No.	Equipment/Tool	Amount	Purpose of use

No.	Equipment/Tool	Amount	Purpose of use
1.	4 x 4 Vehicle	1	For carrying the forest fire control equipment
2.	4 x 4 Pick-up	1	For carrying the forest fire control equipment
3.	Off-road-type Motorbike	5	For mobilization of forest rangers

Source: Final Report for the Preparatory Survey for the Sustainable Forest Development Project in the Northwest Sub-region, September 2016, JICA

d. Training of forest rangers and local communities on forest fire control

PPMUs will first arrange and organize training courses on forest fire control for forest rangers of DFROs and PFMBs/SUFMBs concerned with the target protection forests/special use forests after provision of the forest fire control equipment and tools to DFROs and PFMBs/SUFMBs in the fourth year (2020/2021) of the project. After training of forest rangers of DFROs and PFMBs/SUFMBs, the capacities of village leaders and members of forest protection groups/village working groups will be enhanced through two types of training, namely i) workshop for annual planning of forest fire control and ii) forest fire drill. Forest rangers trained by the project will be trainers in both training courses for local communities. The training courses planned under the component are outlined below.

Phase-in and Phase-out Activities

Title	Participants/time	Topics	Venue	Duration & Frequency	Timing	Impl. Method
Training on forest fire control	Forest rangers of DFROs and PFMBs/SUFMBs relating to the project areas (30 participants)	Activities for forest fire control (forest protection, forest fire prevention, forest fire fighting) Facilitation skills Concept of community forestry or collaborative management Responsibilities of local communities for detection and initial suppression of fire	District capital	2 days x 1 time/ province	4th year (2020/2021)	By administration (PPMUs/DARDs)
Workshop for annual planning of forest fire control	Commune and village leaders, members of forest protection groups, and members of village working groups (50 participants)	Outline of fire prevention, District and commune forest fire control plans Development of commune forest fire control and initial firefighting plans Field practice of fire fighting	Commune	2 days x 1 time/ commune	4th year (2020/2021)	By administration (DFROs)
Forest fire drill	Commune and village leaders, members of forest protection groups, and members of village working groups (50 participants)	Use of forest fire control equipment and tools Field practice of fire fighting Outline of communes forest fire control and initial firefighting plans	Commune	1 day x 1 time/ commune x 2 times	4th year (2020/2021) and 6th year (2022/2023)	By administration (DFROs)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.3.2.8 Project Management

The following activities will be carried out under this component by using the counterpart fund. Detailed cost estimates and draft terms of references (TORs) for some of the activities listed below are shown in Annex-G attached to Volume II of the Final Report.

a. Preparatory works
b. Information dissemination to relevant stakeholders
c. Production and publication of project documents
d. Production and publication of project documents

e. Study tours
e. Technical guidance to the stakeholders
f. Review meetings
g. Monitoring and evaluation of the project performance
h. Forest monitoring

(1) Preparatory Work

a. Establishment of the Project Management Boards including Allocation or Employment of Project Staff

After the loan agreement is effective, MARD, as the governing body of the proposed project, will decide the organization structure of the project including the steering committees at the central and provincial levels and issue the decision on the establishment of the structure. In response to the decision, MBFPs and PPCs concerned will issue the decision on the formation of the Central Project Management Unit (CPMU) and Provincial Project Management Units (PPMUs) at the central and provincial levels, respectively.

The proposed compositions of the steering committees and project management boards at the respective levels are shown below. The members of the steering committees and the staff project management boards will be further deliberated and finalized in the beginning of the project.

Staff/Member Composition of Steering Committees and CPMU/PPMU

Organizations	Composition of the organization
Central Steering Committee (CSC)	- Chairperson: Vice Minister of MARD - Vice Chairperson: Head of ICD - Secretariat: MBFPs - Members: MBFPs, VNFOREST (Dept. of Forest Development, Dept. of Forest Protection, Dept. of Nature Conservation, Dept. of Science, Technologies & International Cooperation), MPI, MoF, and PPCs concerned
Central Project Management Unit (CPMU)	- 1 Director - 1 Deputy Director - 1 Planning officer - 3 Accountants - 3 Technical staffs - 1 Administration staff - 2 Drivers
Provincial Steering Committee (PSC)	- Chairperson: Vice Chairman of PPC - Secretariat: DARD - Members: PPMU, DARD, DONRE, DPI, DOIT, DOST, DPCs, Provincial State Treasury, etc.
Provincial Project Management Unit (PPMU)	- 1 Director - 1 Deputy Director - 1 Planning officer - 5 Accountants - 2 Technical staffs - 1 Administration staff - 1 Driver

Note: MPI: Ministry of Planning and Investment, MoF: Ministry of Finance, DPI: Department of Planning and Investment, DOIT: Department of Industry and Trade, DOST: Department of Science and Technologies, and DPCs: District Provincial Committees

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

MBFPs and PPCs/DARDs will secure the staff of CPMU and PPMUs by either allocation of MBFPs and DARDs officers or new recruitment on a contractual basis. Job descriptions and terms of references (TOR) of the respective positions of CPMU and PPMUs, which specify qualifications, scope of responsibilities, and authorities given to the positions, will be developed before allocation of the staff, so that MBFPs and DARDs concerned could select

applicants based on their qualifications and expertise as compared to those required for the vacant positions in compliance with the national laws/regulations as well as the agreement between GoV and JICA.

b. Development of Guidelines and Regulations for Implementation of the Project

A set of project implementation guidelines/regulations will be prepared by CPMU in the beginning of the project. The implementation guidelines/regulations will stipulate principles, rules and regulations on project management, and procedures for implementation of the project in accordance with existing government regulations at the central and provincial levels. They cover a wide range of aspects on project management, such as administrative and financial management, accounting, project management, and monitoring and evaluation. The topics to be covered by the guidelines/regulations include, but not limited to, the following:

a. Project management
b. Monitoring and evaluation
c. Billing and fund management
d. Identification of the project areas and formation of community organization
e. Survey and detailed planning
f. Information dissemination and extension
g. Capacity development
h. Forest development and improvement
i. Silviculture infrastructure development
j. Small scale infrastructure development
k. Support for livelihood development
l. Forest fire control
m. Benefit sharing, collaborative management, and forest management planning

Having drafted the implementation guidelines/regulations, CPMU will submit and present the draft guidelines/regulations to the central and provincial steering committees for their reviews. The guidelines/regulations will be issued and notified by MARD as a ministerial circular after ratification of the central steering committee.

c. Development of a Monitoring System

In addition to the implementation guidelines/regulations, a GIS-based monitoring system will be developed with monitoring forms and data collection and management systems at the central and provincial levels.

The GIS-based monitoring system will enable CPMU and PPMUs to manage monitoring data in a cost-effective manner and also to make necessary decisions for project operations in a timely manner.

Photo-like maps covering the project areas which will be developed in the project activity of "PLUP and formation of village working groups" will be used as base maps of the GIS-based monitoring system. Spatial data together with photos taken through the field activities, such as "demarcation of boundaries of the project areas," "field validation of forest development activities," and "forest monitoring," will be incorporated into the GIS-based system so that the progress of the project and status of the project areas could be easily confirmed and monitored.

The monitoring system should be synchronized with the activities of SNRMP, as the same project plans to introduce the Provincial Forest Management System (PFMS) with the provision of skill training in the target provinces and districts in the course of the said project. In particular, forest monitoring data collected by forest rangers in the target protection forest and nature serves can also be shared with the PFMS database at the provincial level. Eventually, the monitoring system of the project should be incorporated into or integrated to a PFMS database which will be the basis for measurement and reporting of provincial REDD+ activities.

The project consultant will assist CPMU in the development of the GIS-based monitoring system and provide necessary guidance and orientation to CPMU as well as PPMUs on the use and management of the GIS-based monitoring system in the second year (2018/2019) of the project.

d. Reassessment of the Target Protection Forests and Special Use Forests

Although a total of 64 communes in 10 protection forests and six special use forests are selected as the project areas in the four provinces, PPMUs need to re-examine the necessity of the project in the selected project areas by interviewing the relevant stakeholders such as PFMBs and SUFMBs and DFROs concerned.

e. Procurement of Project Equipment

In the first year (2017/2018) of the project, CPMU and PPMUs will purchase the following project equipment necessary for operations and management of the project at the respective levels.

Lists of Project Equipment to be procured at the Central and Provincial Levels

Project Equipment	CPMU	PPMUs
Desktop PC + software	6 units	4 units/PPMU
Laptop PC + software	2 units	1 unit/PPMU
Printer (A4/A3)	1 unit	1 unit/PPMU
Inkjet Printer (A4/A3)	1 unit	1 unit/PPMU
GIS software (MapInfo)	-	1 unit/PPMU
Photocopy Machine	1 unit	1 unit/PPMU
UPS (1000VA)	6 units	4 units/PPMU
A0 plotter	-	1 unit/PPMU
Digital handycam	1 unit	1 unit/PPMU
GPS	-	5 units/PPMU
Digital camera	2 units	2 units/PPMU
Binoculars	-	2 units/PPMU
Projector	1 unit	1 unit/PPMU

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

f. Development of Draft Terms of References for the Contractual Works

CPMU with technical assistance of the project consultant will prepare the templates of terms of references (TORs) for the activities which will be contracted out to external contractors (central or provincial public or private competent institutions/organizations), such as PLUP and formation of village working groups, socio-economic baseline survey, and marketing sutey, so that CPMU or PPMUs could smoothly proceed to the procurement of contractors for the respective works.

(2) Information Dissemination to Relevant Stakeholders

Information dissemination aims to enhance stakeholders' awareness of the project, especially the concepts, principles, regulations/guidelines, and work plans of the project, in the

beginning of the project, so that key stakeholders, namely CPMU/MBFPs, PPMUs/DARDs, DPCs, CPCs, PFMBs/SUFMBs, and local communities, could have the same understanding of the project in the beginning of the project. Furthermore, specific focus should be put on the dissemination of the idea of benefit sharing and collaborative management between PFMBs / SUFMBs and local communities for sustainable protection and management of plantations and natural forests in the project areas in the post project period. To this end, the following workshops and meetings will be organized and held in the course of the project implementation.

a. Orientation of the project for CPMU/MBFPs, PPMUs/DARDs, PFMBs/SUFMBs, DPCs, CPCs, and village working groups

Since the implementation and management of a yen-loan project will be new to the majority of the stakeholders involved in the proposed project, project orientation workshops will be organized and held to introduce the objectives, concepts, principles and major activities of the projects with regulations/guidelines on project implementation for the relevant stakeholders at the different levels, namely CPMU/MBFPs, relevant departments of MARD, PPMUs/DARDs, relevant provincial departments, PFMBs/SUFMBs, DPCs and CPCs concerned, and village working groups formed. A one-day workshop will be held by MBFPs, CBMB, and PPMUs with assistance from the project consultant in the second year (2018/2019) of the project. The following table shows the outlines of the orientation workshops planned at the respective levels.

Project Orientation Workshops at the Respective Levels

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Project orientation workshops	CPMU, MBFPs, and the relevant departments of MARD (30 participants)	Outline of the project (objectives, concepts, principles, project components and activities, implementation schedule, and organizational structure) Regulations / guidelines / manuals for implementation of the project	Hanoi	1 day x 1 time	2nd year (2018/2019)	By administration (project consultant)
	PPMUs, DARD, and and the relevant departments of PPCs (30 participants)		Provincial capital	1 day x 1 time/ province		By administration (CPMU with project consultant)
	PFMBs/SUFMBs, DPCs (30 participants)		District center	1 day x 1 time/ district		By administration (PPMUs)
	CPCs, and Village working groups (60 participants)		Commune center	1 day x 1 time/ commune		By administration (PPMUs with PFMBs/SUFMBs)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

b. Planning with CPMU and PPMUs

In order to help the project staff of CPMU and PPMUs get a clear picture of the project activities and work schedule of the project, another one-day workshop for discussions on the work plan of the project will be held at the respective levels. In the workshop, the participants from CPMU are expected to develop an overall work plan and an annual work and budget plan of the entire project, while those from PPMUs will develop the same of the project components at the provincial level. The outline of the workshops are summarized below.

Planning Workshops at the Central and Provincial Levels

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Planning workshops	CPMU (20 participants)	Discussion on an overall work plan of the project considering major activities, necessary input and arrangements,	Hanoi	1 day x 1 time	2nd year (2018/2019)	By administration (project consultant)
	PPMUs (20 participants)		Provincial capital	1 day x 1 time/		By administration (CPMU with

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
		work schedule, etc. Discussion on an annual work and budget plan based on the overall work plan		province		project consultant)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

c. Orientation and guidance on work plans to FMBs/SUFMBs, DPCs, CPCs, and village working groups

The work plans developed by PPMUs should be further introduced to and discussed with field implementers and stakeholders at the district and commune levels to enable them to deepen their understandings of the project activities and their responsibilities. A one-day workshop will be organized and held each at the provincial and district levels to this end.

Orientation on Work Plans at the Provincial and District Levels

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Orientation and guidance on project plans	PFMBs/SUFMBs (30 participants/time)	Introduction of the work plan of the components related to the participants, such as improvement of watershed forest, support for livelihood development, and small scale rural infrastructure development	Provincial capital	1 day/time×1 time/province	2nd year (2018/2019)	By administration (PPMUs)
	DPCs and CPCs concerned, village working groups (60 participants/time)		District center	1 day/time×1 time/district		By administration (PPMUs)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

d. Orientation and guidance on benefit sharing mechanism and collaborative management system to CPMU/MBFPs, PPMUs/DARDs, PFMBs/SUFMBs, DPCs, CPCs, and village working groups

The benefit sharing mechanism is the crucial scheme for sustainable management of plantations and natural forests in the target protection forests and special use forests especially after the end of the project. CPMU with technical assistance from the project consultant will first review the existing case studies and trials on benefit sharing and collaborative management in protection forests and special use forests in the county, and draft the regulations/guidelines on the benefit sharing mechanism through field trial by the seventh year (2023/2024) of the project.

To further discuss the draft mechanism, orientation and consultation workshops on the benefit sharing mechanism will also be held at all levels to exchange opinions and ideas on the same topics with a wide range of stakeholders. The following table shows the outline of the orientation and consultation workshops on the benefit sharing mechanism.

Project Orientation Workshops at the Respective Levels

Title	Participants/time	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Orientation and consultation workshop on the benefit sharing mechanism	CPMU, MBFPs, and relevant departments of MARD (30 participants)	Objectives and concepts of the benefit sharing mechanism and collaborative management system, Rules on the benefit sharing,	Hanoi	1 day x 1 time	7th year (2023/2024)	By administration (project consultant)
	PPMUs, DARDs, and relevant department of PPCs (30 participants)		Provincial capital	1 day x 1 time/ province		By administration (CPMU with project consultant)

Title	Participants/time	Topics	Venue	Duration and Frequency	Timing	Impl. Method
	PFMBs/SUFMBs, and DPCs (60 participants)	Rights and obligations of parties involved in benefit sharing / collaborative management, etc.	District center	1 day x 1 time/ district		By administration (PPMUs)
	CPCs and village working groups (60 participants)		Commune center	1 day x 1 time/ commune		By administration (PPMUs with PFMBs/SUFMBs)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

e. Orientation and guidance on the Environmental Social and Management Framework (ESMF) Implementation and Monitoring for CPMU/MARD, PPMUs/DARD, PFMBs, and SUFMBs

In order to properly manage and monitor the environmental and social safeguard issues and their associated procedures, it is crucial to enhance the capacity of various agencies and stakeholders in the initial stage of the project. To this end, the following orientation and guidance sessions should be arranged and provided to the relevant project officers, such as CPMU/MARD, PPMUs/DARDs, PFMBs, and SUFMBs concerned.

Orientation on ESMF Implementation and Monitoring for CPMU, PPMUs, and PFMBs/SUFMBs

Course	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Safeguard Implementation and Compliance	CPMU/MARD, PPMUs/DARDs, PFMBs & SUFMBs (15 participants)	■ Legal framework on environmental and social safeguards of Vietnam and JICA ■ UNFCCC REDD+ Safeguards ■ Environmental and social considerations and potential impacts ■ ESMF procedures	Provincial center	3 days per time per province (once a year in the first 3 years)	from the 1st to 3rd year	By administration (CPMU with project consultant)
Co-management and Participatory Forestry and REDD+	PFMBs & SUFMBs (15 participants)	■ Community-based Natural Resource Management/ Participatory Forestry ■ REDD+ (including REDD+ Safeguards) ■ Sustainable livelihood and PRA skills ■ Free, Prior and Informed Consultation / Consent (FPIC) ■ Participatory Land / Resource Use Mapping ■ Land/Resource Conflict Management ■ Co-management ■ Gender issues	Provincial center	2 days per time per province (once a year in the first 3 years)	from the 1st to 3rd year	By administration (CPMU with project consultant)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The orientation sessions described above will be arranged and held in the first three years (from 2018/2019 to 2020/2021) by CPMU with technical assistance from the project consultant.

(3) Production and publication of project documents

The main aims of production and publication of project documents are to enhance the public awareness of the project and to help relevant stakeholders understand the procedures and/or skills necessary for implementation of the project activities. Hence, different types of publication are to be developed to get messages across to a wide range of people. CPMU and

PPMUs will develop the following materials with technical assistance from the project consultant and/or the contractors that have experiences in production of materials similar to the project documents planned.

Project Documents to be developed and produced

Materials	Type of materials	Responsible organization	Possible assisting organization	Targets	Timing
Project Brief (overall)	Print (leaflet)	CPMU	Project consultant	MARD, PPCs, Public	2nd year (2018/2019)
Project Brief (sub-project)	Print (leaflet)	PPMUs	Project consultant, contractors (PAEC)	DARD, DONRE, DOST, PFMBs, SUFMBs, DPCs, CPCs	Ditto
Annual newsletters (overall)	Print (leaflet)	CPMU	Project consultant	MARD, PPCs, Public	From 2nd year (2018/2019) to 8th year (2024/2025)
Annual newsletters (sub-project)	Print (leaflet)	PPMUs	Project consultant, contractors (PAEC)	DARD, DONRE, DOST, DPCs, CPCs	Ditto
Awareness raising materials	Poster, Booklets, DVD/VCD	PPMUs	Project consultant, contractors (PAEC)	Local communities, households, youths	4th year (2020/2021)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The materials targeting local communities should be developed with pictures, drawings, photos, and images so that they are visually understandable to general public, especially those who have less literacy. The project consultant will review and finalize the materials drafted by CPMU and PPMUs to ensure the effectiveness of the materials.

(4) Study Tours

The study tours will be organized for the project staff of CPMU and PPMUs as well as key officers of MBFPs, VNFOREST, DARDs, and PPCs. The following study tours will be arranged for the different targets in the course of the project.

Study Tours arranged and organized for CPMU, PPMUs, MBFPs, VNFOREST, DARDs, and PPCs

Study Tours	Targets	Responsible organization	Possible assisting organization	Objectives	Frequency and Timing
Study tours to target provinces of the JICA 2 project	PPMUs, DARDs, PFMBs, SUFMBs	CPMU	Project consultant	To have a clear image of the project To learn project management practices and useful lessons in project management	1 time in 2nd year (2018/2019) and 5th year (2021/2022)
Study tours to the pilot sites of SNRMP	PFMBs, SUFMBs, CPCs, and village working groups	PPMUs	Project consultant	To have an image of some of the project activities, especially those relating to livelihood development	1 time in 3rd year (2019/2020) and 4th year (2020/2012)
Overseas study tours	CPMU, MBFPs, VNFOREST, DARDs, PPCs	CPMU	Project consultant	To learn community participation in forest management, development and management of forest users' groups, and income generating activities	1 time in 4th year (2020/2021) and 6th year (2022/2023)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

As the majority of the project staff and key officers of DARDs and PPCs of the target provinces are not familiar with the concept of community-based forest management and collaborative forest and natural resource management, it is particularly important to give them

opportunities to directly observe the existing cases of community-based forest management and learn experiences and lessons through exchanging opinions with communities who have participated in forest management in the field, so that they could have an idea on collaborative forest management applicable to the project areas.

(5) Technical Guidance to the Stakeholders

In order to ensure the quality of the work, the following technical guidance will be given to PPMUs, PFMBs/SUFMBs, and/or other contractors.

- Guidance on PLUP (including the use of GPS)
- Guidance on the use of GIS

For each topic, a two-day workshop will be organized and held in the respective provinces. The following table shows the outline of the respective sessions.

Guidances on PLUP and Use of GIS

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Guidance on PLUP and GPS	PPMUs, PFMBs / SUFMBs, and contractors (about 30 persons)	Outline of PLUP, Procedures for PLUP, Expected outputs of PLUP, and Use of GPS	Provincial Capital	2 days x 1 time/ province	2nd / 3rd years (2018/2019 & 2019/2020)	By administration or Contract out
Guidance on use of GIS	PFMBs / SUFMBs (20 participants / session)	Management of data of the perimeter survey using GIS	Provincial Capital	2 days x 1 time/ province	3rd year (2019/2020)	By administration or Contract-out

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

In addition to the formal guidance, PFMBs and SUFMBs will be given regular coaching and technical assistance on silviculture techniques by the project consultant so that PFMBs/SUFMBs could further provide technical assistance and guidance to the village working groups for establishment of quality plantations in a proper manner.

(6) Review Meetings

The project review meetings will be convened every six months at both the central and provincial levels. CPMU and the relevant departments of VNFOREST/MARD will be the main participants in the meeting at the central level, while PPMU, DARD, and PFMBs/SUFMBs and DPCs will periodically review the component projects at the provincial level. In the meeting, the participants will review, confirm and discuss the activities and accomplishments made in the last six months, any issues and concerns observed in the course of the project, lessons learned, and activities planned in the next six months. Such periodic reviews would help CPMU/MBFPs and PPMUs/DARDs monitor the progress of the project in a timely manner, and also give good opportunities for CPMU and PPMUs to solve any difficulties in the project operations. The outline of the review meetings are summarized below.

Review Meetings at the Central and Provincial Levels

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
Review meeting at the central and provincial levels	CPMU, MBFPs, and the relevant departments of MARD (30 participants)	Review, confirmation, and discussions of the progress of the project (activities and accomplishments made), issues and concerns,	Hanoi	1 day/time×2 times/year from the end of 1st year to the middle of 10th year	1st year (2017/2018) to 10th year (2026/2	By administration (CPMU)

Title	Participants	Topics	Venue	Duration and Frequency	Timing	Impl. Method
	PPMU, DARD, PFMBs/SUFMBs, DPCs (30 participants)	lessons learned, and activities planned in the following six months	Provincial center	ditto	027)	By administration (PPMUs)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(7) Monitoring and Evaluation of the Project Performance

a. Objectives of M&E

The main objectives of M&E are: i) to systematically manage the project implementation and project resources in an effective and efficient manner, ii) to assess the project impact adequately, and iii) to ensure the sustainability of the project effects. As the results of monitoring are relevant to project management, it should be basically carried out by the project implementer as a part of the project management activities in the course of the project. On the other hand, the evaluation should be carried out on a periodic or ad on basis by the third party as it is mainly aimed at the assessment of the project impact and sustainability.

b. Outline of the M&E activities

In accordance with the latest government decree on management and use of ODA (Decision No. 16/2016/ND-CP dated March 16, 2016), the following M&E activities shall be carried out.

i) Regular monitoring and supervision
ii) Initial assessment, monitoring, and evaluation
iii) Mid-term assessment, monitoring, and evaluation
iv) Terminal assessment monitoring, and evaluation
v) Irregular assessment (if necessary)

More details of the respective activities are described in the following sub-sections.

c. Regular monitoring and supervision

PPMUs of the target provinces will monitor and supervise the progress and performance of the component projects periodically and prepare the following monitoring reports for submissions to PPCs concerned and CPMU at the central level.

- Monthly progress report
- Quarterly progress report
- Yearly progress report
- Project completion report

The information and data covered by the monitoring reports will include, but not limited to, the following:

- Physical and financial accomplishments
- Progress of key monitoring indicators
- Progress and results of procurement
- Any negative environmental and social impacts caused by the project activities
- Any issues and concerns on project implementation
- Recommendations

Location data (GPS/GIS data) of physical accomplishments with photos taken in the field will be attached to the report so that the GIS-based monitoring system could be updated periodically.

d. Initial evaluation

The initial evaluation is to be carried out immediately after the commencement of the project. The main aims of the initial evaluation are to review the actual situation of the target protection forests and special use forests as well as communes relevant to the areas, to assess if the project design is still relevant, and to examine the consistency of the project concepts, approaches, and framework with the government policies and strategies. To this end, the following data and information will be collected and analyzed:

- Status of CPMU and PPMUs (current resources assigned and allocated to CPMU and PPMUs, and level of staff);
- Socio-economic situation of the target communes;
- Present land use / forest cover in the target protection forests and special use forests; and
- Any emerging issues, suggested solutions, and proposed changes.

The results of the initial evaluation will be used for updating/revising the overall implementation plan. The evaluation will be carried out by CPMU and PPMUs in the first year (2017/2018) of the project.

e. Mid-term evaluation

The mid-term evaluation will be carried out in the middle of the project life, which is at the fifth year (2021/2022) of the project. The primary purpose of the mid-term evaluation is to verify if the project has been implemented on the right track to achieve its goals and objectives in an efficient and effective manner. In addition, the mid-term evaluation aims to determine any difficulties and issues in the implementation of the project and figure out possible solutions for improvement of the project design. The major activities to be carried out in the mid-term evaluation of the project are outlined below.

i) Confirmation and analysis of the progress of the project as compared to the plan
ii) Field validation of the accomplishments made under the component of improvement of watershed forests
iii) Evaluation of general social impact on the target communes
iv) Evaluation of economic impact on local households
v) Evaluation of the performance of the project
vi) Lessons learned though the project implementation
vii) Recommendations on project designs

Among the activities of the mid-term evaluation, draft specifications of the field works, namely field validation of the accomplishments, evaluation of general social impact on the target communes, and evaluation of economic impact on local households, are summarized below.

Draft Specifications of the Field Works of the Mid-term Evaluation

Work Items	Outline
Field validation	1. Targets of field validation of physical accomplishments (1) Afforestation: 2% of the planted areas will be targeted and the size of one sample plot is 400 m^2/plot. (2) ANR: 1% of the planted areas will be targeted and the size of one sample plot is 500 m^2/plot. 2. Survey times (1) Afforestation: i) year of planting, ii) number of trees planted and survival rate of trees planted in the selected plantations, iii) height of trees and diameter of tree trunk, iv) quality of planted trees, and v) growing stock of trees. (2) ANR: i) year of contract, ii) vegetation covers, iii) height of trees and diameter of tree trunk, and growing stock of trees.
Evaluation of general social impact	The following data and information will be collected from the target communes. - Number of the communes and households involved in the project - Number of the village working groups organized - Any changes in forest management practices/forest resource uses in the communes - Number of beneficiaries involved in the livelihood development activities - Livelihood improvement activities introduced
Evaluation of economic impact on local households	A half of the beneficiary households involved in the project in two-fifth (40%) of the target communes will be sampled and the following data and information will be collected by an interview survey. - Cash income generated by the project - Income generating activities additionally introduced

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The mid-term evaluation including the field works mentioned above will be contracted out by CPMU to a contractor, either a public institution/university/private firm who is financially and technically capable to conduct the works.

f. Terminal evaluation

The terminal evaluation will be carried out one year before the completion of the project. The purpose of the terminal evaluation are: i) to evaluate the design of the project, process of implementation, management performance, level of achievement of the project goals and objectives and efficiency in using the resources; ii) to evaluate the benefits of the project, possible impacts, and sustainability; and iii) to discuss the lessons learned and recommendations. Like in the case of the mid-term evaluation, the terminal evaluation will be outsourced to a contractor. Since the terminal evaluation will require in-depth surveys on physical accomplishments made by the project and socio-economic impacts made on households in the target communes in the four provinces, two types of surveys, namely i) forestry inventory survey and ii) socio-economic interview survey, will be carried out separately. The draft terms of references (TORs) of both surveys and socio-economic interview survey are summarized below.

Draft Specifications of the Forest Inventory Survey

<table>
<tr><th>Work Items</th><th>Outline</th></tr>
<tr><td>Review of project design and framework</td><td>The following data and information will be collected and reviewed.
- Project designs and overall framework;
- Progress of the project activities that have been implemented in the four provinces as compared to the original plans;
- Implementation process of the project.</td></tr>
<tr><td>Analysis of satellite images</td><td>The latest land use and forest cover maps will be developed through the following steps:
- Purchase of the medium resolution satellite images covering the project areas;
- Analysis of the satellite images to clarify the present land use and forest cover the project areas;
- Development of latest land use and forest cover maps with GIS data on contour lines, roads, administrative boundaries, etc., by using GIS; and
- Revision and finalization of the latest land use and forest cover maps based on the results of ground truth surveys and forest inventory survey</td></tr>
<tr><td>Forest Inventory</td><td>The forest inventory will be carried out in accordance with the following guidelines.
<table>
<tr><th>Target</th><th>Specifications of the survey</th><th></th></tr>
<tr><td>Areas for afforestation</td><td>Sampling rate:
Size of sampling plot:
Survey items:</td><td>0.5 % of the total areas developed as afforestation
400 m^2/plot (20mx20m)
Total area of the plantations developed, species planted, survival rate,</td></tr>
</table>
</td></tr>
</table>

Work Items	Outline		
			density of seedlings planted, height and breast height diameter of trees planted, forest status, and estimated carbon stock.
	Areas for ANR and protection	Sampling rate: Size of sampling plot: Survey items (ANR): Survey items (protection):	5 plots each from the project areas in the target commune 500 m2/plot (25 mx20m) Total area of areas rehabilitated, species planted, survival rate, density of seedlings planted, height and breast height diameter of trees planted, forest status, and estimated carbon stock increased Total area of natural forests protected and forest status
Evaluation of the efficiency of input and activities	The efficiency of the following project activities will be reviewed and assessed. - Forest inventory, mapping, and detailed designing - Forest development and improvement activities - Silviculture infrastructure development - Forest fire prevention		
Sustainability of the project	The sustainability of the project will be assessed by analyzing the following points. - Technical and financial capacities of PFMBs and SUFMBs for management of forests within their jurisdiction - Technical and financial capacities of PFMBs and SUFMBs for operation and maintenance of silviculture infrastructure developed within their jurisdiction - Technical, financial, and organizational capacities of the village working groups that would make collaborative management agreements with PFMBs or SUFMBs for management and protection of the assigned forests in a proper manner.		

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Draft Specifications of the Socio-Economic Baseline Survey

Work Items	Outline
Household interview survey	1. Target Sites: All the communes where the project areas are located 2. Sample size: 24 households each in the target communes 3. Survey items/topics: The following topics will be covered by the interview survey. - General background - Assets and facilities, and access to social services - Income and expenditures - Land tenure - Agricultural production - Forest use and management - Livestock and fisheries - Recommendations for sustainability of the project
Interview to commune and village leaders	1. Target Sites: All the communes where the project areas are located 2. Interviewees: Commune and village leaders of the target communes 3. Survey items/topics: The following topics will be covered by the interviews. - Demographic conditions (villages, population, households, and ethnicity) - Agricultural production (cropped areas, major crops, production, and number of livestock animas) - Forestry production (area of production forests, major forestry products (including non-timber forest products), and sources of non-timber forest products) - Fishery production and other sources of livelihoods - Access to rural finance or existence of village funds - Existing rural and social infrastructure (roads, irrigation systems, electricity, water supply systems, marketing, school, and health clinic, etc.) - Any ongoing projects on poverty alleviation ad commune development - Existing mass organizations - Existing activities and organizations for forest management - Development needs of the commune
Interview to women	1. Target Sites: All the communes where the project areas are located 2. Interviewees: Six women each in the target communes 3. Survey items/topics: The following topics will be covered by the interviews. - Main roles played by women in forest use and management - Gender differences in access to and control over forest resources - Gender differences in decision making processes relating to forest management - Benefits that women have obtained from forest management and protection - Impacts caused by the project to women

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

f. Irregular evaluation

The irregular evaluation may be conducted if there are unpredictable difficulties, problems and impacts observed in the course of the project. It is aimed at analyzing the actual situations

with emerging issues/difficulties and providing necessary solutions and recommendations for smooth project operations.

g. Monitoring formats and information management

A simplified monitoring format shall be developed prior to the implementation of the component projects in the field. The formats should be easy to apply, but at the same time should cover all the items to be monitored by PPMUs. For efficient management of the monitoring data and effective use of the data for decision making, the GIS-based monitoring system should be developed in the preparatory stage. All the data should be interlinked with geographical data so that the progress and results of the project could be visualized and data could be easily managed systematically.

(8) Forest Monitoring

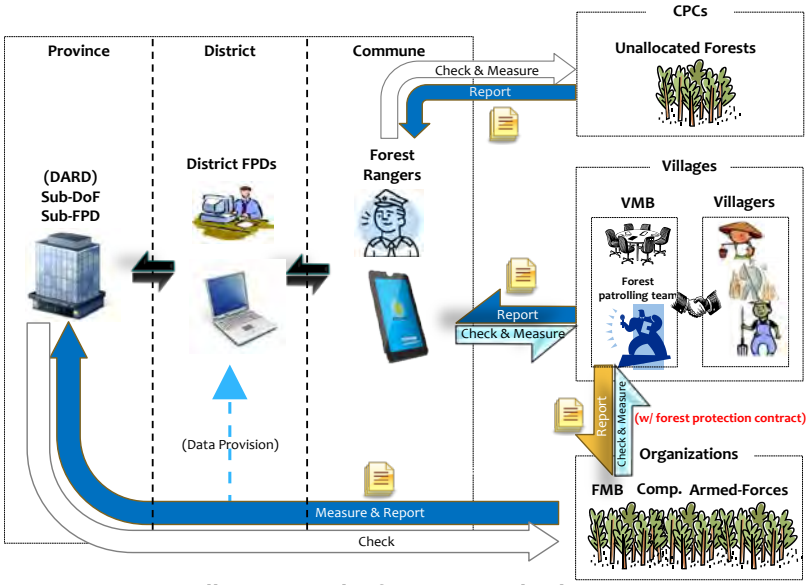
In the context of REDD+ all the forest activities listed below should be monitored.

a. Reduction of emissions from deforestation
b. Reduction of emissions from forest degradation
c. Carbon stock enhancement
d. Conservation of forests
e. Sustainable management of forests

The above-listed activities except (d) can be measured in the framework of the annual forest monitoring system, while item (d) can be monitored through field validation of the project activities to be carried out by PFMBs/SUFMBs in the course of the project implementation.

a. Annual Forest Monitoring

Annual forest monitoring will be carried out as part of the regular tasks of provincial and district officers in the target provinces. The annual forest change monitoring, such as field monitoring, data compilation, and reporting, is one of the official mandates of forest rangers of PFMBs/SUFMBs/DFROs, District FPDs, and DARD, respectively. The past and on-going JICA-T/C projects, namely SUSFORM-NOW and SNRMP, have assisted and will assist DARDs and concerned District FPDs in the four provinces in the improvement of the forest monitoring systems with introduction of the GIS-based monitoring database and the field data collecting system using tablet-PC. The overall framework of the improved forest monitoring system is illustrated below.



Overall Framework of Forest Monitoring System

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

By 2018/2019, all the four provinces are expected to develop the updated monitoring framework and equip forest rangers in the 15 districts in the provinces with tablet-PC and necessary skills for forest monitoring with assistance from SNRMP. It is, therefore, expected that forest changes in the target protection forests and special use forests will be monitored in accordance with the updated monitoring framework on the initiatives of PFMBs/SUFMBs and DFROs concerned.

b. Validation of project activities

PFMBs and SUFMBs will carry out field validation of the forest development and improvement activities (i.e., afforestation, ANR, and protection of natural forests) carried out by the village working groups in the course of the project. The results of the field validation can also be used for monitoring of forest conservation and increase of forest areas.

Forest rangers of PFMBs/SUFMBs will measure the boundaries of the plantations developed or regenerated forests under ANR with GPS or tablet-PC. The location data and photos of the project areas will also be submitted to PPMUs, so that the digital data of the field validation can also be transferred to the provincial forest monitoring system database.

J.3.2.9 Consulting Services

(1) Rationale

As the project covers a variety of components, a wide range of expertise is necessary for smooth operations of the project. CPMU and PPMUs will hire a number of contractors to implement the respective project components and activities, but it may be quite difficult for them to efficiently manage, monitor and supervise the works of the contractors, as the majority of the CPMU and PPMU officers may not necessarily have the expertise relating to the project activities or be familiar with the management of a large scale ODA project. It is judged that the project consultant should be hired for overall technical and managerial assistance in smooth implementation of the project. Particularly, the following expertise are in need for effective project management.

- Project management
- Forest development, planning, and monitoring
- REDD+ safeguard and community-based/collaborative management
- Livelihood development and NTFP production
- Infrastructure development
- Institutional development
- GIS and information system management

(2) Draft Scope of Works

The project consultant is expected to provide CPMU and PPMUs overall technical, managerial, administrative assistance in project implementation. The main objective of the assistance is to ensure that CPMU and PPMUs could effectively achieve the project objectives, efficiently implement the project activities, and secure the project sustainability with quality accomplishments.

The draft scope of services of the project consultant is summarized below.

a. Assist CPMU and PPMUs in managing the project in an effective and efficient manner.

b. Assist CPMU and PPMUs in understanding and using the project regulations and guidelines on project implementation.

c. Assist CPMU in developing a GIS-based monitoring system with a user friendly database and simplified monitoring formats necessary for regular monitoring.

d. Assist CPMU and PPMUs in improving the monitoring system by periodically checking the use of the system.

e. Assist CPMU and PPMUs in formulating overall project implementation plans of the project in the beginning of the project.

f. Assist CPMU and PPMUs in preparing annual work and budget plans based on the appropriate estimation of work quantity as well as unit costs of the respective inputs.

g. Assist CPMU enhance the awareness of collaborative management and benefit sharing mechanism among key stakeholders, namely PPMUs, DARDs, PFMBs, SUFMBs, and CPCs.

h. Assist CPMU, PPMU, and DARDs in reviewing, assessing, and formulating the regulations on collaborative management and benefit sharing in the target protection forests and special use forests based on the field trials in the course of the project.

i. Assist CPMU and PPMUs in procuring the project equipment.

j. Assist CPMU and PPMUs in periodically monitoring the project activities with the monitoring formats and improving the project design, framework, and systems based on the monitoring data stored in the GIS-based monitoring system.

k. Assist CPMU in the proper fund management and smooth communication/ coordination with JICA.

l. Assist CPMUs in providing guidance and orientation to PPMUs and DARDs on managerial and technical aspects necessary for implementation of the projects.

m. Provide periodic coaching to CPMU and PPMUs to strengthen their technical, managerial, and administrative capacities for implementation and management of the project.

n. Assist CPMU and PPMUs in preparing TOR for the project activities to be outsourced to the contractors.

o. Assist CPMU and PPMUs in monitoring and supervising the contractors' works to secure the expected outputs.

p. Assist CPMU and PPMUs in providing orientation, technical guidance, and advice to PFMBs/SUFMBs and other contractors for the effective implementation of the project activities.

q. Assist CPMU and PPMUs in preparing, designing, and developing information dissemination project materials.

r. Assist PPMUs, PFMBs/SUFMBs and relevant stakeholders in developing strategies and work plans for operation and management of the target protection forests and special use forests in the post-project period as well as O&M plans for small scale rural infrastructure in the same period.

s. Assist CPMU and PPMUs in monitoring and supervising the implementation of the environmental management plan (EMP) and environmental monitoring plan (EMoP) prepared in accordance with the Environmental and Social Management Framework.

t. Assist PPMU, PFMBs, SUFMBs, and other relevant stakeholders in ensuring that local communities could obtain the maximum benefit from the project activities and forest management activities in the post project period.

u. Assist CPMU and PPMUs in monitoring the progress of the project, assessing the results and effects of the project activities, solving any issues and problems that might hinder the effective and efficient operations of the project, and draw lessons learned from the implementation of the project over the course of the project.

v. Assist CPMU in reviewing, assessing, and evaluating the validity of the plans submitted by PPMUs for the project components necessary for concurrence from JICA prior to the detailed design works, namely Improvement of Small Scale Rural Infrastructure and Improvement of Silviculture Infrastructure.

w. Assist CPMU in preparing and submitting the plans for the same components to JICA for approval.

x. Provide technical assistance to CPMU, PPMUs, PFMBs/SUFMBs, and the contractors in execution of their respective works.

y. Review, analyze, and recommend improvement/revision of existing related regulations and guidelines (e.g., circulars and decisions).

z. Assist CPMU in reporting any matters to JICA.

(3) Required Man-months of the required Specialists

The total inputs of the project consultant for seven years are expected to be 83 man-months for international experts, 262 man-months for national experts, and 200 man-months for

national support staff. The following table shows the summary of the required man-months of the respective experts.

Required Man-Months for the respective Experts

International experts	MM	National expert	MM
Team Leader	55	Forest Development and Management	68
Forest Development Planning & Management	6	REDD+ Safeguard and Community Organization	43
REDD+ Safeguard and Collaborative Management	20	Livelihood Development	42
GIS and Monitoring System	2	Institutional and Capacity Development	9
Sub-total	**83**	Infrastructure Development	37
National Supporting Staff	**MM**	NTFP Development	15
Administrative Officer	84	GIS	12
Interpreter	63	**Sub-total**	**262**
Secretary	53		
Sub-total	**200**		

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.4 Total Investment, Capital Structure, and Finncial Plan

J.4.1 Conditions and Assumptions

The project costs are estimated under the following conditions:

a. All the project costs in the project period (10 years) are estimated based on June 2016 constant prices in Vietnamese dong and Japanese yen.
b. The daily wage for unskilled labor is estimated at VND 231,000 by adapting the minimum wage set by the new circular of the Ministry of Construction (No. 05/2016/TT-BXD) in consultation with MARD and VNFOREST.
c. The exchange rates of US$1.0 = VND 21,954 and US$ 1.0 = JPY 101.3 are used for the estimation according to the pre-conditions set by JICA.
d. Price escalation is set at 3.8% per annum for local currency components and 1.6% for foreign currency components.
e. Physical contingency is 5% of the sum of base costs including the administration cost.
f. The unit costs for the project components and sub-components were estimated on the basis of the detailed cost breakdown of the respective project activities. The detailed cost estimates of the project activities were prepared in reference to the government cost norms and regulations. Price quotations collected from potential implementers were also used for estimation of unit costs of surveys and studies, such as PLUP, market survey, and mid-term and terminal evaluation activities. Actual expenditures of the JICA 2 project were also used for estimation of the costs of detailed designing works.

J.4.2 Total Investment

J.4.2.1 Cost Components

(1) Direct Cost

The direct cost of the project consists of costs for all the components, i.e., survey and detailed planning, improvement of watershed forests, improvement of silviculture infrastructure, improvement of small scale infrastructure, support for livelihood development, and forest fire control. The total cost of all these components is estimated to be VND 1,372.1 billion.

(2) Administration Cost

Administration costs consist of i) procurement of project equipment, ii) information dissemination and capacity development, iii) production of project documents, iv) study tours, v) technical guidance to key stakeholders, vi) review meetings, vii) project monitoring and evaluation, and viii) personnel expenditures and operational expenses of CPMU and PPMUs. The total administration cost is estimated at VND 125.6 billion as the base cost.

(3) Price Contingency

Price contingency is the amount of price escalation during the project period. It is estimated by applying the different rates, namely 5.0% p.a. and 3.8% p.a., to local and foreign currency portions for all the cost components, respectively. The physical contingency for the direct cost is estimated at VND 323.4 billion, while the same for the administration cost is estimated at VND 30.9 billion.

(4) Physical Contingency

Physical contingency of 5% is applied to all costs for the various project components. Physical contingency is estimated at VND 74.9 billion, which consists of VND 68.6 billion for the direct cost and VND 6.3 billion for the administration cost of the project.

(5) Project consultant

The cost of the project consultant was estimated by applying the unit costs given by JICA for the consultancy services as pre-conditions. The total estimated cost for consulting services, excluding taxes and duties, is tabulated below.

Cost for Consulting Services

Currency	Item	Cost (VND million)
Foreign currency portion	Base Cost (w/o tax)	58,671
	Physical and price contingency	7,580
Local currency portion	Base Cost (w/o tax)	51,688
	Physical and price contingency	13,110
Total		131,050

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(6) Taxes and duties

The value added tax for costs of all materials, consumables and services is calculated in the cost estimation. Tariffs on imported equipment are also included in the estimates. The total cost of taxes and duties is estimated at VND 196.8 billion.

(7) Loan Interest

Loan interest is also calculated as one of the cost components by adopting 0.01% for consulting services and 0.03% for the other loan portions. The total cost of loan interest is estimated at VND 33.6 billion.

(8) Front end fee

Front end fee is estimated at VND 3.8 billion as 0.2% of the total loan amount.

J.4.2.2 Total Cost Estimates

The total project cost of the entire project is estimated at VND 2,292.1 billion as shown below. The detailed project cost of the entire project and those of the four target provinces are presented in **Table J-1**.

Summary of Project Cost

Cost Items	Cost (VND million)
1. Survey and Detailed Planning	65,131
2. Improvement of Watershed Forests	984,878
3. Improvement of Silviculture Infrastructure	112,469
4. Small scale infrastructure	148,755
5. Support for Livelihood Development	44,006
6. Forest Fire Control	16,881
7. Sub-total of Direct Costs (Sum of 1~6)	**1,372,120**
8. Price Escalation	323,356
9. Physical contingency	68,606
10. Sub-total (7+8+9) (Base Cost for Components eligible to be loaned)	**1,764,082**
11. Project Management	125,580
12. Price Escalation	30,868
13. Physical contingency	6,279
14. Sub-total (11+12+13) (Administration Cost)	**162,728**
15. Consulting Services (including price and physical contingeny)	131,050
16. Taxes and Duties	196,778
17. Total Project Cost excluding Loan Interest and Front End Fees (10+14+15+16)	**2,254,638**

Cost Items	Cost (VND million)
18. Loan Interest during the Project Period	33,680
19. Front End Fee	3,790
20. Grand Total (Sum of 17~19)	**2,292,107**

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.4.2.3 Annual Cost Schedule

The annual cost disbursement schedule for the whole project is shown in **Table J-2**, and summarized below.

Summary of Annual Cost Schedule of the Whole Project

(Unit: VND million)

Items <1	1st (2017/18)	2nd (2018/19)	3rd (2019/20)	4th (2020/21)	5th (2021/22)	6th (2022/23)	7th (2023/24)	8th (2024/25)	9th (2025/26)	10th (2026/27)	11th (2027/28)	Total
Direct cost	0	11,574	43,845	226,815	370,236	391,662	186,325	106,102	35,562	0	0	1,372,120
Administration	10,644	13,049	11,602	12,939	11,888	13,341	12,227	10,713	10,713	15,994	2,674	125,580
Price contingency	404	1,891	6,564	38,573	78,335	101,570	59,232	40,611	18,908	7,230	1,356	354,436
Physical contingency	532	1,221	2,772	11,988	19,106	20,250	9,928	5,841	2,416	800	134	74,885
Consulting services	0	14,398	21,009	24,445	22,413	17,092	15,719	12,239	3,781	0	0	131,050
Taxes & duties	341	5,097	8,333	31,231	48,718	52,466	27,487	16,544	5,740	818	3	196,778
Total Project Cost	11,921	47,028	94,124	345,945	550,695	596,381	310,916	192,050	76,568	24,841	4,167	2,254,638

Note: <1 The figures exclude price escalations and physical contingencies.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.4.2.4 Currency Component

The project cost is composed of two currency components, namely, local currency and foreign currency, assuming that i) all goods and services except those relating to international experts of the consulting services will be available locally and ii) international experts of the consulting services will be procured through an international bid. The currency components of the project cost are shown in **Table J-1,** and summarized below.

Summary of Currency Components for the Project Cost

(Unit: VND million)

Component	LC	FC	Total
1. Survey and Detailed Planning	65,131	0	65,131
2. Improvement of Watershed Forests	984,878	0	984,878
3. Improvement of Silviculture Infrastructure	112,469	0	112,469
4. Small scale infrastructure	148,755	0	148,755
5. Support for Livelihood Development	44,006	0	44,006
6. Forest Fire Control	16,881	0	16,881
7. Sub-total of Direct Costs (Sum of 1~6)	**1,372,120**	0	**1,372,120**
8. Price Escalation	322,356	0	322,356
9. Physical contingency	68,606	**0**	68,606
10. Sub-total (7+8+9) (Base Cost for Components eligible to be loaned)	**1,764,082**	0	**1,764,082**
11. Project Management	125,580	**0**	125,580
12. Price Escalation	30,868	0	30,868
13. Physical contingency	6,279	**0**	6,279
14. Sub-total (11+12+13) (Administration Cost)	**162,728**	0	**162,728**
15. Consulting Services	64,799	66,251	131,050
16. Taxes and Duties	186,840	9,938	196,778
17. Total Project Cost excluding Loan Interest and Front End Fees (10+14+15+16)	**2,178,449**	76,189	**2,254,638**

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.4.2.5 Capital Sources (Financial Plan)

In accordance with the JICA funding policy, the front end fee, administration cost and taxes and duties related to the project activities will not be covered by the JICA loan. As a result, the total cost to be borne by the GoV is estimated at VND 356.2 billion, while the total cost to be covered by the JICA loan is estimated at VND 1,843.7 billion (JPY 8,499.6 million). Breakdown of the financial plan is summarized below.

Summary of Fund Requirement

(Unit: VND million)

Component	GoV	Loan	Total
1. Survey and Detailed Planning	0	65,131	65,131
2. Improvement of Watershed Forests	0	984,878	984,878
3. Improvement of Silviculture Infrastructure	0	112,469	112,469
4. Small scale infrastructure	0	148,755	148,755
5. Support for Livelihood Development	0	44,006	44,006
6. Forest Fire Control	0	16,881	16,881
7. Sub-total of Direct Costs (Sum of 1~6)	0	**1,372,120**	**1,372,120**
8. Price Escalation	0	322,356	322,356
9. Physical contingency	0	68,606	68,606
10. Sub-total (7+8+9) (Base Cost for Components eligible to be loaned)	**0 (0)**	**1,764,082 (8,139.8)**	**1,764,082 (8,139.8)**
11. Project Management	125,580	0	125,580
12. Price Escalation	30,868	0	30,868
13. Physical contingency	6,279	0	6,279
14. Sub-total (11+12+13) (Administration Cost)	**162,728**	**0**	**162,728**
15. Consulting Services	0	131,050	131,050
16. Taxes and Duties	196,778	0	196,778
17. Total Project Cost excluding Loan Interest and Front End Fees (10+14+15+16)	**352,505 (1,658.8)**	**1,895,132 (8,744.5)**	**2,254,638 (10,403.3)**
18. Loan Interest during the Project Period	0	33,680	33,680
19. Front End Fee	3,790	0	3,790
20. Grand Total (Sum of 17~19)	**363,296 (1,676.3)**	**1,,928,812 (8,899.9)**	**2,292,107 (10,576.2)**

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.5 Implementation Plan

J.5.1 Institutional Arrangement for Implementation of the Project

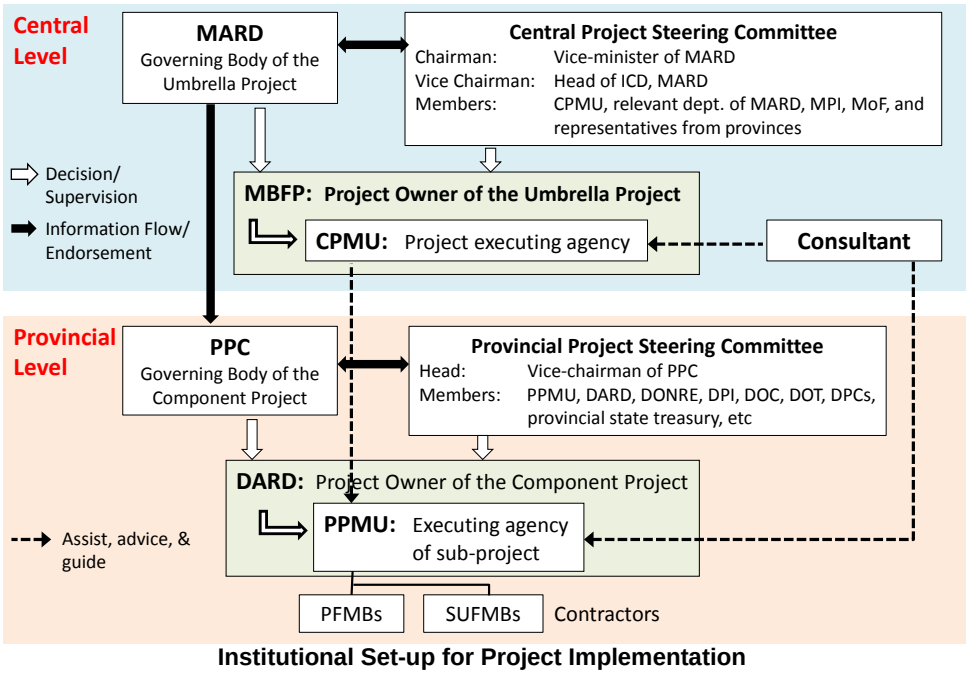
J.5.1.1 Organizational Set-up for Implementation of the Project

(1) Overview of Organizational Set-up

Based on the review of the institutional set-ups of the past and on-going forestry projects similar to the proposed project and the relevant government regulations as described in **Section J.2.3**, the two-layer management system, where the project management units are established at the central and provincial levels, are proposed.

In accordance with Decree No. 16/2016/ND-CP (PM Decree on Management and Utilization of Official Development Assistance (ODA) and Concessional Loans granted by Foreign Sponsors), the project is categorized as a "umbrella program/project," where MARD and PPCs concerned, as the governing bodies," will have the overall responsibility for the joint project and the component projects in the target provinces, respectively. MBFPs and DARDs will be assigned as the project owners of the joint project and the component projects, respectively. CPMU and PPMUs will be established at the central and provincial levels to assist the project owners in managing and implementing the umbrella project and component projects in the respective levels.

The following figure shows the proposed institutional set-up for the implementation of the project.



Institutional Set-up for Project Implementation

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(2) Staffing and Constitution of the Steering Committees and Project Management Units

a. Central Project Steering Committee (CPSC)

The Central Project Steering Committee (CPSC) is to be organized at the ministerial level to approve the overall plans and project regulations, solve inter-sectoral issues, and facilitate the coordination and collaboration between/among the departments and sub-departments under MARD for enhancing synergy and convergence effects. The preparatory survey team proposes that CPSC should be chaired by Vice Minister of MARD considering the nature of the tasks given to CPSC. The proposed constitution of CPSC is shown below.

Proposed Constitution of CPSC

Position	Organizations/Personnel responsible for position
Chair person	Vice Minister of MARD
Secretariat	Head of ICD, MARD
Members	CPMU, MBFPs, MPI. MoF, Relevant departments of MARD (e.g., Financial Dept., Planning Dept., Dept of Construction and Management, Legislation Dept.), VNFOREST (including relevant departments of VNFOREST), Representatives of the target provinces

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

b. Central Project Management Unit (CPMU)

The Central Project Management Unit (CPMU), as the project implementing body at the central level, will be responsible for i) coordinating component projects at the provincial level with DARD and the Provincial Project Management Units of the target provinces, ii) supervising and monitoring the component projects, and iii) providing guidance and orientation, and assistance to PPMUs and other implementers at the provincial level for smooth operations and maintenance of quality of the project activities. The proposed constitution of CPMU is shown below.

Proposed Constitution of CPMU

Position/Section	No. of staff	Roles and Responsibilities
Director	1	■ Be responsible for overall management and supervision of the board ■ Be responsible for implementation of the entire project and coordination with MBFPs, DARDs, and PPMUs of the target provinces
Vice director	1	■ Assist Director in fulfilling its tasks. ■ Act as Director in case Director cannot perform or fulfill its tasks.
Planning	1	■ Develop an overall work plan and detailed annual work plans. ■ Prepare the project regulations and guidelines. ■ Manage biddings and contracts ■ Monitor the overall progress of the project.
Accounting	3	■ Manage project budgets and assets. ■ Keep and manage financial records. ■ Handle and process billing documents.
Technical	3	■ Monitor and supervise the performance and progress of the component projects at the provincial level. ■ Supervise and monitor the performance of the contractors. ■ Provide technical and managerial advice and guidance to PPMUs/DARDs of the target provinces. ■ Supervise and oversee any technical matters.
Administration	3	■ Be responsible for management of administrative and organizational issues/matters.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

c. Provincial Project Steering Committee (PPSC)

The Provincial Project Steering Committee (PPSC) is to be organized at the provincial level to approve the overall and annual plans of the component projects, approve project regulations and guidelines at the provincial level, solve any cross sectoral issues, and facilitate inter-department coordination between/among the departments and sub-departments under PPC. Likewise, PPSC should be chaired by Vice Chairperson who is appropriate for taking the leading role of PPSC. The composition of PPSC is proposed below.

Proposed Constitution of PPSC

Position	Organizations/Personnel responsible for position
Chair person	Vice Chairperson of PPC
Secretariat	PPMU/DARD
Members	Vice Directors of DARD, DPI, DoF, DoNRE, DoC, and DoT, Vice Chairperson of DPCs concerned, Provincial state treasury, Director of Sub-department of Forest Protection, Director of Planning and Finance Section, etc.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

d. Provincial Project Management Unit (PPMU)

The Provincial Project Management Unit (PPMU) will be responsible for execution of the component projects at the provincial level. The major tasks of PPMU are: i) preparation of the project, ii) procurement of contractors, iii) management, monitoring, and supervision of the works of contractors, iv) processing of documents for billing and disbursement, v) report to DARD, PPC, and CPMU, and vi) coordination with relevant organizations/agencies, especially DPCs concerned. The constitution of PPMU and roles of the respective persons and sections of the organization should be similar to those of CPMU as summarized below.

Proposed Constitution of PPMU

Position/Section	No. of staff	Roles and Responsibilities
Director	1	■ Be responsible for overall management and supervision of the board ■ Be responsible for implementation of the entire project and coordination with PPC, relevant departments of PPC and sub-departments of DARD
Vice director	1	■ Assist Director in fulfilling its tasks. ■ Act as Director in case Director cannot perform or fulfill its tasks.
Planning	1	■ Develop an overall work plan and detailed annual work plans. ■ Prepare the project regulations and guidelines. ■ Manage biddings and contracts ■ Monitor the overall progress of the project.
Accounting	3	■ Manage project budgets and assets. ■ Keep and manage financial records. ■ Handle and process billing documents.
Technical	3	■ Monitor and supervise the performance of the contractors and progress of the component projects ■ Provide technical and managerial advice and guidance to the contractors, DPCs, and CPCs concerned. ■ Supervise and oversee any technical matters.
Administration	3	■ Be responsible for management of administrative and organizational issues/matters.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.5.1.2 Roles and Responsibilities of the Stakeholders

(1) Roles and Responsibilities of Relevant Stakeholders in the Proposed Institutional Set-up for Implementation of the Project

The roles and responsibilities of the relevant stakeholders involved in the proposed institutional set-up for implementation of the project are tentatively defined below based on Decree on Management and Use of ODA and Concessional Loans granted by Foreign Sponsors (No. 16/2016/ND-CP) and the experiences from the JICA 2 project.

Roles and Responsibilities of Relevant Stakeholders in the Proposed Organizational Set-up

Stakeholders	Outline
MARD	MARD is the governing body of the joint project at the central level, which will be responsible for ensuring efficient, effective, and smooth implementation of the entire project including allocation of sufficient counterpart funds in a timely manner, monitoring and supervision of the project owner, and coordination with PPCs of the target provinces.
Central Project Steering Committee	CPSC will make the final decisions on the key managerial issues/matters, such as approval of an annual work plan, evaluation annual accomplishments, and approval of regulations and guidelines for project implementation. CPSC meetings will be organized at least every six months.

Stakeholders	Outline
MBFPs	MBFPs will be assigned as the project owner of the umbrella project by MARD and responsible for i) effective management and use of project resources including ODA funds, ii) formulation of an overall plan as well as annual plans of the entire project, iii) management of bidding, negotiations and supervision of contacts, and iv) monitoring and evaluation of the project.
CPMU	CPMU shall have the following tasks: i) formulation and submission of an overall plan and annual plans of the project, ii) preparation and execution of the project, iii) preparation of project regulations and guidelines, iv) provision of guidance and orientation to PPMUs and DARDs of the target provinces, v) management and disbursement of financial resources, vi) coordination with relevant agencies (e.g., MoF and MPI) and JICA, and vii) monitoring, evaluation and reporting of the project implementation.
Project Consultant	The project consultant will provide i) technical and managerial support to CPMU and PPMUs in the implementation of the project and ii) periodic coaching to CPMU, PPMUs, and other key stakeholders, such as PFMBs/NRMBs to enable them to implement the project in a proper and effective manner.
PPC	PPCs will be the governing bodies at the provincial level and shall have the same responsibilities as MARD has for the implementation of the component projects in the respective provinces.
Provincial Project Steering Committee	PPSC will be responsible for i) making decisions relating to the implementation of the component projects in the province, ii) approving the project regulations, guidelines, and overall and annual plans, and iii) monitoring and evaluating the project implementation at the provincial level. Like in the case of CPSC, committee meetings shall be organized at least every six months.
DARD	DARD will be the project owner of the component projects at the provincial level and responsible for i) establishment of PPMU, ii) provision of guidance and orientation to PPMU, iii) execution of appraisal and approval of designs, cost estimates, and contracts of the project activities, iv) monitoring, supervision, and evaluation of the progress of the component projects, and v) management of the project fund.
PPMU	PPMU as the implementing body of the component projects at the provincial level, will be responsible for implementation and management of the component project activities. Its roles will be similar to those given to CPMU. Specifically, PPMU shall: i) prepare an annual operational and financial plan of the component projects in the province, ii) procure and liquidate contracts, iii) implement, monitor and supervise the component projects in the province, iv) prepare progress reports and submit them to DARD/PPC/CPMU, and v) coordinate with DPCs, CPCs and other relevant institutions concerned.
DPC	DPC's function is to provide support or cooperation at the field level. It should be involved in the key processes of the project, such as monitoring of the project activities, information dissemination, and livelihood improvement.
Contractors	Contractors will be public institutions or private companies responsible for actual implementation of the respective project activities on a contract basis with CPMU or PPMU. In the JICA2 project, NAEC, PFMBs, PAECs, and state universities, all of which are the public institutions at the national or provincial level, have been hired by the project for implementation of the project activities.
CPC	CPC, as a representative of commune, will play important roles as a supporter, facilitator, and decision maker in the respective processes of the project. It should be particularly involved in i) PLUP and group formation, ii) information dissemination, iii) discussion on phase-out/phase-in activities, iv) identification of development needs of small-scale rural infrastructure, v) O&M of the facilities, vi) livelihood development activities, and vii) training on forest fire control.
Local communities	Local communities will be the field implementers of the forest development and improvement activities under the contract with PFMBs/SUFMBs. As they will develop the lands over which they have used with either *de facto* or *de jure* land use rights in principle, they are expected to be managers in collaboration with PFMBs/SUFMBs in the post-project period. They should be involved in the entire processes of the project, especially in the following project activities, as decision makers and field implementers of the project activities. - PLUP and group formation (as decision makers of the project areas) - Site demarcation (as field implementers of the forest development activities) - Baseline survey (as key informants) - Information dissemination (as participants) - Improvement of watershed forests (as field implementers) - Identification of priority small-scale rural infrastructure (as decision makers and end users) - Support for livelihood development (as field implementers) - Forest fire prevention (as field implementers)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(2) Other Important Stakeholders at the Field Level

Aside from those listed in the previous sub-section, support from the following stakeholders is needed to ensure the smooth operations of the component projects as well as the sustainability of the project activities on the ground level.

a. District/commune extension workers

District and commune extension workers shall be involved in the project activities, especially i) PLUP and formation of village working groups, ii) phase-out/phase-in activities, and iii) all

the activities under the component of "support for livelihood development," since they would be the key players in agriculture and forestry extension in the target communes after the project. Particularly, they are expected to enhance their knowledge and capacities by being involved in the processes and activities of support for livelihood development, especially development of model/ demonstration sites and technical training courses, so that they could provide technical assistance and coaching to local communities in the target communes in the post-project period.

b. Key villagers

Village leaders are expected to play a role as focal persons when the contractors will carry out the project activities, such as PLUP, site demarcation, forest development and improvement activities, and livelihood development activities. Moreover, other local households or members of the mass organizations, such as youth and women's groups, may be hired by the contractors as field coordinators or facilitators when they organize meetings and workshops of the project activities in the course of the project.

J.5.2 Implementation and Procurement Methods

(1) Implementation Methods

The project activities will be implemented basically by two ways: i) direct implementation by CPMU or PPMUs with or without technical and managerial assistance from the project consultant and ii) implementation by outsourcing to external organizations, which are mainly public institutions, such as NAEC, FIPI, PAEC, PFMBs, SUFMBs, state universities, state research institutions, and design and consulting centers.

The following table shows the proposed implementation methods of the key project activities programmed in the respective project components.

Implementation Methods of the Key Project Activities

Component	Main Activities	Implementation method	Potential Executors
Survey and detailed planning	- Procurement of satellite images	Direct implementation or Contract-out	CPMU with the project consultant or Contractor for PLUP
	- PLUP and group formation	Contract-out (LCB)	NAEC, PAECs, University, NGOs
	- Site demarcation and set-up of land marks	Direct appointment (Odering)	PFMBs and SUFMBs
	- Socio-economic survey	Contract-out (LCB)	PAECs, Universities, etc.
	- Surveys and DDs of forest development activities	Ditto	Design and consulting centres, PFMBs, Consulting firms
	- Technical guidance on PLUP, GPS, and GIS	Ditto	NAEC, PAEC, FIPI
Improvement of watershed forests	- Forest development and improvement	Direct appointment (Odering)	PFMBs and SUFMBs
	- Technical guidance	Direct implementation or Contract-out (LCB)	PPMUs with the project consultant or PAECs, Universities, etc.
	- Phase-in/phase-out activities	Contract-out (LCB)	NAEC, PAEC, Universities, NGOs.
Improvement of silviculture infrastructure	- Surveys and detailed designs	Contract-out (LCB)	Design and consulting centres, Consultant firms
	- Tender	Direct implementation	PPMUs
	- Construction of facilities	Contract-out (LCB)	Construction companies
Improvement of small-scale rural infrastructure	- Surveys and detailed designs	Contract-out (LCB)	Design and consulting centres, Consultant firms
	- Tender	Direct implementation	PPMUs
	- Construction of facilities	Contract-out (LCB)	Construction companies

Component	Main Activities	Implementation method	Potential Executors
Support for livelihood improvement	- Selection of priority options, Survey on potential model sites, and Development of model sites and technical training, Guidance and training on financial management, and Cross visits	Contract-out (LCB)	PAECs, NGOs, etc.
	- Market survey	Ditto	NAEC, PAECs, Universities, etc.
Forest fire prevention	- Procurement of equipment	Contract-out (LCB)	-
	- Training and forest fire drills	Contract-out (Direct Appointment)	Regional or Provincial Forest Protection Agencies
Project managementJICA	- Establishment of organizations	Direct implementation	MARD and DARD
	- Development of regulations and monitoring system	Ditto	MARD, PPC, MBFPs, DARDs
	- Reassessment of the target sites	Ditto	CPMU and PPMUs
	- Procurement of project equipment	Ditto	Ditto
	- Development of TORs of contractual works	Ditto	CPMU and PPMUs with the project consultant
	- Information dissemination	Ditto	Ditto
	- Production and publication	Ditto	Ditto
	- Study tours	Ditto	Ditto
	- Review meetings	Ditto	CPMU and PPMUs
	- Development of monitoring forms	Ditto	CPMU with the project consultant
	- Regular monitoring	Ditto	CPMU and PPMUs with the project consultant
	- Initial evaluation	Ditto	Ditto
	- Mid-term evaluation	Contract-out (LCB)	FIPI and NAEC, Universities, etc.
	- Terminal evaluation (Physical)	Ditto	FIPI, Universities, etc.
	- Terminal evaluation (Social)	Ditto	NAEC, PAEC, Universities, etc.
Consulting services	- Consulting service	Contract-out	International and national consulting firms

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Moreover, the field activities of forest development and improvement such as afforestation, ANR, and protection of natural forests, will be sublet to the village working groups organized at the village level.

(2) Procurement Methods

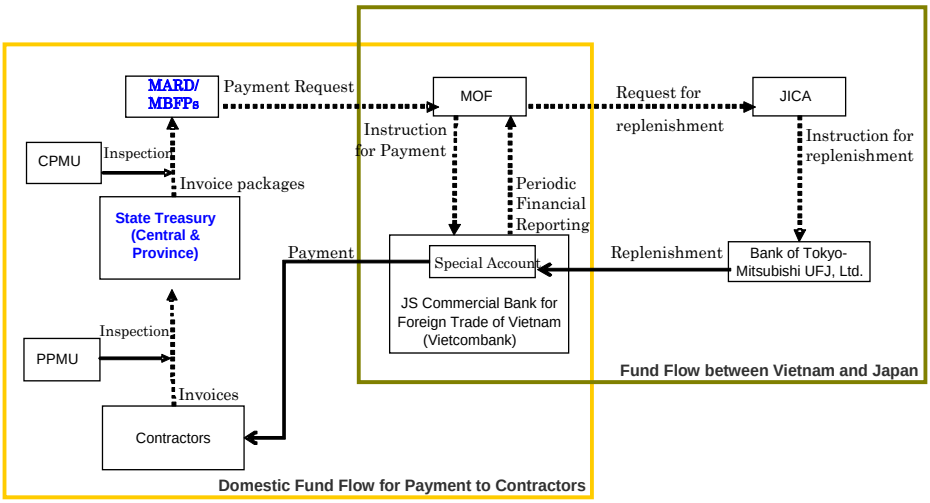
Direct appointment method is to be employed for procurement of contractors for the project activities which only specific public institutions are considered capable to carry out from the financial, technical, and managerial points of view. Among others, the following project activities will be implemented by the public institutions directly appointed by CPMU or PPMUs.

- Site demarcation (contracted out to PFMBs/SUFMBs)
- Forest development and improvement (contracted out to PFMBs/SUFMBs)

Aside from the above-listed activities, CPMU or PPMUs will chose the procurement method, local competitive bidding or direct appointment, considering i) technical and financial capacities of potential executors/contractors and ii) difficulties of the respective project activates prior to the procurement of contractors for the works. The project consultant should be procured by the international competitive bidding (ICB) method.

(3) Fund Management

The project budget will be managed in the same manner as managed under the JICA2 project. The following flow chart shows the overall fund management of the budget for the project.



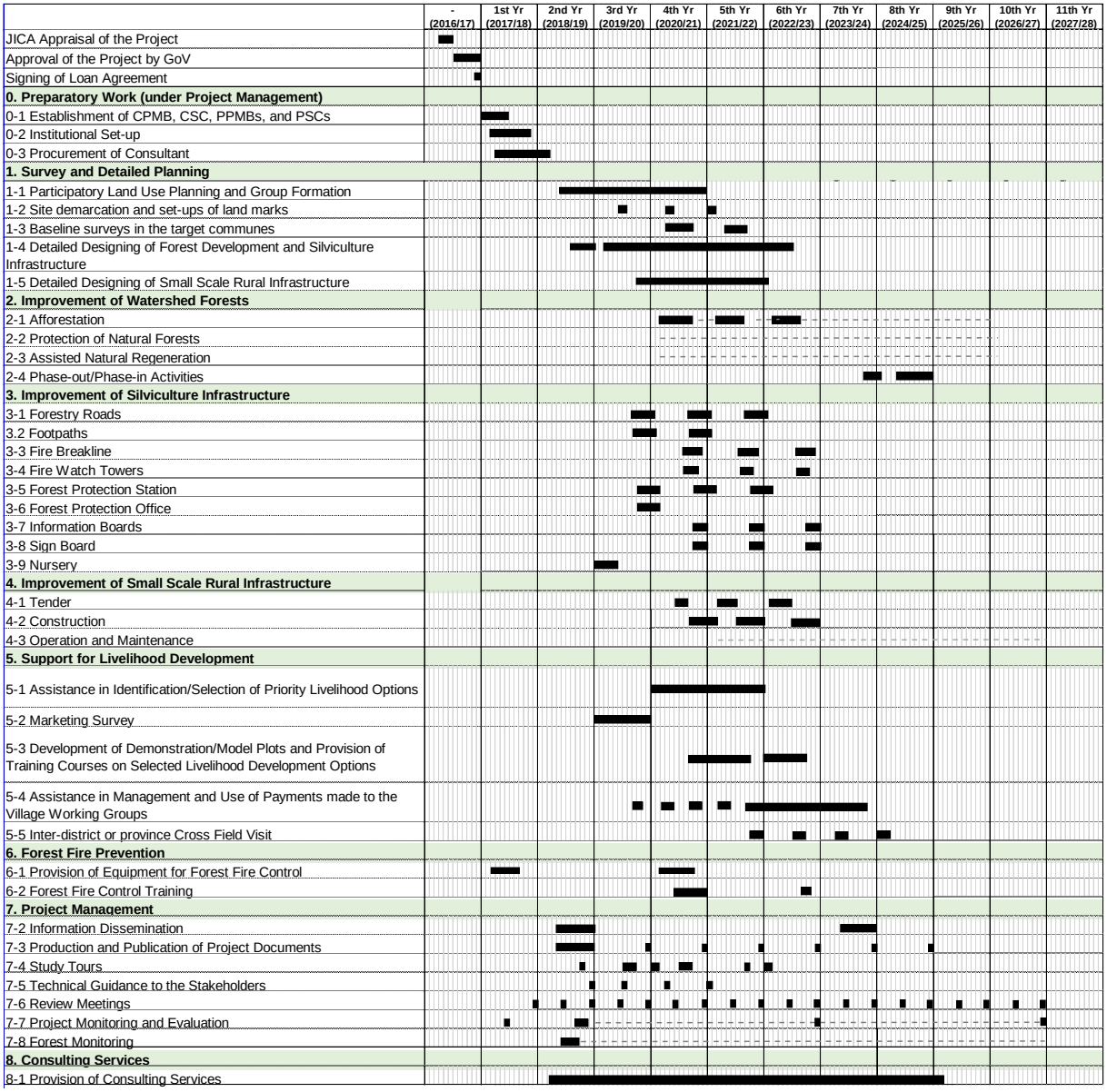
Overall Fund Management of the Project

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

As illustrated above, payment proposals (invoices) submitted by contractors are first reviewed and inspected by PPMU. PPMU then, submits an approved proposal to the provincial state treasury for review. Packaged invoices are forwarded by the provincial state treasury to CPMU for processing of payment. Then, CPMU reviews the payment proposals and further endorse them to MoF for payment. Finally, MoF will perform reviews and eventually instructs Vietcom Bank for the payment of contractors.

J.5.3 Implementation Schedule

The proposed implementation schedule of the project is shown in **Figure J.1** attached to this report, and summarized below.



Draft Implementation Schedule of the Project

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

As shown in the schedule, the majority of the project activities will be undertaken from the middle of the second year (2018/2019) to the end of the ninth year (2025/2026) of the project. The physical development activities, such as forest development and improvement activities (afforestation, ANR, and protection of natural forests), improvement of silviculture infrastructure, and improvement of small-scale rural infrastructure, will be implemented in a phased manner by dividing them into three batches. The mid-term evaluation of the project performance will be carried out in the fifth year (2021/2022), while the terminal evaluation will be conducted in the end of the tenth year (2026/2027).

J.6 Project Evaluation

The viability of the project was evaluated from economic and financial points of view. A cost and benefit analysis was made for the economic analysis, while the financial capacity of the provincial governments and project effect on household economy were assessed for the financial evaluation. Intangible benefits which could not be quantified in monetary values were also itemized in order to draw attention to the indirect benefits of the project.

J.6.1 Economic Evaluation

J.6.1.1 Economic Cost of the Project

For the economic evaluation of the project, the standard conversion factor (SCF) and shadow wage rate (SWR) were used for conversion of the project cost estimated from current market prices into the economic cost.

(1) Project Cost

The total economic cost of the project was estimated at VND 1,243 billion as shown below.

Economic Cost of the Project

(Unit: VND: Million)

	Cost Items	Financial Cost	CF (Conversion Factor)	Economic Cost
1	Survey and Detailed Planning	65,131	0.9	58,617
2	Improvement of Watershed Forests	984,878	0.6 for labour cost, 0.9 for other cost	638,146
3	Improvement of Silviculture Infrastructure	112,469	0.8	89,974
4	Small scale infrastructure	148,755	0.8	119,004
5	Support for Livelihood Development	44,006	0.9	39,607
6	Forest Fire Control	16,881	0.9	15,195
7	**Sub-total (1~6)**	**1,372,120**		**960,544**
8	Project Management	125,580	0.9	113,019
9	Price contingency	354,225	None *	0
10	**Sub-total (7+8+9)**	**1,851,925**		**1,073,563**
11	Physical Contingency (5% of items 10)	74,885	-	53,678
12	Consulting Services	115,880	1.0	115,880
13	Tax and duty	15,173	-	0
14	**GRAND TOTAL (10+11+12+13)**	196,778	None *	0

* The price contingency and TAX is excluded from the economic cost

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(2) O&M Cost

The O&M costs for the components of "improvement of watershed forests," "improvement of silviculture infrastructure," and "improvement of small-scale rural infrastructure were calculated on the basis of the following assumptions.

O&M Cost of the Project

Cost Items	Assumption
Improvement of Watershed Forests	The project areas, namely plantations established, forest rehabilitated and natural forest protected through the project, will be protected by the village working groups.
Improvement of Silviculture Infrastructure	Silviculture infrastructure facilities developed through the project will be maintained from the 7th year of the project. The O&M cost is estimated at 1% of the capital investment cost (VND 900 million) of the same component.
Improvement of small-scale Rural Infrastructure	Likewise, small-scale rural infrastructure facilities improved by the project will be maintained from the 7th year of the project with use of 1% of the capital investment cost (VND 1,190 million) of the same component.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

(3) Replacement cost

The equipment and facilities installed in the components of "improvement of silviculture infrastructure" and "improvement of small-scale rural infrastructure" need to be replaced at intervals of 20 to 30 years. The replacement costs estimated for the evaluation are shown below.

Replacement Cost of the Project

Cost Category	Item	Replacement Period	Total Economic Cost
Improvement of Silviculture Infrastructure	Fire watch towers, Information boards, Nursery	20 years	VND 7,044 million
	Forest guard office, Forest guard station	30 years	VND 9,895 million
Improvement of Small scale Rural Infrastructure	Irrigation system, Water supply system	20 years	VND 34,092 million

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.6.1.2 Economic Benefits (Estimation of Economic Development from the Mcro Economic Point of View)

(1) Types of Benefits

The following economic benefits are expected to be generated through the implementation of the project.

a. Benefits from collection of firewood, timber, and resin from the plantations developed in protection forests
b. Benefits from CO_2 sequestration by afforestation and assisted natural regeneration
c. Benefits from reduction of CO_2 emissions through reduction of deforestation and forest degradation

The following table is the summary of the economic benefits estimated for the economic evaluation of the project.

Summary of the Economic Benefits

Type of benefits	Project activities related	Source of benefit (assumption)	Unit price	Volume (for the evaluation period)
Collection of firewood, timbers, & resin	Afforestation in the target protection forests	■ Fuel wood (*Pinus massoniana & Acacia mangium*) ■ Timber (*Pinus massoniana & Acacia mangium*) ■ Resin (*Pinus massoniana*)	VND 600,000/m^3 VND 550,000/m^3 VND 1,500,000/m^3 VND 1,150,000/m^3 VND 25,000/kg	4.5 m^3/ha 19.0 m^3/ha 6.8 m^3/ha 76 m^3/ha 40,130 kg/ha
CO_2 sequestration	Afforestation and ANR without enrichment in the target protection forests and nature reserves	■ CO_2 sequestration in Afforested areas ■ CO_2 sequestration in ANR areas	US$ 3.3/ t CO_2 US$ 3.3/ t CO_2	10.46 t CO_2/ha 2,80 t CO_2/ha (Total 165,825 t CO_2/year)
Reduction of CO_2 emission	Protection of natural forests in the target protection forests and nature reserves	■ Reduction of CO_2 emission from natural forest protection	US$ 3.3/ t CO_2	8.81 t CO_2/year/ha (Total 338,499 t CO_2/year)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The total values of the economic benefits over the evaluation period are summarized below.

Summary of the Economic Benefits

Province	Type of benefits	Total estimated values
Dien Bien	Collection of forest products	VND 1,710,538 million
	CO_2 sequestration	VND 91,356 million
	Reduction of CO_2 emission	VND 225,804 million
Lai Chau	Collection of forest products	VND 3,545,578 million
	CO_2 sequestration	VND 215,664 million
	Reduction of CO_2 emission	VND 0
Son La	Collection of forest products	VND 1,169,229 million
	CO_2 sequestration	VND 93,528 million
	Reduction of CO_2 emission	VND 214,948 million
Hoa Binh	Collection of forest products	VND 1,115,098 million
	CO_2 sequestration	VND 79,948 million
	Reduction of CO_2 emission	VND 540,193 million
Overall	Collection of forest products	VND 7,540,443 million
	CO_2 sequestration	VND 480,549 million
	Reduction of CO_2 emission	VND 980,945 million

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.6.1.3 Cost-Benefit Analysis

The flow of the economic cost and economic benefits during the evaluation period is presented below.

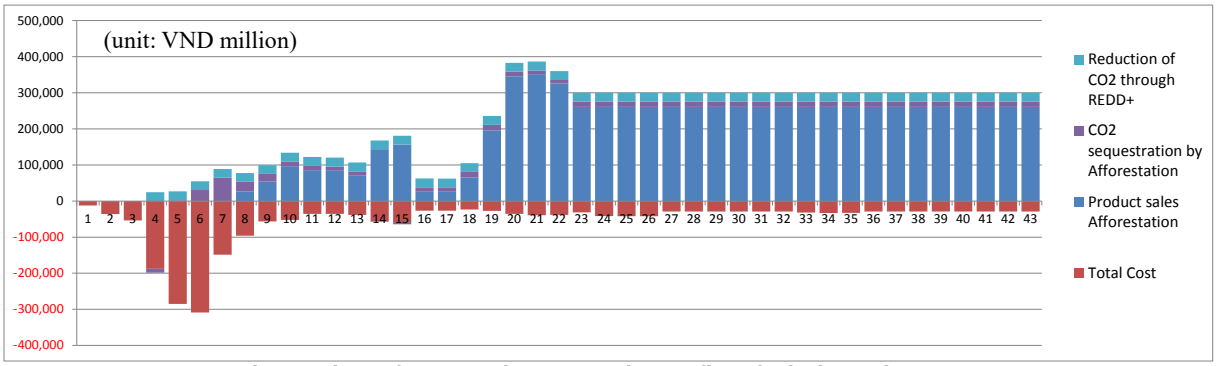


Figure Flow of Economic Cost and Benefits of whole Project

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The economic rate of return (EIRR), cost-benefit ratio (B/C) and the net present values (NPV) were estimated by using the discount rate of 10% to validate the economic feasibility of the project. The results of the estimation of the respective indicators are shown below.

Results of the Economic Analysis

	EIRR	B/C	NPV
Whole Project	10.7 %	1.08	VND 75,037 million

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.6.2 Other Intangible Benefits

In addition to the quantified benefits described above, the project is expected to generate other intangible benefits, which could not be quantified in financial value due to a lack of related data. Some of the intangible benefits are summarized below.

Summary of Intangible Benefits

Expected Benefits	Project Component	Remarks
Provision of clean water to the downstream users	Improvement of Watershed Forests	The forest development and improvement activities will results in the expansion of forest areas and improvement of the quality of forests in the critical watershed; and eventually contribute to the provision of clean and s water to the downstream users, especially dams for hydropower generation.

Expected Benefits	Project Component	Remarks
Stabilization of peak flows and reduction of downstream flooding	Improvement of Watershed Forests	Likewise, the forest development and improvement activities will reduce the occurrence of flash floods owing to the stabilization of peak flows in rivers.
Reduction of soil erosions and inflow of sedimentation into rivers	Improvement of Watershed Forests	Restoration and rehabilitation of forests through afforestation and ANR of the forest development and improvement activities will reduce the risks of soil erosion and slope failure in the project areas. Reduction of inflow of sedimentation into rivers will further contribute to the sustainable operations of hydropower plants.
Climate and moisture regulation	Improvement of Watershed Forests	In addition to the reduction of GHG emission through reduction of deforestation and forest degradation, the increase of forest coverage through afforestation and ANR will also contribute to the improvement of micro climate which more favorable for the growth of trees.
Market access improvement	Small Scale Infrastructure Development	Improvement of commune and village roads through the component of "improvement of small-scale rural infrastructure" will allow local communities to transport their products to market easily, access to market and agricultural extension information, and access to agricultural inputs as well as reasonable credit schemes. As a result, the livelihood conditions of local communities will be significantly improved by improvement of rural roads in the areas.
Improvement of agricultural productivity	Small Scale Infrastructure Development	The component of "improvement of small-scale rural infrastructure" will also improve/upgrade the existing irrigation systems, which will improve the productivity of not only the staple crops but also cash crops such as vegetables. Hence, such an intervention is expected to substantially improve living conditions of local communities.
Reduction of forest fires	Forest Fire Control	Proper management of forest and fire prevention activities will reduce the risks of forest fires and minimize fire damage to not only forests but also farms and other economic property.
Biodiversity conservation	Improvement of Watershed Forests	Protection of natural forest will contribute to the protection and conservation of valuable ecosystems in the target protection forests and nature reserves. Restoration and rehabilitation of forests in bare lands / grasslands / bushes and woodlots will also result in the increase of connectivity of the existing wildlife habitats.
Increase the income of local communities	Support for Livelihood Development	Local communities will have opportunities to learn skills and techniques effective in improving their livelihoods and developing alternative sources of cash income through the component of "support for livelihood improvement."

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.6.3 Financial Analysis

The focus of the financial analysis was on the assessment of the financial capabilities of two levels of stakeholders, the provincial governments and local communities. For assessment of the financial capability of the provincial governments, the preparatory survey team analyzed their capacity to pay: i) the counterpart funds for operations of the projects and ii) the part of the loan portion of the component projects implemented in the provinces assuming the on-lending scheme was applied to the project.

J.6.3.1 Assessment of the Financial Capacity of the Provincial Governments

The affordability of the counterpart funds required for operations of the component projects in the respective target provinces was first assessed as compared to the average provincial budgets, especially those categorized as "development investment expenditures." Moreover, the financial soundness of the provincial governments, in the case where the on-lending scheme would be adopted, was assessed by checking if the provincial governments could pay 50% of the loan amount for the component projects implemented in the respective provinces. In the assessment, the average amount of budget allocated to "development investment expenditures." was compared to 50% of the highest annual loan disbursement in the respective provinces. The following table shows the results of the assessments.

Capacity of Project Implementation

(Unit: VND million)

Items	Dien Bien	Lai Chau	Son La	Hoa Binh
1. Capacity to pay the counterpart funds				
1.1 Annual counterpart funds required	783~12,741	783~23,092	783~12,245	783~13,537
1.2 Development Investment expenditures	**260,869	322,400	*386,100	**259,557
1.3 Proportion	0.3%~4.9%	0.2%~7.2%	0.2%~3.2%	0.3%~5.2%
2. Capacity to pay the part of loan				
2.1 50% of the loan amount in the highest year	49,073 (6th year)	103,816(6th year)	48,004 (6th year)	55,806 (6th year)
2.2 Development Investment expenditures	**260,869	322,400	*386,100	**259,557
2.3 Proportion	18.8%	32.2%	12.4%	21.5%

* In Son La, the planned budget amount in 2014 is used as the data in 2015 is not available.

** In Lai Chau and Hoa Binh provinces, two budget items related to the investment expenditures are not separated in the financial statement. The amount of "Development investment expenditures" is assumed to be 20% of the total expenditures based on the average rate of other provinces.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The results shown above indicate that:

i) It would not be difficult for the target provinces to secure the counterpart budget necessary for the project implementation; and

ii) The target provinces might be capable to repay 50% of the loan amount allocated to the respective provinces in theory even if the on-lending scheme is applied to the project, although it would not necessarily be easy for the provincial governments coordinate the other priority development activities planned by other sectors in the provinces.

J.6.3.2 Financial Impact on Household Economy (Estimation of Socio-economic Development from Household Point of View)

A household budget analysis was made to assess the potential financial impact on local households who would participate in the forest development and improvement activities. The gross household income from the project activities were assessed assuming that the following four models would be the typical cases in which the majority of local communities would engage.

Model 1 Afforestation (1): 2 ha of mix plantation of Indigenous spices with *Acacia mangium* in Protection Forest
Model 2 Afforestation (2): 2 ha of plantation of Indigenous spices in Nature Reserves
Model 3 ANR: 5 ha of ANR without enrichment
Model 4 Protection: 20 ha of protection of natural forest

The labor wage for the forest development and improvement activities, sales of forest products, and payment from the PFES scheme were considered as major sources of income for local communities. Only harvesting cost were estimated as they might need to hire external laborers for harvesting. Moreover, it was assumed that 15% of the total sales revenue would be shared with the relevant government authorities according to the benefit sharing mechanism drafted by the JICA2 project. The results of household budget analysis are tabulated below.

Model 1: 2 ha of Afforestation in Protection Forest

(unit: VND million/year)

Items / Year	1	2	3	4	5 - 14	15 - 25
1. Gross income						
1) Wage Payment from PFMBs/SUFMBs <1	37.3	22.4	18.2	7.1	0 – 0.4	0.4
2) Sales of Forest Resources (85%)	0	0	0	0	0 – 88.0	0.0
2. Cost of Harvesting	0	0	0	0	0 – 25.0	0.0
3. Gross revenue	37.3	22.4	18.2	7.1	0 – 63.0	0.4
Average gross revenue	**21.3**				12.1	0.4

Note: <1 The payment from the PFES scheme was assumed to start in the 10th year at a rate of VND 200,000/ha/year.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Model 2: 2 ha of Afforestation in Nature Reserve

(unit: VND million)

Items / Year	1	2	3	4	5 - 14	15 - 25
1. Gross income						
1) Wage Payment from PFMBs/ SUFMBs <1	37.3	22.4	18.2	7.1	0 – 0.4	0.4
2) Sales of Forest Resources (70%)	0	0	0	0	0	0
2. Cost of labor (for harvesting)	0	0	0	0	0	0
3. Gross revenue	37.3	22.4	18.2	7.1	0 – 0.4	0.4
Average gross revenue	13.2				0.2	0.4

Note: <1 The payment from the PFES scheme was assumed to start in the 10th year at a rate of VND 200,000/ha/year.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Model 3: 5 ha of ANR without enrichment

(unit: VND million)

Items / Year	1	2	3	4	5 - 14	15 - 25
1. Gross income						
1) Wage Payment from PFMBs/ SUFMBs <1	9.1	9.1	9.1	2.0	2.0	2.0
2. Cost of labor	0.0	0.0	0.0	0.0	0.0	0.0
3. Gross revenue	9.1	9.1	9.1	2.0	2.0	2.0
Average gross revenue	**8.3**				**2.0**	**2.0**

Note: <1 The payment from the PFES scheme was assumed to start in the 6th year at a rate of VND 200,000/ha/year.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Model 4: 20 ha of protection of natural forest

(unit: VND million)

Items / Year	1	2	3	4	5 - 14	15 - 25
2. Gross income						
1) Wage Payment from PFMBs/ SUFMBs <1	8.0	8.0	8.0	8.0	4.0-8.0	4.0
2. Cost of labor	0.0	0.0	0.0	0.0	0.0	0.0
3. Gross revenue	8.0	8.0	8.0	8.0	4.0-8.0	4.0
Average gross revenue	**8.0**				**4.4**	**4.0**

Note: <1 The payment from the PFES scheme was assumed to start in the 6th year at a rate of VND 200,000/ha/year.

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The results of the assessment indicate that local household who participate in the forest development and improvement activities could earn cash income of VND 8.0 ~ 21.3 million/year for the first four years, which may be equivalent to 23% ~ 61% of the average households income in the target communes assuming that the average per capita annual income is VND 6~7 million and one family has five family members on average based on the results of the household survey made by the preparatory survey team in April and May 2016. In particular, substantial cash income are expected to be paid to local households who engage in afforestation activities. Furthermore, they are expected to be able to earn VND 0.3 million/year ~ 6.3 million/year on average for 20 years after the end of the project support in protection forests on conditions that local communities and PFMBs concerned would exchange the collaborative management agreement with the benefit sharing mechanism

developed by the project. It is, however, necessary to develop another benefit sharing mechanism for collaborative management of forests in nature reserves in addition to the PFES scheme to ensure the sustainable forest management of forests in such areas in the post-project period.

J.7 Environmental and Social Considerations and Potential Impacts

J.7.1 Environmental Considerations and Potential Impacts

Table J-3 shows the results of initial environmental screening and assessment by using the envionmental checkists for two types of project: i) forestry development and ii) infrastructure development, in consideration of the nature of the project. The following sections further describes the potential environmental and social impacts that might be generated by the project.

J.7.1.1 Positive Environmental Impacts

The project is primarily focused on restoration, rehabilitation, and protection of forests; therefore, the associated activities are expected to generate various environmental benefits, which include:

- Climate change mitigation through reduction of GHG emissions from deforestation and forest degradation;
- Enhancement of carbon stocks and sequestration;
- Regeneration of natural or buffering/connecting forest habitats offering opportunities for wild fauna and flora to establish and recover;
- Enhancement of protection and conservation of protected areas, species, and habitats of significantly precious species; and
- Improvement of forest ecosystem services, such as watershed protection, protection of soils, and regulation of hydrological flows.

J.7.1.2 Negative Environmental Impacts

Table J-4 attached to this report presents the potential environmental impacts or risks associated with each project component based on the results of initial environmental examination (screening and scoping) in the course of the survey and during the participatory consultations. It is important to note that the table only focuses on the physical components of the project as there is no environmental impact associated with project management, monitoring and evaluation and project consultant. Key environmental considerations are highlighted as follows.

(1) Habitat Disturbance and Biodiversity Loss from Inappropriate Afforestation Techniques

Habitat disturbance and biodiversity loss are important considerations in this project due to the ecological significance of the project landscape as a whole, as well as the values of the respective target protection forests and nature reserves. In fact, some target areas have been designated as nature reserves on the basis that they support populations of nationally and globally threatened fauna and flora.

The inappropriate design and implementation of afforestation activities could have deleterious impacts on habitats and biodiversity. This can occur particularly when exotic or timber species are planted on natural non-forest habitats. In general, natural regeneration should always be preferential, followed by planting with indigenous species. Afforestation should be reserved for only bare or severely degraded forest lands. It is also suggested that PPMUs should follow the proposed designs of afforestation, namely i) mix plantation of native species

(dominant species) and economic/fast growing species (subordinate species) in protection forests and ii) mix plantation of several types of native species in special use forests when making the detailed designs of the respective target areas.

(2) Habitat Loss, Disturbance, Biodiversity Loss and Other Negative Impacts from Construction of Forestry Roads:

Construction of forest roads may also lead to the following adverse effects on important ecosystems and biodiversity in the target protection forests and nature reserves.

i) Habitats of wildlife may be lost and disturbed by the clearance of trees and forests.

ii) Construction of forest roads may cause a) deposition of earth into water stream especially in hilly and mountainous areas where the road design necessarily requires compacting of slopes, b) chemical spills, and c) air and nose pollution which may disturb resident wildlife.

iii) In the longer term, forest roads may also split wildlife populations with disastrous consequences for sub-populations, gene pools and even species given rapid forest degradation and biodiversity decline in the northwest region. Another long term impact of roads is that they may facilitate the removal of wildlife and in general disturb forest ecosystems. For this reason, construction of new roads in forest areas should be carefully considered in general as an activity for this project, but eliminated especially in SUF areas. Due care should be taken to ensure that any road upgrading does not involve any clearance of natural forest and should not exceed 5 ha of forest clearance in other types of forests as this would lead national level clearance in protection forests per Decree No. 18/2015.

(3) Various Minor, Small-scale and Temporary Environmental Impacts associated with Construction/Rehabilitation of Small-scale Rural Infrastructure

Again, in general small-scale rural infrastructure investments should be focused on upgrading existing infrastructure rather than constructing new facilities. Minor environmental impacts associated with such sub-projects may include deposition of earth into water streams, potential chemical spills, air and noise pollution.

(4) Minor and Small-scale Environmental Impacts associated with Livelihood Support Activities

Certain livelihood support models are likely to have certain relatively minor environmental impacts associated with them. For example, agricultural models may involve the use of fertilizers and pesticides, excessive water consumption or some pollution during processing. Such deleterious impacts should be managed and mitigated through technical guidance on sustainable production methods during implementation.

J.7.2 Social Considerations and Potential Impacts

J.7.2.1 Positive Social Impacts

While the primary objective of the project is the improvement of watershed forests, the project is also expected to provide a number of social co-benefits, such as:

- Improvement of physical capital for rural poor communities through upgrading of community infrastructure;

- Improvement of financial capital through provision of employment and income generating opportunities to poor communities;
- Improvement of livelihood improvement opportunities through support for capacity building and training on livelihood development activities; and
- Improvement of natural capital through enhancement of ecosystem services.

J.7.2.2 Negative Social Impacts

The potential social impacts or risks identified in the course of the survey through expert assessment as well as participatory consultation are presented in **Table J-5** attached to this report.

Overall, social considerations are of greater concern than environmental issues. The northwest region is inhabited by diverse ethnic minority communities and groups who comprise the majority of project affected households. There are potentially serious social safeguard issues linked to their land and forest tenure rights which would cause impacts on the livelihoods of such people, many of whom are amongst the poorest and most vulnerable in Vietnam and dependent on forest lands and resources. More details of the analysis and explanation of the complex sensitive socio-political context as well as the specific issues in the target provinces are provided in the Environmental and Social Management Framework (ESMF) developed by the preparatory survey team, which is shown in the Final Report prepared by JICA in 2016. Some highlights of the key social concerns are summarized below.

(1) Involuntary Resettlement (Physical Relocation)

Firstly, it is clear that the proposed project will not involve any physical relocation of households.

(2) Loss of Assets or Acess to Assets (including land – land aquisition)

This aspect of involuntary resettlement in the proposed project refers to two types of land acquisition situations:

- Loss of productive land where the household has an existing legal/formal land right; and
- Loss of productive land where the household has no existing/formal land right.

The land and forest land tenure situation in North-west Vietnam is extremely complicated, sensitive, and there are many 'grey' areas. Although the survey team has done its best to try to understand the various situations in the project area, it was difficult for the team to grasp a clear picture of the land tenure issues (including customary use) in the project areas due to time constraints of the survey, the large number of sites and the complexity of the situation at many sites. More detailed and in-depth surveys are required for clear understanding of these issues as the project is further developed.

a. Loss of productive land where the household has an existing legal/formal land right

The most serious safeguard issue for the project is the potential scenario that lands that are at some stage in the process of formal allocation to households or communities; are allocated or re-allocated to FMBs supported by the project.

The original project proposal tentatively indicated or suggested that forest land allocation (FLA) would be an activity or potential activity of one of the components (forest inventory and planning). It was recommended that this activity be removed from the loan project design

at an early stage in the preparatory survey for a variety of reasons, not least that such activities are long, arduous, difficult to implement, expensive etc, but also due to social considerations and the potential for ethnic minority land acquisition, which a) is to be avoided where feasible according to JICA guidelines and b) would likely mean that the project would have to be re-categorised as Category A. Hence, the project plan proposed by the preparatory survey team does not include the activities relating to forest land allocation, if anything, a series of close consultations with local communities, which are necessary for implementation of the project in the areas allocated local communities, are proposed. This recommendation stands and is re-iterated here: The loan project should not finance any forest land allocation (or re-allocation).

However, it is essential to note in this report that processes of FLA might be in progress in the project provinces anyway, which are to some extent influenced by the project (to be selected as the project areas) though they are not directly linked with project activities. Thus, according to our judgment, FLA should therefore be considered in the context of JICA guidelines, even if the land allocation would be completed prior to the start of the loan implementation period. This however is the first grey area i.e. the JICA guidelines are not explicit in how such situations are to be treated (where there are actions which are linked and/or relevant to implementation of the loan project, but are not to be financed by the loan project), nor any clear guidance specifying at what point linked actions/measures must be completed prior to loan implementation for them not to necessitate the application of the JICA safeguard policies.

To provide more specific context, in the project provinces, there are several FMBs that are or may be currently in the process of accumulating lands, particularly in Dien Bien province (e.g. Dien Bien, Tuan Giao, Muong Cha PFMBs and Muong Phang SUFMB). FLA to FMBs is being pursued for more effective management and control of the forests, facilitation of distribution of PFES funds and, in part, participation in the proposed JICA loan project. In protection forests, one of the primary reasons for promotion of FLA is the existing MARD regulation on the management of protection forests, which clearly state that PFMB should have more than 5,000 ha of allocated protection forests to be officially registered. The extent to which the project has affected their motivation is not fully clear, but there might be a possibility that the project might have enhanced DARDs' interest in FLA to FMBs as one of the criteria for the first selection of the target sites was the official allocation to FMBs.

The following protection forests and nature reserves might have the land tenure conflict issues although the situation is extremely unclear at this moment due to the lack of information.

- Dien Bien Dien Bien Protection Forest, Tuan Giao Protection Forest, and Muong Phang Nature Reserve
- Son La Quynh Nhai Protection Forest
- Hoa Binh Ngoc Son – Ngo Luong Nature Reserve

The situations of the target areas listed above are highlighted in Annex-I of the Final Report, but there is a need to carry out in-depth surveys to clarify more details of the current situations as well as the possibility of land acquisition prior to the inclusion of those sites as the project areas. Considering the concerns about the potential social risks described above, the preparatory survey advised DARDs of Dien Bien, Son La, and Hoa Binh not to proceed the FLA process for the proposed project indicating that the site where the FLA to FMBs is

progressed might be excluded from the project areas and even the sites allocated to local communities could be selected as the project areas.

b. Loss of productive land where the household has no existing/formal land right

The project proposes a considerable area for afforestation and ANR. Much of this is proposed within the boundaries of lands formally allocated to PFMBs or SUFMBs. Therefore, in general PFMBs or SUFMBs are the de jure forest owner and are the legal entity entitled to make landuse decisions such as which areas are available for afforestation and ANR. However, in reality many of these PFMB/SUFMB areas are interspersed with lands under cultivation or at various stages of recovery within traditional upland swidden-fallow cycle employed by the different ethnic groups resident in or adjacent to the PFMB/SUFMB area. In some cases, land has been illegally converted by recent migrants or new households. In many cases however ethnic minority households may have 'reasonable' claims to land based on customary or traditional land tenure systems going back many generations, pre-dating the establishment of PFMBs/SUFMBs, or indeed the modern Vietnamese State itself but whose claims were never formally recognized. In this case a project decision to afforest an area of 'bare' or 'degraded' land may in fact, effectively be acquiring a given households productive agricultural land. In such areas with steep slopes and marginal soils, it is necessary to leave land fallow to recover before once again becoming productive. Thus, afforestation may lead to future restrictions on ethnic minority livelihoods and food insecurity. This issue is prevalent at all sites in the project area and in general throughout the mountainous Northwest sub-region.

Therefore, it is proposed that this situation be resolved through consultation, negotiation and detailed participatory landuse planning during implementation. Where there is a clear conflict situation leading to a loss of de facto productive assets and livelihoods, such lands should be eliminated from afforestation/ANR plans. In this manner involuntary resettlement (including land acquisition) can be avoided.

(3) Loss of income sources or livelihoods

The loss of land (both land that is formally owned by households and land which is used informally) will have a direct impact on livelihoods and income sources for rural upland poor ethnic minority households in the project area. Households are almost unanimously and almost entirely dependent on upland agriculture as their main source of income as well as means to meet their own subsistence needs. Thus, any loss of productive land could have significant impacts. However, those who are willing or agree to use their lands (either formally owned or informally used) are also expected to gain substantial income from the project activities and be able to have continuous income from forest resources as well as PFES even after the project under the collaborative management contracts with PFMBs/SUFMBs.

Furthermore, a set of measures effective for recovering the loss of income source or livelihoods should be examined and implemented as one of the project component; hence, it is considered that the sources of income or livelihood conditions of local communities, especially those participating in the project, could be enhnaced over the course of the project.

(4) Restricted access to protected areas resulting in adverse impacts on incomes and livelihoods

The project does include a number of protected area sites. At all sites there are local ethnic minority populations residing within and/or on the periphery of the protected area. Local people continue to cultivate (often illegally) within the protected area boundary and they are

also dependent to varying degrees on the natural resources of the protected area. Although the project will invest in certain actions and measures to improve forest protection, it is not perceived that such actions will lead to significant additional restrictions on such local communities beyond the issues already discussed above for households with agricultural lands inside the protected areas but which are not formally or legally allocated.

(5) Exclusion from and/or or Inequitable Distribution of Project Benefits (and Costs)

There is a risk that the same communes and villages are selected (that have already benefited from other project/programs) for reasons of convenience or ease of implementation and/or that project benefits are skewed towards those households that are already better off (e.g. they have larger land areas for cultivation), leaving behind those categorized as the poorer or vulnerable households or groups. During the stakeholder consultations in the field, participants also raised the same concerns about the selection of target communes, villages, and beneficiaries groups.

(6) Full and Effective Consultation and Participation

Given that the project focuses primarily on forest development and will be implemented through PFMBs/NRMBs, there are concerns that the project could be implemented in a top-down manner and local communities would be treated merely as laborers.

While the initial stakeholder consultation was conducted as part of the preparatory survey, the same process needs to be maintained throughout the project, and if anything, there is also a need for closer and thorough consultations at the grassroots level among local people. It will be especially important in the initial planning stages of site-level project activities as a means towards verifying community support for interventions, particularly regarding the locations of afforestation and ANR at the sites.

Beyond consultations, the effective participation of local people in the project activities is important, as it would enable them to become genuine stakeholders who play an important role in forest protection and development at the sites in the future.

(7) Gender Issues:

Gender is an important consideration with respect to forest protection and development activities in Vietnam. Men and women often have gendered divisions of labor in relation to management, protection and use of forests. As in many rural parts of other south-east Asian countries, women in the remote areas of the target provinces are often excluded from the process of natural resource planning and decision-making as well as certain activities due to patriarchal tenure systems, male-dominated cultural beliefs as well as the lack of women in official forest management positions, in spite of the fact that women are involved in many aspects of forestry and are often knowledgeable about various aspects of forest management.

Another factor specifically relevant to ethnic minority groups in the hilly and mountainous parts in the northwest region is the fact that girls spend less time in school and often drop out of formal education at the younger age than boys do. This combined with i) other restrictions in terms of female roles within the home and the community and ii) the limited exposure to outside communities has often caused little grasp of Vietnamese language among ethnic minority women in the region, which in turn limits their awareness and knowledge, and participation in commune/village activities. It is, therefore, important to actively involve women in forest planning and livelihood development activities in the project.

J.7.3 Management and Mitigation of Environmental and Social Risks

In order to ensure that the potential adverse environmental and social impacts associated with the project are properly addressed in accordance with the Vietnam's relevant policies, laws and regulations as well as the JICA guidelines on environmental and social considerations, the integrated ESMF is prepared. The full document of the ESMF with detailed measures and procedures is presented in the Final Report prepared and submitted by JICA in November 2016. The following sections describes the outline of the ESMF.

J.7.3.1 Environmental and Social Management Framework Overview

The ESMF aims to manage the potential adverse impacts by establishing a guide consisting of a set of relatively simple procedures and measures to facilitate adequate environmental and social management, including risk management of environmental and social impacts, in relation to the activities to be financed by the project.

The Integrated ESMF is comprised of the following elements.

1) **Negative Checklist:** Eliminates activities and/or provides conditions so as to ensure that the scope and scale of project impacts can be minimized.
2) **Environmental Management and Monitoring Procedures:** Provides guidance for meeting environmental planning requirements for management and mitigation of any potential impacts caused by silviculture and small-scale infrastructure development and monitoring of potential impacts.
3) **Community Participation Framework:** Provides guidance for free, prior and informed consultation (FPIC) processes, stakeholder engagement and participation and serves to meet the requirements for ethnic minority development planning, and as such include:
   - Guidelines for Social Assessment;
   - Free, Prior and Informed Consultation Guidelines (including participatory land use planning and household/community verification of plan);
   - Village Selection Criteria; and
   - Beneficiary Selection Criteria.
4) Grievance Redress Mechanism: Outlines an institutional mechanism and procedures for addressing project-related complaints and grievances.

J.7.3.2 Environmental Management Plan

Although no significant adverse impact is expected to be generated by the project in principle, some minor environmental and social impacts might possibly occur as described in the previous sections. In order to ensure that such negative impacts could be minimized and eliminated in the course of the project implementation, the preparatory survey team examined and proposed the mitigation measures and management practices against the respective environmental items. The following tables shows the proposed mitigation measures and management practices to be taken/applied in the construction and operation phases of the project activities, particularly those relating to the infrastructure development.

Proposed Environmental Management Plan/Environmental Code of Practice

Potential Environmental Impact	Proposed Mitigation	Responsibility	Cost
Construction Phase			
Dust generation/ Air pollution	- The Contractor implement dust control measures to ensure that the generation of dust is minimized. ✓ water dusty roads and construction sites. ✓ cover materials loaded/stockpiled in the sites to protect soils and materials stockpiled from being exposed to wind. ✓ prevent soils, sands, materials and dusts from scattering during transportation.	Contractor	to be included in construction cost
Water pollution (Water quality)	- Portable or constructed toilets must be provided on site for construction workers. Wastewater from toilets shall be discharged into a holding tank for removal from the site - Wastewater over permissible values set by relevant Vietnam technical standards/regulations must be collected in a storage tank and removed from site by licensed waste collectors.	Contractor	to be included in construction cost
Solid waste (Waste)	- At all places of work, the Contractor shall provide litter bins, containers and refuse collection facilities. - No burning, on-site burying or dumping of solid waste shall occur. - Recyclable materials such as wooden plates for trench works, steel, scaffolding material, packaging material, etc. shall be collected and separated on-site from other waste sources for reuse, for use as fill, or for sale.	Contractor	to be included in construction cost
Chemical or hazardous wastes (Waste)	- Used oil, lubricants, cleaning materials shall be collected in holding tanks and removed from site. - Chemicals shall be stored in a safe and appropriate manner by roofing, fencing and appropriate labelling.	Contractor	to be included in construction cost
Drainage and sedimentation (Soil)	- Areas of the site not disturbed by construction activities shall be maintained in their existing conditions.	Contractor	to be included in construction cost
Soil Erosion (Soil)	- The excavation in the open cutting area shall be avoided during heavy rainy season. - The tentative prevention measures against soil erosion shall be prepared before rain	Contractor	to be included in construction cost
Restoration of affected areas (Soil)	- Cleared areas such as disposal areas, site facilities, workers' camps, stockpiles areas, working platforms and any areas temporarily occupied during construction of the project works shall be restored using landscaping, adequate drainage and vegetation. - Trees shall be planted at exposed land and on slopes to prevent or reduce land collapse and keep stability of slopes.	Contractor	to be included in construction cost
Noise and vibration	All vehicles must have appropriate "vehicle inspection certificate," and "technical safety and environmental protection certificate" to avoid exceeding noise emission from poorly maintained machines. - Permissions from local authorities should be obtained in case of night time activities, if necessary.	Contractor	to be included in construction cost
Disruption of vegetative cover and ecological resources (Ecosystems)	- Areas to be cleared should be minimized as much as possible. - The application of chemicals for vegetation clearing shall not be permitted. - Cutting of any tree shall be prohibited unless such an act is explicitly authorized in the vegetation clearing plan. - When needed, temporary protective fence shall be set up to efficiently protect the preserved trees before commencement of any works within the site. - The Contractor shall ensure that no hunting, such as trapping shooting, poisoning of fauna, takes place.	Contractor	to be included in construction cost
Communication with local communities (Resettlement)	- The contractor shall disseminate project information to communities/groups/ entities affected by the construction (for example local authority, enterprises and affected households, etc) through community meetings before construction	Contractor	to be included in construction cost

Potential Environmental Impact	Proposed Mitigation	Responsibility	Cost
	commencement. - The contractor shall provide a community relations contact from whom interested parties can receive information on site activities, project status and project implementation results. - Local residents shall be informed about construction and work schedules, interruption of services, and traffic detour routes and as appropriate. - Notification boards shall be erected at all construction sites providing information about the project.		
Worker and public Safety (Work environment)	- The contractor shall train workers on occupational safety regulations and provide sufficient protective clothing for workers in accordance with applicable Vietnamese laws. - Fences, barriers, dangerous warning shall be installed around the construction area which showing potential danger to public people. - The contractor shall provide safety measures as installation of fences, barriers warning signs, lighting system against traffic accidents as well as other risk to people and sensitive areas. - First-aid stations, safety equipment, and warning signals shall be placed.	Contractor	to be included in construction cost
Traffic management (Work environment)	- Signs/notices with directions, safety advice and warning shall be placed around the construction areas to facilitate traffic movement. - Safe traffic control measures, including road/rivers/canal signs and flag persons, shall be employed to warn of dangerous conditions	Contractor	to be included in construction cost
	Operation Phase		
Air Quality, Noise and Vibration	- All the constructed facilities, especially forest roads and commune roads, shall be properly maintained on a regular basis.	FMBs/ PPMUs	to be included in operation cost
Water Quality	- All the constructed facilities, especially irrigation and water supply facilities, shall be properly maintained on a regular basis.	FMBs/ PPMUs	to be included in operation cost
Accidents	- Staff of FMBs/CPCs and communities concerned shall be trained on operation and maintenance.	FMBs/ PPMUs	to be included in operation cost

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

More details of the mitigation practices and measures applied to the construction works for silviculture and small scale rural infrastructure are shown in the ESMF.

J.7.3.3 Environmental Monitoring Plan

Safeguard implementation, monitoring, and reporting is an integral part of the project implementation and specific safeguard officer under each PPMU and PFMBs/SUFMBs shall be assigned to be responsible for the activities. At the stage of site-level implementation planning, the designated staff responsible for safeguards at PFMBs/SUFMBs shall ensure that the CPGs have been correctly followed e.g. to ensure that communities have been selected appropriately, social assessments and participatory land use planning have been carried out according to the specified requirements so that interventions are appropriate and could be broadly supported by community. Each of these safeguards requirements has corresponding process indicators. Therefore, it is the job of the designated safeguards staff to collect and collate the various forms that provide evidence of the consultation and participation processes. In addition, he/she should also check the proposed plan against the Negative Checklist attached to the ESMF.

Once project activities have been appraised and approved (requiring environmental clearance or not), it is necessary to monitor the implementation of the activities to ensure that

environmental and social impacts do not occur and/or are being managed and mitigated appropriately. For example, the designated PFMB/SUFMB staff responsible for environmental and social safeguards should follow up during the implementation of activities such as the construction/upgrade of forest roads to ensure that environmental protection measures pertaining to tree-clearance, road width, management and use of chemicals and hazardous substances and other safeguards are being implemented in reality by the contractors.

The safeguard compliance during the project/subproject implementation should be also closely monitored by staff from local authorities; provincial and district Environment Officers; Technical staff of CPMU and representatives from local NGOs, Cooperatives and Associations; and community mass organizations such as Social Groups, women's Unions, youth unions. Regular/periodic visits should also be carried out to confirm that the potential positive impacts have been led by the project and mitigation measure have been carried out properly by the awarded contractors/implementer.

The table below shows the proposed environmental monitoring plan, especially for silviculture infrastructure (forest roads, sub-stations, watchtowers, fire-breaks, etc.) and small-scale infrastructure (commune roads, water supply, irrigation facilities) which expectedly would generate minor temporary/reversible environmental impacts on air/dust, water sources, chemicals/pollutants, noise, waste disposal during the construction.

Environmental Monitoring Plan (for improvement of silviculture infrastructure and small-scale infrastructure)

Items	Parameters	Location	Method	Frequency	Responsibility[3]	Due Diligence
Construction Phase						
Dust generation/ Air pollution	Dust, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMU Safeguards Officer (and CPMU/TA Consultant)
Water pollution (Water quality)	Water quality change, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMU Safeguards Officer (and CPMU/TA Consultant)
Solid waste (Waste)	Volume and kind of construction wastes, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMU Safeguards Officer (and CPMU/TA Consultant)
Chemical or hazardous wastes (Waste)	oil, lubricants, cleaning materials, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMU Safeguards Officer (and CPMU/TA Consultant)
Drainage and sedimentation (Soil)	mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMU Safeguards Officer (and CPMU/TA Consultant)
Soil Erosion (Soil)	Visual monitoring of	Subproject areas	Visit site and visual	Bi-annually	FMB Safeguards Officer/ CPC	PPMU Safeguards

[3] FMB shall be supported by NREO as required. Simple monitoring form shall be drafted by TA Consultants and applied by FMBs in the field.

Items	Parameters	Location	Method	Frequency	Responsibility[3]	Due Diligence
	storm water runoff, mitigation measure implemented		check			Officer (and CPMU/TA Consultant)
Restoration of affected areas (Soil)	mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMU Safeguards Officer (and CPMU/TA Consultant)
Noise and vibration	Noise, complain from local resident mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMU Safeguards Officer (and CPMU/TA Consultant)
Disruption of vegetative cover and ecological resources (Ecosystems)	Illegal tree clearing, wild animal hunting, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMU Safeguards Officer (and CPMU/TA Consultant)
Communication with local communities (Resettlement)	Complaint from local resident, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMU Safeguards Officer (and CPMU/TA Consultant)
Worker and public Safety (Work environment)	Training for worker, fences, barriers warning signs, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMU Safeguards Officer (and CPMU/TA Consultant)
Traffic management (Work environment)	Signs, mitigation measure implemented	Subproject areas	Visit site and visual check	Bi-annually	FMB Safeguards Officer/ CPC	PPMU Safeguards Officer (and CPMU/TA Consultant)
Operation Phase						
Accidents	Regularly maintenance	Subproject areas	Record the accident Check the training record	Annually	FMBs/ PPMU	―

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

Furthermore, the following table gives the proposed monitoring plan on the potential environmental and social risks associated with the forest development activities.

Environmental Monitoring Plan (for improvement of watersheds)

Items	Parameters	Location	Method	Frequency	Responsibility[4]	Due Diligence
Construction Phase						
Disturbance of ecosystem	Design, Species planted,	Subproject areas	Visit site and visual check	Bi-annually	PPMU, FMB	PPMU Safeguards Officer (and CPMU/TA Consultant)
Resettlement (loss of income or loss of access)	Process of selection of the project areas, Negative impact on household	Subproject areas	Interviews	Bi-annually	PPMU, FMB	PPMU Safeguards Officer (and CPMU/TA Consultant)

[4] FMB shall be supported by NREO as required. Simple monitoring form shall be drafted by the project onsultants and applied by FMBs in the field.

Items	Parameters	Location	Method	Frequency	Responsibility[4]	Due Diligence
	economy					
Affects on livelihoods	Any direct or indirect impact on livelihoods	Subproject areas	Interviews	Bi-annually	PPMU, FMB	PPMU Safeguards Officer (and CPMU/TA Consultant)
Operation Phase						
Affects on livelihoods	Any direct or indirect impact on livelihoods	Subproject areas	Interviews	Annualy	PPMU, FMB	PPMU Safeguards Officer (and CPMU/TA Consultant)

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

The draft terms of references (TOR) for environmental monitoring and the samples of the environmental monitoring forms to be used in and post project periods are also presented in the ESMF.

J.8 Project Risks / Important Assumptions

J.8.1 Sensitivity Analysis

To evaluate the reliability and stability of the project effect from the economic viewpoint, a sensitive analysis was made for the following negative scenarios.

- Case 1: 10% increase of the project cost
- Case 2: 20% increase of the project cost
- Case 3: 10% reduction of the project benefit
- Case 4: 20% reduction of the project benefit

The results of the sensitivity analyses are summarized below.

Result of Sensitivity Analysis of Economic Analysis

Cases	EIRR	Difference from Base Case (EIRR)	B/C	NPV (VND Million)
Base Case	10.7%	-	1.08	75,039
Case1: Cost +10%	9.8%	- 0.9%	0.98	-23,610
Case2: Cost +20%	9.0%	- 1.7%	0.90	-122,260
Case3: Benefit -10%	9.7%	- 1.0%	0.97	-31,114
Case4: Benefit -20%	8.6%	- 2.1%	0.86	-137,267

Source: Final Report for the Preparatory Survey for the Sustainable Forest Management Project in the Northwest Sub-region, November 2016, JICA

J.8.2 Project Risks and Important Assumptions

For the effective and smooth implementation of the project, the following external conditions and requirements are assumed shall be met, as otherwise there may be significant impacts to project implementation.

a. No delay in fund disbursement during the implementation.
b. No delay in procurement, approval and any other decision making by CPMU/MARD at central level and DARDs/PPCs at provincial level.
c. No change in strategies, policies, plans, and organizational structures in the forest sector.
d. No social conflict or dispute occurring in the target communes/villages.
e. No large scale immigration into the target protection forests and nature reserves from other district or provinces.
f. No drastic economic recession in the national and regional economy.

The following external conditions and requirements are assumed shall also be met in order for the envisaged project outcomes to have the desired and expected effects and impacts.

a. No large-scale and destructive natural disaster, such as severe drought or strong cyclone, takes place in the target provinces.
b. The categories of watershed protection forest or forest classification are not changed by PPCs.
c. The prices of wood chips and timber do not drastically drop.
d. The prices of staple crops do not drastically rise.
e. Employment conditions in rural areas in the regions/target provinces are not drastically changed.
f. The macro economy of the country is stable.
g. Climatic conditions in the target provinces are unchanged.

Tables

Table J-1 Estimated Project Cost by Province

<4 Provinces & CPMU>

Project components	Unit	Total of 4 Provinces + CPMU				CPMU				Dien Bien			
		Q'tv	Unit Cost (mil. VND)	Amount (mil. VND)		Q'tv	Unit Cost (mil. VND)	Amount (mil. VND)	%	Q'tv	Unit Cost (mil. VND)	Amount (mil. VND)	%
1 Survey and Planning			3.0	**65,131**	**3%**			**5,411**	**3%**			**9,037**	**2%**
1.1 Participatory land use planning (PLUP) and formation of village working groups													
(1) Procurement of satelliteimages	km^2	4,681	0.9	4,371		4,681	1	4,371		-	-	0	
(2) PLUP and formation of village worrking groups in the taret communes	communes	64	348.5	22,301		0	0	0		8	359	2,871	
1.2 Site demarcation and set-ups of land marks	ha	16,010	0.2	3,525		0	0	0		3,160	0	696	
1.3 Baseline surveys in the target communes	time	1	1,040.3	1,040		1	1,040	1,040		0	0	0	
1.4 Survey and detailed designs of forestry development and silviculture infrastructure development	ha	74,310	0.3	23,578		-	-	0		15,870	0	5,471	
1.5 Survey and detailed designs of small scale rural infrastructure development	ls			10,315				0		-	1,798.27	1,318	
2 Improvement of Watershed Forests			44.8	**984.878**	**44%**			**0**	**0%**			**203.303**	**48%**
2.1 Forest Development and Improvement													
(1) Afforestation	ha	16,010						0		3,160	0.00	0	
Afforestation for Protection forest	ha	13,930	53.86	750,270						3,160	53.86	170,198	
Afforestation for Nature reserve	ha	2,080	33.82	70,346						0	33.83	0	
(2) Forest Protection (5years)	ha	45,180	1.59	71,700				0		10,400	1.63	16,900	
(3) ANR	ha	13,120	6.91	90,659				0		2,310	6.91	15,962	
2.2 Phase-out/Phase-in													
(1) Guidance on Collaborative Management to PPMUs, DARDs, and PFMBs/SUFMBs	times	4	11.3	45				0		1	11.30	11	
(2) Workshops for Development of Forest Management Plan at the Commune/Village Level	communes	64	15.0	960				0		8	15.00	120	
(3) Guidance on Operation and Maintenance to CPCs, Commune Extension Workers and Users' Groups	communes	64	14.0	898				0		8	14.04	112	
3 Improvement of Silviculture Infrastructure				**112.469**								**40.273**	
3.1 Motorbike Road	km	121.5	652.6	79,292						48	657.12	31,542	
3.2 Footpaths	km	30	14.5	436						0	13.38	0	
3.3 Fire beakline (FBL)	km	278	41.8	11,617						60	41.79	2,507	
3.4 Fire watch towers	no.	29	151.9	4,406						4	151.50	606	
3.5 Forest management board office	no.	1	702.7	703						0	730.28	0	
3.6 Forest guard station	no.	33	353.5	11,667						14	365.14	5,112	
3.7 Information boards	no.	68	21.8	1,481						10	22.19	222	
3.8 Nursery	no.	10	286.8	2,868						1	284.45	284	
4 Small scale infrastructure				**148.755**	**7%**			**0**	**0%**			**18.626**	**4%**
4.1 Improvement of small scale rural infrastructure													
(1) Road	km	61	1,729.9	106,141						8	1,798.27	13,487	
(2) Irrigation system	km	28	1,190.9	33,620						5	1,081.89	5,139	
(3) Water supply system	no.	14	642.4	8,994						0	0.00	0	
5 Support for Livelihood Development			2.0	**44.006**	**2%**			**829**	**0%**			**5.474**	**1%**
5.1 Selection of Livelihood Development Model													
(1) Identification of Priority Livelihood Development Options	communes	64	15.8	1,008						8	15.75	126	
(2) Survey on the potential model sites	communes	64	16.1	1,032						8	15.75	126	
5.2 Marketing survey and development of marketing strategies	time	1	829.3	829		1	829.31	829		0	0.00	0	
5.3 Development of model site and technical training at the model sites													
(1) Set-up of Working groups and preparation of action plans	communes	64	23.4	1,497						8	23.50	188	
(2) Development of model sites and provision of technical training on the selected option 1	communes	64	176.5	11,293						8	176.50	1,412	
(3) Development of model sites and provision of technical training on the selected option 2	communes	64	176.5	11,293						8	176.50	1,412	
(4) Development of model sites and provision of technical training on the selected option 3	communes	64	176.5	11,293						8	176.50	1,412	
5.4 Assistance in mangement and use of payments made to the village working groups													
(1) Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups	communes	64	15.8	1,013						8	16.00	128	
(2) Workshops/discussions on the Use of Saving Funds of the Village Working Groups	communes	64	15.8	1,008						8	15.75	126	
(3) Training on Financial Management	communes	64	24.3	1,558						8	24.25	194	
(4) Assistance in the preparation of business plans on potential income generating activities	communes	64	24.3	1,558						8	24.25	194	
5.5 Inter district/province Cross Field Visit	times	16	39.0	624						4	39.00	156	
6 Forest Fire Control			**0.8**	**16.881**	**1%**			**0**	**0%**			**3.665**	**1%**
6.1 Provisoin of equipment for forest fire control	sets	31	429.3	13,308						7	451.52	3,161	
6.2 Forest Fire control training in 12 provinces	times	64	55.8	3,573						8	63.04	504	
7 Base Cost for Components eligible to be loaned				**1,372,120**	**61%**			**6,240**	**3%**			**280,379**	**66%**
8 Price contingency				323,356				627				66,063	
9 Physical Contingency (5% of items 14)				**68,606**				312				14,085	
10 Sub-total of Base Cost (7+8+9)				**1,764,082**	**78%**			**7,180**	**3%**			**360,527**	**85%**
11 Project Management			**5.7**	**125.580**	**6%**			**37.154**	**18%**			**21.824**	**5%**
11.1 Procurement of equipments	sets	5	734.2	3,671				671				750	
11.2 Information Dissemination													
(1) Project Orientation	times	83	14.2	1,177		1	9.50	10		12	13.79	166	
(2) Annual Planning Workshop	times	5	8.3	42		1	9.50	10		1	8.00	8	
(3) Orientation and Guidance on Annual Work Plan and Guidelines	times	18	33.4	600		-	-	0		4	32.95	132	
(4) Orientation and Guidance on Benefit Sharing Mechanism	times	83	18.2	1,514		1	9.50	10		12	19.82	238	
(5) Orientation and Guidance on JICA Env. Guidelines, ESMF, and REDD+ safeguarrds at the provinces	times	24	19.3	462		24	19.25	462		-	-	0	
11.3 Production and publication of project documents													
(1) Project Brief (Leaflets)	sets	5	19.0	95		1	19.00	19		1	19.00	19	
(2) Project Newsletter	sets	35	20.2	708		7	20.23	142		7	20.23	142	
(3) Awareness Raising Materials	sets	4	48.5	194		0	0.00	0		1	48.50	49	
11.4 Study tour													
(1) Study Tours to JICA 2 Sites for PPMBs and Forest Owners (PFMBs/SUFMBs)	times	2	174.3	349		2	174.28	349		0	0.00	0	
(2) Study Tours to SNRMP Sites for Forest Owners (PFMBs/SUFMBs) and Village Working Groups	times	8	174.3	1,394		-	-	0		2	174.28	349	
(3) Overseas Study Tours for CPMU/MBFPs and PPMUs/DARDs	times	2	1,334.2	2,668		2	1,334.24	2,668		0	0.00	0	
11.5 Technical guidance and training													
(1) Guidance on PLUP and formation of village working groups	times	4	22.0	88		0	0	0		1	22	22	
(2) Guidance on operations of GIS	times	4	29.2	117		0	0	0		1	29	29	
11.6 Review meetings													
(1) Bi-annual Review Meetings at the Central Level	times	19	9.5	181		19	9.50	181		0	0.00	0	
(2) Bi-annual Review Meetings at the Provincial Level	times	76	8.0	608		-	-	0		19	8.00	152	
11.7 Project monitoring and evaluation	time	1	6,423.5	6,424				6,424				0	
11.8 Forest Monitoring		0		0				0				0	
11.9 Staff salary and allowance	years	10	6,444.00	64,440		10	1,432.00	14,320		10	1,253.00	12,530	
11.10 Direct operation expenses	years	10	4,085.00	40,850		10	1,189.00	11,890		10	724.00	7,240	
12 Price contingency				30,868				9,916				5,203	
13 Physical Contingency (5% of items 14)				**6,279**				1,858				1,091	
14 Administration Cost (11+12+13)				**162,728**	**7%**			**48,928**	**23%**			**28,118**	**7%**
15 Consulting Services / TA				**131.050**	**6%**			**131.050**					
15.1 Consulting services w/o contingencies				110,359				110,359					
15.2 Physical and price contigencies				20,691				20,691					
16 Tax and Duties on the Project Components				**196,778**	**9%**			**21.653**	**10%**			**36.401**	**9%**
16.1 Taxes and Duties on the Project Components except C/S				177,120				1,995				36,401	
16.2 Taxes (CIT and VAT) on Consulting Services				19,658				19,658					
15 GRAND TOTAL (14+15+16+17)				**2,254,638**	**100%**			**208,810**	**100%**			**425,046**	**100%**
19 Loan interest during construction				33,587				205				6,915	
20 Loan interest during consulting service				93				93				0	
21 Front end fee				3,790				3,790					
22 GRAND TOTAL (18+19+20+21)				**2,292,107**				**212,899**				**431,961**	

Table J-1 Estimated Project Cost by Province

<4 Provinces & CPMU>

Project components	Lai Chau				Son La				Hoa Bin			
	Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)		Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)		Q'ty	Unit Cost (mil. VND)	Amount (mil. VND)	
1 Survey and Planning			**18,612**	**2%**			**8,871**	**2%**			**12,883**	**3%**
1.1 Participatory land use planning (PLUP) and formation of village working groups												
(1) Procurement of satelliteimages	0	0	0		0	0	0		-	-	0	
(2) PLUP and formation of village worrking groups in the taret communes	22	346	7,602		11	353	3,886		23	345	7,942	
1.2 Site demarcation and set-ups of land marks	6,550	0	1,442		3,220	0	709		3,080	0	678	
1.3 Baseline surveys in the target communes	0	0	0		0	0	0		0	0	0	
1.4 Survey and detailed designs of forestry development and silviculture infrastructure development	14,050	1	9,568		15,590	0	4,276		28,800	0	4,263	
1.5 Survey and detailed designs of small scale rural infrastructure development	-	-	3,429		-	-	1,915		-	-	3,653	
2 Improvement of Watershed Forests			**405,258**	**52%**			**185,821**	**49%**			**190,496**	**43%**
2.1 Forest Development and Improvement												
(1) Afforestation	6,550	0.00	0		3,220	0.00	0		3,080	0.00	0.00	
Afforestation for Protection forest	6,550	53.86	352,783		2,160	53.86	116,338		2,060	53.86	110,952	
Afforestation for Nature reserve	0	33.83	0		1,060	33.82	35,849		1,020	33.82	34,496	
(2) Forest Protection (5years)	0	1.65	0		9,900	1.64	16,236		24,880	1.55	38,564	
(3) ANR	7,500	6.91	51,825		2,470	6.91	17,068		840	6.91	5,804	
2.2 Phase-out/Phase-in												
(1) Guidance on Collaborative Management to PPMUs, DARDs, and PFMBs/SUFMBs	1	11.30	11		1	11.30	11		1	11.30	11	
(2) Workshops for Development of Forest Management Plan at the Commune/Village Level	22	15.00	330		11	15.00	165		23	15.00	345	
(3) Guidance on Operation and Maintenance to CPCs, Commune Extension Workers and Users' Groups	22	14.04	309		11	14.04	154		23	14.04	323	
3 Improvement of Silviculture Infrastructure			**42,170**	**5%**			**16,439**	**4%**			**13,586**	**3%**
3.1 Motorbike Road	48	654.26	31,404		14	648.43	8,754		12	632.65	7,592	
3.2 Footpaths	0	13.80	0		30	14.52	436		0	12.67	0	
3.3 Fire beakline (FBL)	114	41.79	4,764		48	41.79	2,006		56	41.79	2,340	
3.4 Fire watch towers	11	152.23	1,674		10	152.69	1,527		4	149.76	599	
3.5 Forest management board office	0	709.16	0		1	702.67	703		0	653.79	0	
3.6 Forest guard station	8	354.58	2,837		5	351.34	1,757		6	326.89	1,961	
3.7 Information boards	14	22.36	313		17	22.71	386		27	20.73	560	
3.8 Nursery	4	294.49	1,178		3	290.58	872		2	267.02	534	
4 Small scale infrastructure			**48.118**	**6%**			**27.033**	**7%**			**54.978**	**12%**
4.1 Improvement of small scale rural infrastructure												
(1) Road	16	1,936.79	30,214		8	1,945.31	16,255		30	1,544.65	46,185	
(2) Irrigation system	12	1,208.50	14,224		6	1,345.63	7,549		6	1,099.67	6,708	
(3) Water supply system	6	613.33	3,680		5	645.80	3,229		3	695.00	2,085	
5 Support for Livelihood Development			**14.784**	**2%**			**7.471**	**2%**			**15.448**	**3%**
5.1 Selection of Livelihood Development Model												
(1) Identification of Priority Livelihood Development Options	22	15.73	346		11	15.82	174		23.0	15.74	362	
(2) Survey on the potential model sites	22	16.18	356		11	16.18	178		23.0	16.17	372	
5.2 Marketing survey and development of marketing strategies	0	0.00	0		0	0.00	0		-	-	0	
5.3 Development of model site and technical training at the model sites												
(1) Set-up of Working groups and preparation of action plans	22	23.36	514		11	23.36	257		23.0	23.39	538	
(2) Development of model sites and provision of technical training on the selected option 1	22	176.45	3,882		11	176.45	1,941		23.0	176.43	4,058	
(3) Development of model sites and provision of technical training on the selected option 2	22	176.45	3,882		11	176.45	1,941		23.0	176.43	4,058	
(4) Development of model sites and provision of technical training on the selected option 3	22	176.45	3,882		11	176.45	1,941		23.0	176.43	4,058	
5.4 Assistance in mangement and use of payments made to the village working groups												
(1) Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups	22	15.82	348		11	15.73	173		23.0	15.83	364	
(2) Workshops/discussions on the Use of Saving Funds of the Village Working Groups	22	15.73	346		11	15.82	174		23.0	15.74	362	
(3) Training on Financial Management	22	24.36	536		11	24.36	268		23.0	24.35	560	
(4) Assistance in the preparation of business plans on potential income generating activities	22	24.36	536		11	24.36	268		23.0	24.35	560	
5.5 Inter district/province Cross Field Visit	4	39.00	156		4	39.00	156		4.0	39.00	156	
6 Forest Fire Control			**4,305**	**1%**			**4.024**	**1%**			**4.887**	**1%**
6.1 Provisoin of equipment for forest fire control	7	451.52	3,161		8	422.82	3,383		9	400.49	3,604	
6.2 Forest Fire control training in 12 provinces	22	52.02	1,144		11	58.32	641		23	55.76	1,282	
7 Base Cost for Components eligible to be loaned			**533,248**	**68%**			**249,660**	**65%**			**292,278**	**66%**
8 Price contingency			127,223				59,700				69,744	
9 Physical Contingency (5% of items 14)			26,834				12,579				14,797	
10 Sub-total of Base Cost (7+8+9)			**687,304**	**88%**			**321,939**	**84%**			**376,818**	**85%**
11 Project Management			**22.244**	**3%**			**21.914**	**6%**			**22.445**	**5%**
11.1 Procurement of equipments			750				750				750	
11.2 Information Dissemination												
(1) Project Orientation	26	14.44	376		15	14.03	211		29	14.33	416	
(2) Annual Planning Workshop	1	8.00	8		1	8.00	8		1	8.00	8	
(3) Orientation and Guidance on Annual Work Plan and Guidelines	4	32.95	132		4	32.95	132		6	34.17	205	
(4) Orientation and Guidance on Benefit Sharing Mechanism	26	17.22	448		15	18.85	283		29	18.48	536	
(5) Orientation and Guidance on JICA Env. Guidelines, ESMF, and REDD+ safeguarrds at the provinces	-	-	0		-	-	0		-	-	0	
11.3 Production and publication of project documents												
(1) Project Brief (Leaflets)	1	19.00	19		1	19.00	19		1	19.00	19	
(2) Project Newsletter	7	20.23	142		7	20.23	142		7	20.23	142	
(3) Awareness Raising Materials	1	48.50	49		1	48.50	49		1	48.50	49	
11.4 Study tour												
(1) Study Tours to JICA 2 Sites for PPMBs and Forest Owners (PFMBs/SUFMBs)	0	0.00	0		0	0.00	0		-	-	0	
(2) Study Tours to SNRMP Sites for Forest Owners (PFMBs/SUFMBs) and Village Working Groups	2	174.28	349		2	174.28	349		2	174.28	349	
(3) Overseas Study Tours for CPMU/MBFPs and PPMUs/DARDs	0	0.00	0		0	0.00	0		-	-	0	
11.5 Technical guidance and training												
(1) Guidance on PLUP and formation of village working groups	1	22	22		1	22	22		1	22	22	
(2) Guidance on operations of GIS	1	29	29		1	29	29		1	29	29	
11.6 Review meetings												
(1) Bi-annual Review Meetings at the Central Level	0	0.00	0		0	0.00	0		-	-	0	
(2) Bi-annual Review Meetings at the Provincial Level	19	8.00	152		19	8.00	152		19	8.00	152	
11.7 Project monitoring and evaluation			0				0				0	
11.8 Forest Monitoring			0				0				0	
11.9 Staff salary and allowance	10	1,253.00	12,530		10	1,253.00	12,530		10	1,253.00	12,530	
11.10 Direct operation expenses	10	724.00	7,240		10	724.00	7,240		10	724.00	7,240	
12 Price contingency			5,259				5,197				5,294	
13 Physical Contingency (5% of items 14)			1,112				1,096				1,122	
14 Administration Cost (11+12+13)			**28.615**	**4%**			**28.206**	**7%**			**28.861**	**7%**
15 Consulting Services / TA												
15.1 Consulting services w/o contingencies												
15.2 Physical and price contigencies												
16 Tax and Duties on the Project Components			**68.653**	**9%**			**32.472**	**8%**			**37.599**	**8%**
16.1 Taxes and Duties on the Project Components except C/S			68.653				32.472				37.599	
16.2 Taxes (CIT and VAT) on Consulting Services												
15 GRAND TOTAL (14+15+16+17)			**784.572**	**100%**			**382.616**	**100%**			**443.278**	**100%**
19 Loan interest during construction			13.092				6.131				7.243	
20 Loan interest during consulting service			0				0				0	
21 Front end fee												
22 GRAND TOTAL (18+19+20+21)			**797.664**				**388.747**				**450.522**	

Table J-2 Annual Cost Disbursement Schedule of the Project

Project components	Unit	Q'ty	Unit Cost (mil. VND)	Project Cost (mil. VND) Total		LC	FC	1st (2017/2018) LC	FC	2nd (2018/2019) LC	FC	3rd (2019/2020) LC	FC	4th (2020/2021) LC	FC	5th (2021/2022) LC	FC	6th (2022/2023) LC	FC	7th (2023/2024) LC	FC	8th (2024/2025) LC	FC	9th (2025/2026) LC	FC	10th (2026/2027) LC	FC	11th (2027/2028) LC	FC
1 Survey and Detailed Planning				**65.131**	**3%**	**65.131**				**5.144**		**20.660**		**26.847**		**12.479**													
1.1 Participatory land use planning (PLUP) and formation of village working groups																													
(1) Procurement of satelliteimages	km^2	4,681	0.9	4,371		4,371				4,371																			
(2) PLUP and formation of village worrking groups in the taret communes	communes	64	348.5	22,301		22,301						11,151		11,151															
1.2 Site demarcation and set-ups of land marks	ha	16,010	0.2	3,525		3,525						3,525																	
1.3 Baseline surveys in the target communes	time	1	1,040.3	1,040		1,040								520		520													
1.4 Survey and detailed designs of forestry development and silviculture infrastructure development	ha	74,310	0.3	23,578		23,578				773		5,985		10,019		6,801													
1.5 Survey and detailed designs of small scale rural infrastructure development	ls			10,315		10,315								5,158		5,158													
2 Improvement of Watershed Forests				**984.878**	**44%**	**984.878**								**98.463**		**245.026**		**315.223**		**184.659**		**105.946**		**35.562**					
2.1 Forest Development and Improvement																													
(1) Afforestation	ha	16,010																											
- Afforestation for Protection forest	ha	13,930	53.9	750,270		750,270								74,553		185,798		250,434		140,136		77,618		21,731					
- Afforestation for Nature reserve	ha	2,080	33.8	70,346		70,346								7,625		18,516		24,078		12,006		6,356		1,764					
(2) Forest Protection	ha	45,180	1.6	71,700		71,700								5,736		14,340		14,340		14,340		14,340		8,604					
(3) ANR	ha	13,120	6.9	90,659		90,659								10,548		26,371		26,371		18,132		5,773		3,464					
2.2 Phase-out/Phase-in																													
(1) Guidance on Collaborative Management to PPMUs, DARDs, and PFMBs/SUFMBs	times	5	9.0	45		45														45									
(2) Workshops for Development of Forest Management Plan at the Commune/Village Level	communes	64	15.0	960		960																960							
(3) Guidance on Operation and Maintenance to CPCs, Commune Extension Workers and Users' Groups	communes	64	14.0	898		898																898							
3 Improvement of Silviculture Infrastructure				**112.469**	**5%**	**112.469**						**22.086**		**40.608**		**43.019**		**6.755**											
3.1 Motorbike Road	km	121.5	657.1	79,292		79,292						15,858		31,717		31,717													
3.2 Footpaths	km	30	13.4	436		436						174		261															
3.3 Fire beakline (FBL)	km	278	41.8	11,617		11,617								2,323		4,647		4,647											
3.4 Fire watch towers	no.	29	151.5	4,406		4,406								1,063		1,822		1,521											
3.5 Forest management board office	no.	1	730.3	703		703						703																	
3.6 Forest guard station	no.	33	365.1	11,667		11,667						2,483		4,938		4,246													
3.7 Information boards	no.	68	22.2	1,481		1,481								306		587		587											
3.8 Nursery	no.	10	284.5	2,868		2,868						2,868																	
4 Small scale infrastructure				**148.755**	**7%**	**148.755**								**49.585**		**49.585**		**49.585**											
4.1 Improvement of small scale rural infrastructure																													
(1) Road	km	61	1,729.9	106,141		106,141								35,380		35,380		35,380											
(2) Irrigation system	km	28	1,190.9	33,620		33,620								11,207		11,207		11,207											
(3) Water supply system	no.	14	642.4	8,994		8,994								2,998		2,998		2,998											
5 Support for Livelihood Development				**44.006**	**2%**	**44.006**						**1.098**		**1.925**		**20.127**		**19.034**		**1.666**		**156**							
5.1 Selection of Livelihood Development Model																													
(1) Identification of Priority Livelihood Development Options	communes	64	15.8	1.008		1.008								520		488													
(2) Survey on the potential model sites	communes	64	16.1	1,032		1,032								532		500													
5.2 Marketing survey and development of marketing strategies	time	1	829.3	829		829						829																	
5.3 Development of model site and technical training at the model sites			-																										
(1) Set-up of Working groups and preparation of action plans	communes	64	23.4	1,497		1,497								351		772		374											
(2) Development of model sites and provision of technical training on the selected option 1	communes	64	176.5	11,293		11,293										5,823		5,470											
(3) Development of model sites and provision of technical training on the selected option 2	communes	64	176.5	11,293		11,293										5,823		5,470											
(4) Development of model sites and provision of technical training on the selected option 3	communes	64	176.5	11,293		11,293										5,823		5,470											
5.4 Assistance in mangement and use of payments made to the village working groups																													
(1) Guidance on the mode of payments from PFMBs/SUFMBs to the village working groups	communes	64	15.8	1.013		1.013						269		522		222													
(2) Workshops/discussions on the Use of Saving Funds of the Village Working Groups	communes	64	15.8	1,008		1,008										520		488											
(3) Training on Financial Management	communes	64	24.3	1,558		1,558												803		755									
(4) Assistance in the preparation of business plans on potential income generating activities	communes	64	24.3	1,558		1,558												803		755									
5.5 Inter district/province Cross Field Visit	times	16	39.0	624		624										156		156		156		156							
6 Forest Fire Control				**16.881**	**1%**	**16.881**				**6.430**				**9.386**				**1.064**											
6.1 Provisoin of equipment for forest fire control	sets	-	-	13.308		13.308				6,430				6,878															
6.2 Forest fire control training	times	-	-	3,573		3,573								2,508				1,064											
7 Base Cost for Components eligible to be loaned				1,372,120	**61%**	1,372,120				11,574		43,845		226,815		370,236		391,662		186,325		106,102		35,562					
8 Price contingency	%		3.8	323,356	**14%**	323,356				896		5,191		36,491		75,898		98,224		55,584		36,887		14,185					
9 Physical Contingency (5% of items 14)	%		5.0	68,606	**3%**	68,606				579		2,192		11,341		18,512		19,583		9,316		5,305		1,778					
10 Sub-total of Base Cost (7+8+9)				1,764,082		1,764,082				13,049		51,228		274,647		464,646		509,469		251,225		148,293		51,525					
11 Project Management				**125.580**		**125,580**		**10.644**		**12.847**		**11.602**		**12.939**		**11.888**		**13.341**		**12.227**		**10.713**		**10.713**		**15.994**		**2.674**	
11.1 Procurement of equipments	sets	-	-	3,671		3,671		2,551										1,120											
11.2 Information Dissemination		-	-		20,290																								
(1) Project Orientation	times	83	14.2	1,177		1,177				1,177																			
(2) Annual Planning Workshop	times	5	8.3	42		42				42																			
(3) Orientation and Guidance on Annual Work Plan and Guidelines	times	18	33.4	600		600				600																			
(4) Orientation and Guidance on Benefit Sharing Mechanism	times	83	18.2	1,514		1,514														1,514									
(5) Orientation and Guidance on ESMF	times	24	19.3	462		462		154		154		154																	
11.3 Production and publication of project documents																													
(1) Project Brief (Leaflets)	sets	5	19.0	95		95						95																	
(2) Project Newsletter	sets	35	20.2	708		708						101		101		101		101		101		101		101					
(3) Awareness Raising Materials	sets	4	48.5	194		194								194															
11.4 Study tour																													
(1) Study Tours to JICA 2 Sites for PPMBs and Forest Owners (PFMBs/SUFMBs)	times	2	174.3	349		349				174						174													
(2) Study Tours to SNRMP Sites for Forest Owners (PFMBs/SUFMBs) and Village Working Groups	times	8	174.3	1,394		1.394						523		697				174											
(3) Overseas Study Tours for CPMU/MBFPs and PPMUs/DARDs	times	2	1,334.2	2,668		2,668								1,334				1,334											
11.5 Technical guidance and training																													
(1) Guidance on PLUP and formation of village working groups	times	4	22.0	88		88				88																			
(2) Guidance on operations of GIS	times	4	29.2	117		117						117																	
11.6 Review meetings																													
(1) Bi-annual Review Meetings at the Central Level	times	19	9.5	181		181		10		19		19		19		19		19		19		19		19		10		10	
(2) Bi-annual Review Meetings at the Provincial Level	times	76	8.0	608		608		32		64		64		64		64		64		64		64		64		32		32	
11.7 Project monitoring and evaluation	time	1	6,423.5	6,424		6,424										1,000										5,423			
11.8 Forest Monitoring																													
11.9 Staff salary and allowance	years	10	6,444.0	64,440		64,440		4,833		6,444		6,444		6,444		6,444		6,444		6,444		6,444		6,444		6,444		1,611	
11.10 Direct operation expenses	years	10	4,085.0	40,850		40,850		3,064		4,085		4,085		4,085		4,085		4,085		4,085		4,085		4,085		4,085		1,021	
12 Price contingency	%		3.8	30.868		30,868		404		995		1.373		2.082		2.437		3.346		3.648		3.724		4.273		7.230		1.356	
13 Physical Contingency (5% of items 14)	%		5.0	6,279		6,279		532		642		580		647		594		667		611		536		536		800		134	
14 Administration Cost (11+12+13)				**162.728**	**7%**	**162.728**		11.580		14.484		13.555		15.667		14.919		17.354		16.486		14.973		15.522		24.023		4.164	
15 Consulting Services				**131.050**	**6%**	**64.799**	**66.251**			**6.017**	**8.380**	**10.045**	**10.963**	**11.938**	**12.462**	**11.407**	**11.006**	**8.962**	**8.131**	**8.141**	**7.577**	**6.230**	**6.009**	**2.058**	**1.723**				
15.1 Consulting services w/o contingencies				110,359		51,688	58,671			5,337	7,743	8,598	9,978	9,859	11,171	9,089	9,718	6,889	7,070	6,038	6,490	4,458	5,069	1,420	1,432				
15.2 Physical and price contigencies				20,691		13,110	7,580			680	637	1,448	986	2,079	1,291	2,318	1,289	2,072	1,060	2,103	1,087	1,773	940	638	291				
16 Tax and Duties on the Project Components				**196.778**		**186.840**	**9.938**	**341**		**3.840**	**1.257**	**6.688**	**1.645**	**29.362**	**1.869**	**47.067**	**1.651**	**51.246**	**1.220**	**26.350**	**1.137**	**15.643**	**901**	**5.482**	**258**	**818**		**3**	
16.1 Taxes and Duties on the Project Components except C/S				177,120		177,120		341		2,938		5,181		27,571		45,356		49,902		25,128		14,709		5,173		818		3	
16.2 Taxes (CIT and VAT) on Consulting Services				19,658		9,720	9,938			903	1,257	1,507	1,645	1,791	1,869	1,711	1,651	1,344	1,220	1,221	1,137	935	901	309	258				
17 GRAND TOTAL (10+14+15+16)				**2.254.638**	**100%**	**2.178.449**	**76.189**	**11.921**		**37.391**	**9.637**	**81.516**	**12.608**	**331.614**	**14.331**	**538.038**	**12.657**	**587.031**	**9.350**	**302.202**	**8.714**	**185.140**	**6.910**	**74.587**	**1.981**	**24.841**		**4.167**	

Table J-3 (1) Draft Environmental Checklists (Forestry Project)

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) N (b) N (c) N/A (d) N	(a) As regulated in the Decree No 18/2015/ND-CP dated February 14th 2015 and Circular No 27/2015/TT-BTNMT dated May 29th 2015, an EIA is required as part of the project approval process on GoV side but has not been conducted yet. (b) EIA report shall be prepared by the project proponent (MBFPs) and submitted to MONRE for obtaining of approval before submission of pre-F/S for approval of PM. (c) See above. (d) Beyond the project-level EIA, no further approvals are required.
	(2) Explanation to the Local Stakeholders	(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) Stakeholder Consultation Meetings were held during the project preparation survey, however this was restricted to consultations with local level government authorities and mass organisations and did not include adequate consultation with project affected communities and households. Further consultation is therefore required specifically at project site levels prior to implementation of specific activities. Such consultation is provided for in the ESMF - see Consultation and Participation Guidelines (Appendix D) (b) Comments from project stakeholders (Forest Management Boards, Local government authorities (PPC, CPC, DARD, DoNRE, CEMA etc.) and mass organisations) were noted and reflected in project design. However, comments from affected communities and households should be absorbed into detailed design of interventions at the site level.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Full consideration of an alternative for the project has not been considered however the project design has been examined with respect to environmental and social considerations during the preparatory survey. Certain activities have been eliminated or altered so as to ensure that environmental and social impacts are avoided, minimised or otherwise mitigated during implementation (see ESMF).
2 Pollution Control	(1) Air Quality	(a) Do air pollutants, such as dust, soot and dust, sulphur oxides (SOx), nitrogen oxides (NOx), and organic chemical substances emitted from various sources, such as logging operations, forest products manufacturing processes, and incinerators comply with the country's emission standards and ambient air quality standards? Are any mitigating measures taken?	(a) N/A	(a) There will be no project activities with any significant impact in terms of air pollution.
	(2) Water Quality	(a) Is there a possibility that the use of chemicals, such as fertilizers, and agrochemicals will cause water pollution? (b) Where facilities, such as forest products manufacturing facilities are installed, do effluents from the facilities comply with the country's effluent standards and ambient water quality standards?	(a) N (b) N	(a)There may be some limited use of fertilizer in afforestation and fertilizers/pesticides for certain agricultural/NTFP livelihood activities, however these will have a very minimal environmental impact. In general the project will promote organic farming and the use of bio-fertilizers. In case that this is not feasible in certain areas and the use of chemicals is inevitable for some agricultural livelihood models, the project will develop instructions on the use of fertilizers/pesticides throughout the

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				introduction of farming good practices. There will not be any noticeable impact on water sources. (b) There will be no 'manufacturing' of forest products under the project, except for small scale honey production. No pulp, paper or timber operations with factories etc. Thus any associated effluent and effect on water sources/supply will be nil or negligible.
	(3) Wastes	(a) Are wastes properly treated and disposed of in accordance with the country's regulations?	(a) Y	(a) There will not be any significant waste associated with project activities since there will be no manufacturing.
	(4) Soil Contamination	(a) Are adequate measures taken to prevent contamination of soil and groundwater by use of chemicals, such as agrochemicals? (b) Are any agrochemicals management plans prepared? Are any usages or any implementation structures organized for proper use of the plans?	(a) N/A (b) N/A	(a) Use of such chemicals will be minimal under the project (b) Agricultural livelihood interventions in the project are very small scale and mainly restricted to technical trainings with limited provision of inputs such as the provision of fertilizers and pesticides. Agricultural models will not promote the extensive use of agrochemicals, indeed organic production models are preferred.
3 Natural Environ-ment	(1) Protected Areas	(a) Is the project site or discharge area located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) Y	(a) The project will not involve any significant discharge from construction or other production activities such as wood processing. The project aims to implement the forest development and improvement activities in protected areas (e.g., nature reserves); however, the project interventions are primarily beneficial to the conservation and protection of the protected areas. In addition, the project will strengthen the capacity of SUFMBs concerned, which will further contribute to strengthen the management of the protected areas.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) Is there a possibility that changes in localized micro-meteorological conditions, such as solar radiation, temperature, and humidity due to a large-scale timber harvesting will affect the surrounding vegetation? (d) Is there a possibility that a large-scale timber harvesting will result in loss of breeding and feeding grounds for wildlife? (e) In the case of reforestation projects, is there a possibility that mono-species plantations will adversely affect wildlife habitats? Is there a possibility that mono-species plantations will cause outbreaks of pests? (f) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? (g) Isn't an illegal deforestation associated with the project being carried out, or is an acquisition of the forest certification by the project proponent being carried out?	(a) Y (b) Y (c) N (d) N (e) N (f) N/A (g) N	(a) The project will be implemented at several protected area sites and in other tropical rain forest areas. However, project interventions are aimed at forest protection and restoration. (b) A number of the forest sites, especially the designated protected area sites, include important habitats for endangered species. However, project interventions are primarily beneficial (and not damaging) to the conservation and protection of the protected areas (c) No large scale timber harvesting activities (d) No large scale timber harvesting activities (e) Mix planting of indigenous species and fast growing species is the main design of afforestation in protection forests, while planting of several indigenous species is the main design of the same in nature reserves. (f) Significant ecological impacts are not anticipated since sub-projects activities with significant ecological impacts are eliminated (see Negative Checklist in ESMF Appendix A) (g) The project supports sustainable forest development and protection and thus does not include any significant deforestation activities. Moreover, any clearance of natural forest is also eliminated through the Negative Checklist in ESMF Appendix A.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(3) Hydrology	(a) Is there a possibility that alteration of rainwater runoff and runoff characteristics due to a large-scale timber harvesting and access road construction will cause impacts on the hydrology of the surrounding areas? (b) Is there a possibility that decreased water retention capacity due to deforestation will affect the existing drainage patterns of the forest?	(a) N (b) N	(a) There is no large scale timber harvesting activities planned in the project. (b) The project supports sustainable forest development and protection and thus does not include any significant deforestation activities. The project is aimed at enhancing water retention in critical watersheds.
	(4) Topography and Geology	(a) Is there a possibility that loss of forest stability due to timber harvesting will cause slope failures or landslides?	(a) N	(a) There is no significant timber harvesting activities planned in the project, although some minimal clearance may be associated with establishment of fire-breaks, constructing forest roads, and upgrading small scale village roads.
	(5) Management of Abandoned Sites	(a) Are adequate restoration and vegetation plans considered for the harvested areas? In particular, are adequate measures taken to prevent soil runoff from the harvested areas? (b) Is a sustainable management system for the harvested areas established? (c) Are adequate financial provisions secured to manage the harvested areas?	(a) N/A (b) N/A (c) N/A	(a) There is no significant timber harvesting activities planned. (b) Ditto (c) Ditto
4 Social Environ-ment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? (b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Is the compensations going to be paid prior to the resettlement? (e) Is the compensation policies prepared in document? (f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples? (g) Are agreements with the affected people obtained prior to resettlement? (h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (i) Are any plans developed to monitor the impacts of resettlement? (j) Is the grievance redress mechanism established?	(a) N (b) N/A (c) N/A (d) N/A (e) N/A (f) N/A (g) N/A (h) N/A (i) N/A (j) Y	(a) There will be no physical displacement nor land acquisition under the project. (b) There will not be any resettlement associated with the project. (c) Ditto. (d) Ditto. (e) Ditto. (f) Ditto. (g) Ditto. (h) Ditto. (i) Ditto. (j) Guidance on GRM is prepared as part of IPPF substantive requirements and included as part of the Consultation and Participation Guidelines (ESMF Appendix D)
	(2) Living and Livelihood	(a) Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary? Is particular attention paid to the inhabitants whose livelihoods are based on primary industries, such as farming, raising livestock, or hunting and gathering in the forests? (b) Are adequate measures taken to prevent illegal entry into the forestry resource areas from the outside through newly constructed access roads? (c) Is there a possibility that the forest right of common is obstructed?	(a) N (b) N/A (c) N (d) Y	(a) There may be the possibility for some loss of access to productive assets and livelihoods by introduction of afforestation and ANR activities in lands under customary use. However, this threat can be avoided and mitigated through consultations with local communities including participatory land use planning activities planned in the project. Procedures and measures for consultations are described in Consultation and Participation Guidelines of ESMF. In fact, it is expected that local people can increase their cash earnings through participation of the project because of the following reasons:

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		(d) Are considerations given to life of residents before implementation of project?		- In general, the project will use abandoned areas where local communities have left as fallow over years and do not plan to use for farming in coming years; and - Local communities will gain cash income from the forest development and improvement activities during the project period; and - They will be able to earn cash income from thinning of subordinate (economic) species, collection of NTFPs, and payment of PFES after the end of the project under the collaborative management agreement with PFMBs/ SUFMBs. (b) Forestry road is basically developed for carrying seedlings for afforestation and patrolling the areas. Hence, the major part of it will be just good for motorbike use, which cannot be used for transportation of timber illegally cut. (c) The project does not include activities which significantly strengthen forest law enforcement or create additional restrictions of access to forest lands and resources (d) A socio-economic baseline survey is planned to be conducted in the beginning of the project to clarify the life of local communities residing in the project areas. Consultations will also be carried out to give due considerations to local livelihoods and life style in making detailed designs of the project activities. Detailed description of consultation and participation procedures to be applied prior to and during project implementation are included in ESMF (Please see ESMF Appendix D).
	(3) Heritage	(a) Is there a possibility that the project will damage the local archaeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) There is no archaeological, historical, cultural, and religious heritage sites in and around the project areas.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) The project promotes sustainable forest development and protection, as such it aims to enhance local landscapes.
4 Social Environ-ment	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(a) Y (b) Y	(a) An Integrated ESMF is prepared to meet the substantive requirements of an IPPF, which details the procedures for consultations to reduce and minimize impacts on culture and lifestyle of ethnic minorities in the Consultation and Participation Guidelines (see ESMF Appendix D). (b) The project avoids any involuntary resettlement or formal land acquisition of ethnic minority households. The project does not include significant additional restrictions on access to forest resources. Where there are situations of existing latent land tenure conflict these are to be resolved through a process of free, prior and informed consultation (FPIC) leading to broad community support and agreements on spatial land use plans which acknowledge customary/informal land use areas to avoid and mitigate any loss of livelihoods (see ESMF, especially Appendix D).

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	(a) N/A (b) N/A (c) N/A (d) N/A	(a) No physical development relating to forestry development is planned in the project. (b) Ditto. (c) The majority of the works to be undertaken by local communities are simple and less dangerous, as they are similar to farming activities, such as weeding, hole digging, carrying materials, and planting seedlings. Hence, health program and safety training are not necessarily required for the project. (d) No security guard will be placed in the project.
5 Others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(a) N/A (b) N/A (c) N/A	(a) No physical development relating to forestry development is planned in the project. (b) Ditto. (c) Ditto.
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	(a) N/A (b) N/A (c) N/A (d) N/A	(a) Environmental Management and Monitoring Framework developed in ESMF can be used for the basis of monitoring plan. (b) Ditto. (c) Ditto. (d) Environmental monitoring will be carried out as a part of regular monitoring defied by Decision No. 18/2016.
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Agriculture checklist should also be checked.	(a) N/A	(a) Agricultural activities under the project are extremely small-scale, restricted mainly to capacity-building and do not involve significant environmental or social risks.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to trans-boundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as trans\boundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) N/A	(a) No significant negative impacts on trans-boundary or global issues are expected. To the contrary, the project is expected to enhance GHG sequestration as forest carbon sinks.

Remarks: "Y," "N," and "N/A" means "Yes," "No," and "Not Applicable."

Note:

1) Regarding the term "Country's Standards" mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are required to be made. In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan's experience).

2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which the project is located.

Table J-3 (2) Environmental Checklists (Silviculture and Small Scale Rural Infrastructure Project)

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) N (b) N (c) N (d) N	(a) As regulated in the Decree No 18/2015/ND-CP dated February 14th 2015 and Circular No 27/2015/TT-BTNMT dated May 29th 2015, an EIA is required as part of the project approval process on GoV side but has not been conducted yet. (b) EIA report shall be prepared by the project proponent (MBFPs) and submitted to MONRE for obtaining of approval before submission of pre-F/S for approval of PM. (c) See above. (d) Beyond the project-level EIA, no further approvals are required.
	(2) Explanation to the Local Stakeholders	(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) Stakeholder Consultation Meetings were held during the project preparation survey, however this was restricted to consultations with local level government authorities and mass organisations and did not include adequate consultation with project affected communities and households. Further consultation is therefore required specifically at project site levels prior to implementation of specific activities. Such consultation is provided for in the ESMF - see Consultation and Participation Guidelines (Appendix D) (b) Comments from project stakeholders (Forest Management Boards, Local government authorities (PPC, CPC, DARD, DoNRE, CEMA etc.) and mass organisations) were noted and reflected in project design. However, comments from affected communities and households should be absorbed into detailed design of interventions at the site level.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Full consideration of an alternative for the project has not been considered however the project design has been examined with respect to environmental and social considerations during the preparatory survey. Certain activities have been eliminated or altered so as to ensure that environmental and social impacts are avoided, minimised or otherwise mitigated during implementation (see ESMF).
2 Pollution Control	(1) Air Quality	(a) Do air pollutants, (such as sulphur oxides (SOx), nitrogen oxides (NOx), and soot and dust) emitted from the proposed infrastructure facilities and ancillary facilities comply with the country's emission standards and ambient air quality standards? Are any mitigating measures taken? (b) Are electric and heat source at accommodation used fuel which emission factor is low?	(a) N/A (b) N/A	(a) The rehabilitation/upgrading of small-scale rural infrastructure and silviculture infrastructure could generate unnoticeable dust. However, these impacts are inconsiderably temporal and below the country's emission standard. These potential risks will be further minimized by following the environmental management plan, particularly the Environmental Code of Practice (ECOP) given by ESMF. ECOPs outline typical generic low risk techniques that can be applied to a wide range of small scale temporary construction activities in the four provinces. ECOPs include mitigation measures and procedures for introduction of mitigation measures in the construction works. They include mitigation measures for these impacts and a process for including them in the construction contracts of contractors. Detailed designs shall be developed in accordance with ECOPs and also other specific measures identified in the environmental management plan. (b) All the construction work is seasonal and temporal. In fact, the construction period is

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
				estimated at less than 6 months in general. Therefore, no electric and heat source is required during the construction. Furthermore, no infrastructure development associated with an electric and heat source is planned in the project.
	(2) Water Quality	(a) Do effluents or leachates from various facilities, such as infrastructure facilities and the ancillary facilities comply with the country's effluent standards and ambient water quality standards?	(a) Y	(a) The rehabilitation/upgrading of small-scale rural infrastructure and silviculture infrastructure could only generate small amount of effluents; therefore, these impacts are inconsiderably temporal and below the country's emission standard. However, EMP/ECOP included in ESMF specifies the mitigation measures to control the effluent to minimize the water pollution during the construction phase.
	(3) Wastes	(a) Are wastes from the infrastructure facilities and ancillary facilities properly treated and disposed of in accordance with the country's regulations?	(a) Y	(a) There will not be any significant waste associated with project activities since any small-scale issues of waste will be dealt with according to national regulations and in accordance with the proposed Environmental Code of Practice (ECOP - see ESMF Appendix C).
	(4) Soil Contaminatio n	(a) Are adequate measures taken to prevent contamination of soil and groundwater by the effluents or leachates from the infrastructure facilities and the ancillary facilities?	(a) Y	(a) Likewise, the impact will be temporal and minimal, and a potential risk of effluents will be strictly dealt with by applying the ECOPs.
	(5) Noise and Vibration	(a) Do noise and vibrations comply with the country's standards?	(a) Y	(a) Given that small-scale rural infrastructure focuses on rehabilitation/ upgrading and the scale of silviculture infrastructure is small, noise and vibration are expected to be very small. Furthermore, the locations of the construction sites are remote and mountainous areas, there will be less households who might be affected by the construction. Moreover, the issue can be properly dealt with by applying the noise/vibration mitigation measure described in the ECOPs.
	(6) Subsidence	(a) In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence?	(a) N/A	a) No extraction of a large volume of groundwater is associated with the construction works of such small scale infrastructure and silviculture infrastructure.
	(7) Odor	(a) Are there any odor sources? Are adequate odor control measures taken?	(a) N	a) No odor sources are foreseen during the project implementation.
3 Natural Environment	(1) Protected Areas	(a) Is the project site or discharge area located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas? (b) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) Y	(a) The project will not involve any significant discharge from construction. (B) No physical development of small scale rural infrastructure is planned in the project. Only minor works, such as set-ups of watch towers and information boards, may be undertaken in the special use forests. However, they are generally simple interventions which will not disturb ecosystem around them. Moreover, they are primarily part of the management works of SUFMBs concerned and beneficial to strengthening of conservation and protection in the protected areas.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on ecosystems? (d) Are adequate protection measures taken to prevent impacts, such as distribution	(a) N (b) N (c) Y (d) Y (e) Y (f) N/Y	(a) No infrastructure development even watch tower and information board is not planned in primary forests and tropical rain forests, which are designated as strictly conservation sub-zone. (b) As described above, no infrastructure development is planned in the protected habitats (or nature reserves). Any potential impacts on ecosystems in protection forests can be eliminated by applying the Negative Checklist given in ESMF. (c) Only motorbike road is proposed as the forestry road in principle so as to minimize significant negative impact on ecosystems. All

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		of migration routes, habitat fragmentation, and traffic accident of wildlife and livestock? (e) Is there a possibility that installation of roads will cause impacts, such as destruction of forest, poaching, desertification, reduction in wetland areas, and disturbance of ecosystem due to introduction of exotic (non-native invasive) species and pests? Are adequate measures for preventing such impacts considered? (f) In cases the project site is located at undeveloped areas, is there a possibility that the new development will result in extensive loss of natural environment?		construction works for small scale rural infrastructure are upgrading of existing facilities; hence, the construction works will be extremely small-scale and temporal. Furthermore, any potential impacts can be minimized or prevented by application of the negative checklists and mitigation measures described in in the ECOPs of the ESMF. (d) Ditto. (e) Natural vegetation might be cleared by installation of the forestry road. However, as described above, the installation of motorbike road can mitigate such a risk. Furthermore, forestry road (either motorbike road or forestry road) will not be developed in existing forests but in degraded vegetation areas; hence destruction of forest is considered minimal. Again, the application of the negative checklists and mitigation measures described in in the ECOPs could minimize the risk. (f) Any infrastructure development will not be undertaken in undeveloped areas.
	(3) Hydrology	(a) Is there a possibility that hydrologic changes due to the project will adversely affect surface water and groundwater flows? (b) Is there a possibility that alteration of topographic features and installation of structures, such as tunnels will adversely affect surface water and groundwater flows?	(a) N (b) N/Y	(a) Given that the scale and scope of "improvement of small-scale rural infrastructure" and "development of silviculture infrastructure" and small and scattered, and mainly focus on rehabilitation/upgrading of existing facilities, the potential risks on surface water and groundwater flows are expected to be minimal. Furthermore, the impacts on surface water and groundwater flows can be eliminated by applying the Negative Checklist in ESMF. In addition, the ECOPs with mitigation measures will help the contractors not to cause any adverse impacts. (b) No physical development which might cause the alteration of topographic features is planned in the project.
	(4) Topography and Geology	(a) Is there a possibility the project will cause large-scale alteration of the topographic features and geologic structures in the project site and surrounding areas? (b) Is there any soft ground on the route that may cause slope failure or landslides? Are adequate measures considered to prevent slope failures or landslides, where needed? (c) Is there a possibility that civil works, such as cutting and filling will cause slope failures or landslides? Are adequate measures considered to prevent slope failures or landslides (d) Is there a possibility that soil runoff will result from cut and fill areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff?	(a) N	(a) No large scale alternation of topographic features and geologic structures are expected and eliminated by using the Negative Checklist. (b) The size and scale of construction works are minimal and the extent of ground work is limited. The potential risk of slope failure and landslide can also be minimize and eliminated by application of the negative checklist and mitigation measures described in in the ECOPs. (c) Some cutting and filling will be associated with construction of motorbike/forestry road as well as improvement of rural roads. However, the size of filling and cutting is minimal; therefore the potential impacts is likely negligible. ECOPs describe the necessary mitigation measures to protect slopes (cutting and filling areas) from erosion and failures. (d) In theory, there is possibility that soil runoff can happen in cut and fill areas. However, the size of the construction site is general minimal and construction period is seasonal (mainly dry season) and temporal, hence the potential risk is also minimal. Plus, the application of the mitigation measures described in in the ECOPs can further minimize the risks.
4 Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement?	(a) N (b) N/A (c) N/A (d) N/A (e) N/A	(a) There will be no physical displacement nor land acquisition under the project. (b) There will not be any resettlement associated with the project. (c) Ditto

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		(b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Is the compensations going to be paid prior to the resettlement? (e) Is the compensation policies prepared in document? (f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples? (g) Are agreements with the affected people obtained prior to resettlement? (h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (i) Are any plans developed to monitor the impacts of resettlement? (j) Is the grievance redress mechanism established?	(f) N/A (g) N/A (h) N/A (i) N/A (j) Y	(d) Ditto (e) Ditto (f) Ditto (g) Ditto (h) Ditto (i) Ditto (j) Guidance on GRM is prepared as part of IPPF substantive requirements and included as part of the Consultation and Participation Guidelines (ESMF).
	(2) Living and Livelihood	(a) Is there a possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary? (b) Is there any possibility that the project will adversely affect the living conditions of the inhabitants other than the target populations? Are adequate measures considered to reduce the impact, if necessary? (c) Is there any possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary? (d) Is there any possibility that the project will adversely affect road traffic in the surrounding areas? (e) Is there any possibility that roads will impede the movement inhabitants? (f) Is there any possibility that structures associated with roads will cause a sun shading and radio interference?	(a) N (b) N (c) N (d) N (e) N (f) N	(a) The rehabilitation/upgrading of small-scale rural infrastructure and silviculture infrastructure will not adversely affect the living conditions of inhabitants. However, ESMF includes a detailed description of consultation and participation procedures to be applied for the adequate consideration of local livelihoods and consultation with affected communities and households prior to and during project implementation (see ESMF Appendix D). (b) No adverse influence is caused by the project. If anything, all the small scale rural infrastructure will give substantial benefits to local communities and improve their living conditions. (c) The construction works for all the infrastructure is at the small scale, hence, casual labourers will be mainly local people living in the target areas. The risk of the outbreak of HIV or other transmittable diseases is limited. (d) There is no possibility of affecting the existing road traffic. (e) There is no possibility of impeding the movement of inhabitants as the scale of the planned rural and silviculture infrastructure facilities is small. (f) There is no possibility of sun shading and radio interference.
	(3) Heritage	(a) Is there a possibility that the project will damage the local archaeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) There is no archaeological, historical, cultural, and religious heritage sites in and around the project areas. Also any such activities can be further eliminated by using a negative checklist presented in ESMF Appendix A.
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken? (b) Is there a possibility that landscape is spoiled by construction of high-rise buildings such as huge hotels?	(a) N (b) N	(a) The project will not adversely affect the local landscapes. (b) No high building is proposed in the project

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(a) Y (b) Y	(a) An Integrated ESMF is prepared to meet the substantive requirements of an IPPF, which details the procedures for consultations to reduce and minimize impacts on culture and lifestyle of ethnic minorities in the Consultation and Participation Guidelines (see ESMF Appendix D). (b) Any involuntary resettlement or land acquisition will not occur along with improvement of small scale rural infrastructure and development of silviculture infrastructure in general. In the process of free, prior and informed consultation (FPIC), which leads the participatory land use planning, the proposed locations of village roads or forest roads to be developed could be discuss with local communities to avoid land acquisition and cause any loos of livelihood.
	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	(a) N (b) Y (c) Y (d) Y	(a) The project will not violate any laws regarding working conditions (see Environmental Code of Practice in ESMF Appendix C) (b) Environmental Code of Practice in ESMF Annex C is included the content of Worker safety which require the worker should wear protective labour equipment at construction site. (c) Environmental Code of Practice in ESMF Appendix C include the contractor's workers environmental code of conducts to cope with risk and emergency at construction site and provide training for workers on occupational safety regulations. (d)Environmental Code of Practice is also included the requirement of Installation of fences, barriers, lighting system against traffic accidents, dangerous warning/prohibition site around the construction area which showing potential danger to public people .
5 Others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(a) Y (b) Y (c) Y	(a) Construction activities in the project are small scale (primarily upgrading existing infrastructure); therefore, the potential adverse impact is expected to be minimal. However, measures to reduce impacts are specified as the ECOP in ESMF Annex C) (b) There will be no clearance of natural forest under the project nor any construction of new roads, even forestry road in the nature reserves (protected areas). Forestry or motorbike roads will be developed in the protection forests, but its scope (width) is narrow and the lengths are also limited; therefore, the potential impact is expected to be less. Moreover, any significant impact can be avoided by applying the Negative Checklist in ESMF Appendix A. (c) There will be no physical resettlement or land acquisition in the project; therefore social issues can be expected to be minimal and temporary disruption during the construction phase. These are generally mitigated by application of the ECOP in ESMF Appendix C.
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and	(a) Y (b) Y (c) Y (d) Y	(a) Environmental Management and Monitoring Framework developed in ESMF can be used for the basis of monitoring plan. (b) Ditto. (c) Ditto. (d) Environmental monitoring will be carried out as a part of regular monitoring defied by Decision No. 18/2016.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?		
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Roads, Railways and Bridges checklist should also be checked (e.g., projects including access roads to the infrastructure facilities).	(a) N/A	(a) The small-scale rural infrastructure and silviculture infrastructure under the project are extremely small-scale, restricted mainly to rehabilitation/upgrading/restoration the existing works and do not involve significant environmental or social risks.
	Note on Using Environmental Checklist	(a) If necessary, the impacts to trans-boundary or global issues should be confirmed (e.g., the project includes factors that may cause problems, such as trans-boundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) N/A	(a) No significant negative impacts on trans-boundary or global issues are expected. To the contrary, the project is expected to enhance GHG sequestration as forest carbon sinks.

Remarks: "Y," "N," and "N/A" means "Yes," "No," and "Not Applicable."

Note:

1) Regarding the term "Country's Standards" mentioned in the above table, in the event that environmental standards in the country where the project is located diverge significantly from international standards, appropriate environmental considerations are required to be made. In cases where local environmental regulations are yet to be established in some areas, considerations should be made based on comparisons with appropriate standards of other countries (including Japan's experience).

2) Environmental checklist provides general environmental items to be checked. It may be necessary to add or delete an item taking into account the characteristics of the project and the particular circumstances of the country and locality in which the project is located.

Table J-4 Potential Negative Environmental Impacts and Mitigation Measures

Component	Activities	Potential Environmental Issues	Possible Mitigation Measures
1. Survey and Detailed Planning	1.1 Purchase of high resolution satellite images 1.2 Participatory land use planning (including development of land use and forest maps for forest management) 1.3 Demarcation of boundaries of target areas (perimeter surveys) 1.4 Baseline surveys at target sites/communes. 1.5 Detailed designs of forest development, silviculture and small-scale rural infrastructure development	• Inaccurate or inappropriate land use zoning could lead to negative impacts on forests and wildlife • Lack of environmental considerations in the design of forest development, silviculture and small-scale rural infrastructure could lead to negative environmental impacts e.g. selection of exotic species for afforestation may have negative impacts on biodiversity, or minor effects of small-scale infrastructure (e.g. air and water pollution, minor land/forest clearance)	• Verify afforestation and ANR sites in the field to confirm appropriateness. • Eliminate activities (e.g. no conversion of natural forest, no conversion of any protection/SUF forest >5 ha, roads <50 km etc. – see Negative Checklist). • Do not use non-native species for Afforestation/ANR in special use forests (see Negative Checklist). • Use native species in principle or at least mixed stand designs (mainly native species) approved by MARD for Afforestation/ANR in protection forests.
2. Protection and improvement of critical watershed forest	2.1 Afforestation 2.2 Assisted Natural Regeneration 2.3 Forest Protection 2.4 Introduction of benefit sharing mechanism and collaborative management	• Use of exotic species in afforestation and/or assisted natural regeneration could have negative impacts on biodiversity	• Select severely degraded forests/bushes or bare or glass lands for afforestation (see Negative Checklist). • Use native species or at least mixed stand designs approved by MARD for Afforestation/ANR in protection foresst. • Do not use non-native species in special use forests
3. Development of silviculture infrastructure	3.1 Watch tower 3.2 Nursery 3.3 Motor bike roads 3.4 Forest fire prevention line 3.5 Forest guard station	• Construction of new motorbike roads could cause forest/tree loss, damage habitats, split populations of certain species (e.g. primates) • Construction/upgrading of motorbike roads could facilitate extraction of forest resources and negatively impact forest cover and ecosystems • Minor small scale /temporary/reversible environmental impacts on air/dust, water sources, chemicals/pollutants, noise, waste disposal during the construction of watchtowers, nurseries, checkpoints, guard stations	• Do not convert natural forests for silviculture infrastructure (see Negative Checklist). • Do not implement any construction works in special use forests (see Negative Checklist). • Construct/upgrade forestry/motorbike roads which do not cause forest clearance more than 5 hain protection forest (see Negative Checklist). • Place the primary focus of road upgrading on upgrading– no new roads (see Negative Checklist). • Apply ECOP into the bidding document of the contractors who then will be responsible for mitigation measures during the construction phase (refer to the Appendix C).
4. Improvement of small-scale rural infrastructure	4.1 Rural road construction/improvement 4.2 Small-scale irrigation system construction/upgrade 4.3 Rural water supply system construction/upgrade	• Minor environmental impacts in construction of small-scale infrastructure (temporary/reversible impacts e.g. on air/dust, water sources, chemicals/pollutants used in construction, noise, tree removal, minor damage to habitats, waste disposal etc.)	• Focus on upgrading/restoring existing infrastructure – avoid new infrastructure • Do not exceed scale/size for District EPP clearance (see Negative Checklist). • Apply ECOP into the bidding document of the contractors who then will be responsible for mitigation measures during the construction phase,

Component	Activities	Potential Environmental Issues	Possible Mitigation Measures
5. Support for livelihood improvement (including technical trainings, model implementation support and marketing)	5.1 Fuel-saving models; a) Biogas; b) Improved cookstoves 5.2 Alternative income generating models: a) Vegetable garden and fruit trees; b) Fodder grass; c) Apiculture (beekeeping) model; d) Contract farming (business-matching and quality improvement through TA) 5.3 Market assessment 5.4 Forestry/Agroforestry models: Fruit trees, spices, bamboo, rattan, (mixed planting on forest land) 5.5 Technical trainings on Sloping Agricultural Land Techniques (SALT)	• Promotion of contract farming (likely products will be maize, cassava, tea, coffee, rubber) could encourage deforestation • Development of certain cash crop/ NTFP models could enhance illegal and unsustainable extraction or deleterious impacts on forest understorey • Ecological impacts from cassava and maize production (on soils) and processing from waste in processing (on water sources)	• Select potential livelihood activities to ensure appropriateness (see TA Guidance) • Develop agriculture and livelihood models which can improve productivity or profitability of the exiting practices to prevent agricultural expansion and deforestation. • Provide guidelines for NTFP/cash crop models to employ quotas and environmentally-friendly/sustainable production techniques (see TA Guidance).
6. Prevention of forest fires	6.1 Provision of fire preventive equipment 6.2 Conduct of fire drills	• No significant environmental issues foreseen	
7. Project Management	7.1 Awareness raising and information dissemination to local communities and local government units	• No significant environmental issues foreseen	-

Table J-5 Potential Negative Social Impacts and Mitigation Measures

Component	Activities	Potential Social Issues	Possible Mitigation Measures
1. Survey and Detailed Planning	1.1 Purchase of high resolution satellite images 1.2 Participatory land use planning (including development of land use and forest maps for forest management) 1.3 Demarcation of boundaries of target areas (perimeter surveys) 1.4 Baseline surveys at target sites/communes. 1.5 Detailed designs of forest development, silviculture and small-scale rural infrastructure development	• Involuntary Resettlement/Land Acquisition: Formal acquisition of (agricultural or forest) unallocated lands by PFMBs (not funded by project but parallel to project in same sites). • Involuntary Resettlement/Loss of Access to Productive Assets and Loss of Livelihoods: Use of lands by the project for afforestation/ANR or other activities which are claimed or customarily used by ethnic minority communities or households • Land use conflict (between households, between communities or between communities and forest management boards): Any conflict over lands as a result of land use planning, particularly where it reinforces inequitable distribution of land/resource access. • Inequitable distribution of benefits based on forest land tenure arrangements.	• Do not implement any activities which cause: - physical relocation/resettlement; - ormal land acquisition at project sites, even where financed by GoV i.e. remove site from project; and - involuntary resettlement/loss of livelihoods or access to productive assets. • Conduct a process of FPIC including participatory land use planning and verification of support for the land use arrangements for selection of the project areas without any conflict with local communities (see Consultation and Participation Guidelines). • Select communities/households through accountable and transparent beneficiary selection process and equitable benefit-sharing mechanism (see Consultation and Participation Guidelines).
2. Protection and improvement of critical watershed forest	2.1 Afforestation 2.2 Assisted Natural Regeneration 2.3 Forest Protection 2.4 Introduction of benefit sharing mechanism and collaborative management	• Afforestation on lands needed by households for agricultural production could affect livelihoods, reduce incomes, food security, increase vulnerability etc.	• Mitigate and avoid any social risks through Consultation and Participation Guidelines (see 1 above).
3. Development of silviculture infrastructure	3.1 Watch tower 3.2 Nursery 3.3 Motor bike roads 3.4 Forest fire prevention line 3.5 Forest guard station	• Land acquisition associated with road construction	• No land acquisition - use existing routes or new routs where land acquisition is not required (see Negative Checklist) or only small areas of voluntary land acquisition on the communities' initiatives take place (see Consultation and Participation Guidelines).
4. Improvement of small-scale rural infrastructure	4.1 Rural road construction/ improvement 4.2 Small-scale irrigation system construction/upgrade 4.3 Rural water supply system construction/upgrade	• Land acquisition associated with rural infrastructure • Small-scale infrastructure benefits elites or non-equitable receipt of benefits among community	• No land acquisition - upgrade existing infrastructure or ensure route which does not require land acquisition (see Negative Checklist) or small areas of voluntary land acquisition on the communities' initiatives.
5. Support for livelihood improvement (including technical trainings, model implementation support and marketing)	5.1 Fuel-saving models; a) Biogas; b) Improved cookstoves 5.2 Alternative income generating models: a) Vegetable garden and fruit trees; b) Fodder grass; c) Apiculture (beekeeping) model; d) Contract farming (business-	• Inequitable selection of beneficiaries • Exclusion of vulnerable groups from project activities and benefits	• Identify specific activities for marginalized groups such as landless, poor households, female headed households, women etc. in site level plans. • Specify minimum quotas for the selection of women as beneficiaries (e.g. 50% poor/near poor and 30% women) of livelihood development

Component	Activities	Potential Social Issues	Possible Mitigation Measures
	matching and quality improvement through TA) 5.3 Market assessment 5.4 Forestry/Agroforestry models: Fruit trees, spices, bamboo, rattan, (mixed planting on forest land) 5.5 Technical trainings on Sloping Agricultural Land Techniques (SALT)		activities – see Consultation and Participation Guidelines.
6. Prevention of forest fires	6.1 Provision of fire preventive equipment 6.2 Conduct of fire drills	• No significant social issues foreseen	-
7. Project Management	7.1 Awareness raising and information dissemination to local communities and local government units	• An over-emphasis on improved forest law enforcement capacity could lead to worsening relationships between communities and forest management boards/forest protection authorities.	• Place the focus of capacity building and training on social aspects of forestry, co-management etc. (see Capacity development for ESMF).

Figures

Figure J-1 Implementation Schedule of the Project

Work Items	2016	2017 (1st)	2018 (2nd)	2019 (3rd)	2020 (4ht)	2021(5th)	2022 (6th)	2023 (7th)	2024 (8th)	2025 (9th)	2026 (10th)	2027 (11th)
JICA Appraisal of the Project												
Approval of the Project by the VN Government												
(1) Submission of Pre-FS												
(2) Approval of FS												
(3) Submission of the plan of the provincial projects												
(4) Approval of the plan of the provincial projects												
(5) Approval of Consolidated EIA by MONRE												
Signing of Loan Agreement												
0. Project Management (Preparatory Work)												
0-1 Establishment of CPMB, CSC, PPMBs, and PSCs												
0-1-1 Establishment of CPMB												
0-1-2 Formation of Centeral Steering Committee (CSC)												
0-1-3 Establsihemnt of PPMBs												
0-1-4 Formation of Provincial Steering Committees (PSCs)												
0-1-5 Procurement of Equipment												
0-2 Institutional Set-up												
0-2-1 Issuance of Circular on Financial Management of Project												
0-2-2 Issuance of Project Cost Norm												
0-2-3 Issuance of Regulations of Organization and Operation of the Project												
0-2-4 Issuance of Project Implementation Manuals and Guidelines												
0-3 Procurement of Consultant												
0-3-1 Short-listing of Consultants												
0-3-2 Issuance of RfP to Short-listed Consultants												
0-3-3 Evaluation of the Proposals												
0-3-4 Mobilization of the Consultant												
1. Survey and Detailed Planning												
1-1 Participatory Land Use Planning and Group Formation												
1-1-1 Procurement of Satellite Images												
1-1-2 Procurement of Contractor												
1-1-3 Preparation of Photo-like Maps												
1-1-4 Participatory Land Use Planning and Group Formation												
(1) 1st batch												
(2) 2nd batch												
1-2 Site demarcation and set-ups of land marks												
1-3 Baseline surveys in the target communes												
1-3-1 Procurement of Contractor/s												
1-3-2 Baseline Surveys in Target Communes												
1-4 Detailed Designing of Forest Development												
1-4-1 Procurement of Contractor/s												
1-4-2 Detailed Desgining of Forest Development and Silviculture Infrastruture												
1-5 Detailed Desgining of Small Scale Rural Infrastructure												
1-5-1 Identification of Priority Project, Planning and Procurement of Contractor/s												
1-5-2 Survey and Detailed Designing												
2. Improvement of Watershed Forests												
2-1 Afforestation												
2-1-1 1st Batch (20%)												
2-1-2 2nd Batch (40%)												
2-1-3 3rd Batch (40%)												
2-2 Protection of Natural Forests												
2-2-1 1st Batch (40%)												
2-2-2 2nd Batch (60%)												
2-3 Assisted Natural Regeneration												
2-3-1 1st Batch (40%)												
2-3-2 2nd Batch (60%)												
2-4 Phase-out/Phase-in Activities												
2-4-1 Guidance on Collaborative Management to PPMUs, DARDs, and PFMBs/SUFMBs												
2-4-2 Workshops for Development of Forest Management Plan at the Commune/Village Level												
2-4-3 Guidance on Operation and Maintenance to CPCs, Commune Extension Workers and Users' Groups												
3. Improvement of Silviculture Infrastructure												
3-1 Forestry Roads												
3-2 Footpaths												
3-3 Fire Breakline												
3-4 Fire Watch Towers												
3-5 Forest Protection Station												
3-6 Forest Protection Office												
3-7 Information Boards												
3-8 Sign Board												
3-9 Nursery												

Figure J-1 Implementation Schedule of the Project

Work Items	2016	2017 (1st)	2018 (2nd)	2019 (3rd)	2020 (4ht)	2021(5th)	2022 (6th)	2023 (7th)	2024 (8th)	2025 (9th)	2026 (10th)	2027 (11th)
4. Improvement of Small Scale Rural Infrastructure												
4-1 Tender												
4-1-1 1st Batch												
4-1-2 2nd Batch												
4-1-3 3rd Batch												
4-2 Construction												
4-2-1 1st Batch												
4-2-2 2nd Batch												
4-2-3 3rd Batch												
4-3 Operation and Maintenance												
4-3-1 1st Batch												
4-3-2 2nd Batch												
4-3-3 3rd Batch												
4-3-4 Orientation and Guidance on Operations and Maintenance of Infrastructure												
5. Support for Livelihood Development												
5-1 Assistance in Identification/Selection of Priority Livelihood Options												
5-1-1 Workshops for Identification/Selection of Livelihood Options (1st Batch and 2nd Batch)												
5-1-2 Survey on potential model sites for livelihood development (1st Batch and 2nd Batch)												
5-2 Marketing Survey												
5-2-1 Procurement of Contractor/s												
5-2-2 Marketing Survey												
5-3 Development of Demonstration/Model Plots and Provision of Training Courses on Selected Livelihood Development Options												
5-3-1 Training on Key Techniques for DAECs and Commune Extension Workers												
5-3-2 Development of Demonstration Plots												
5-3-3 Technical Training on Livelihood Development at the Demonstration Plots for Communities												
5-4 Assistance in Management and Use of Payments made to the Village Working Groups												
5-4-1 Guidance on the Mode of Payments from PFMBs/SUFMBs to the Village Working Groups												
5-4-2 Workshops/Discussions on the Use of Saving Funds of the Village Working Groups												
5-4-3 Training on Financial Management												
5-4-4 Assistance in the Preparation of Business Plans on Potential Income Generating Activities												
5-5 Inter-district or province Cross Field Visit												
6. Forest Fire Prevention												
6-1 Provision of Equipment for Forest Fire Control												
6-2 Forest Fire Control Training												
6-2-1 Training of Forest Rangers												
6-2-2 Training of Village Leders and Village Working Groups on Forest Fire Control Planning												
6-2-3 Forest Fire Control Drills at the Communes												

Figure J-1 Implementation Schedule of the Project

Work Items	2016	2017 (1st)	2018 (2nd)	2019 (3rd)	2020 (4ht)	2021(5th)	2022 (6th)	2023 (7th)	2024 (8th)	2025 (9th)	2026 (10th)	2027 (11th)
7. Project Management												
7-1 Information Dissemination												
7-1-1 Project Orientation (including M&E system)												
(1) Project Orientation to CPMUs/MARD												
(2) Project Orientation to PPMUs/DARDs												
(3) Project Orientation to DPCs/PFMBs/SUFMBs												
(4) Project Orientation to CPCs and Village Working Groups												
7-1-2 Annual Planning Workshop												
(1) At the Central Level (with CPMU)												
(2) At the Provincial Level (with PPMUs)												
7-1-3 Orientation and Guidance on Annual Work Plan and Guidelines												
(1) To Forest Owners (PFMBs/SUFMBs)												
(2) To DPCs, CPCs, and Village Working Groups												
7-1-4 Orientation and Guidance on Benefit Sharing Mechanism												
(1) Orientation to CPMUs/MARD												
(2) Orientation to PPMUs/DARDs												
(3) Orientation to DPCs/PFMBs/SUFMBs												
(4) Orientation to CPCs and Village Working Groups												
7-2 Production and Publication of Project Documents												
7-2-1 Project Brief (Leaflets)												
7-2-2 Project Newsletter												
7-2-3 Awareness Raising Materials												
7-3 Study Tours												
7-3-1 Study Tours to JICA 2 Sites for PPMUs and Forest Owners (PFMBs/SUFMBs)												
7-3-2 Study Tours to SNRMP Sites for Forest Owners (PFMBs/SUFMBs) and Village Working Groups												
7-3-3 Overseas Study Tours for CPMU/MBFPs and PPMUs/DARDs												
7-4 Review Meetings												
7-4-1 Bi-annual Review Meetings at the Central Level												
7-4-2 Bi-annual Review Meetings at the Provincial Level												
7-5 Technical Guidance to PPMBs and/or PFMBs/SUFMBs and ContractorS												
7-5-1 Guidance on PLUP (for PPMBs, PFMBs/SUFMBs, and Contractors)												
7-5-2 Guidance on Demarcation with GPS and Use of GIS (for PPMBs/SUFMBs)												
7-5 Project Monitoring and Evaluation												
7-5-1 Establishment of Monitoring, Supervision, and Evaluation System for the Project												
7-5-2 Regular Supervision and Monitoring of the Project												
7-5-3 Periodic Monitoring, Assessment, and Evaluation												
(1) Initial Evaluation												
(2) Mid-term Evaluation												
(3) Terminal Evaluation												
7-6 Forest Monitoring												
7-6-1 Guidance on Provincial Forest Monitoring System to PPMUs, PFMBs/SUFMBs												
7-6-2 Procurement of Equipment for Provincial Forest Monitoring System												
7-6-3 Annual Monitoring of Forest Reseources												
8. Consulting Services												