6 Financial plan and feasibility

The items of the estimated operation costs and revenues correspond to the components of the operational plan for the Mang La FE.

The same amount of expected external funds under Program 661 and other such programs, is appropriated in both the operation costs in 6.1 and in the operation revenues in 6.2. Therefore, these amounts do not affect the profit and loss situation as shown in 6.3.

The timber production program under the operation has set the volume of the cutting so that the revenues from logging will cover the operation costs that the Mang La FE needs to finance. Therefore, the operation could not possibly fall into the red, at least on paper. This presupposes, however, that the planned volume of the cutting is within the range of the cutting quota shown in 3.8.1, Part II in Vol. I, that is, between 2,684 and 6,270 m^3. In fact, the planned volume of the cutting as shown in Table II-5.1.1 is within this range. Consequently, the forest management plan of the Mang La FE is evaluated as feasible.

The feasibility will be realized on a condition that the Decision 187 on Reforming Organization and Management Mechanism of State Forest Enterprises would be applied to the Mang La FE and the financial independency of the FE would be secured. In other words, it should be noted that operation revenue earned from stumpage sales can be put in the account of the FE as profits and be used as expenditure for the FE's operation.

6.1 Estimated operation costs (expenditures)

The operation costs are basically estimated in line with the concept for estimation of project financing planning under the master plan. The estimates over the ten years for each cost item and the concept behind the estimation are shown in the following subsections related to the cost items.

The estimated operation costs include the costs to be financed by the Mang La FE itself and the costs to be financed from external funds. The basis for and the method of the estimation correspond to those discussed in 3.9.2, Part II, Vol. I. unless otherwise noted.

Each cost is shown year by year from the 1st year to 10th year in each table. However, most of the costs over the ten years shown in the tables have simply been allotted to each year, since the annual plans had not been formulated. Therefore, these annual costs are only indicative.

6.1.1 Cost of the cutting

Since the stumpage sales are adopted as timber sale measures, the cost of cutting is represented only by the cruising costs paid to the FIPI at the planning stage based on the cutting plan in Volume II 5.1.1. The sales and general administrative expenses are included in the office overheads discussed in 6.1.7 (management and administrative costs). The cruising costs paid to FIPI amount to 20,000 VND /m^3 in proportion to the volume of the cutting on a per log basis. Since the cutting plan in 5.1.1 sets the volume of the cutting for each five-year period, not for each year, estimates are made for each of the first and second five-year periods. The cruising costs for the first period are allocated equally to each year between 2003 and 2007. Likewise, the cruising costs for the second period are allocated equally to each year between 2008 and 2012. Table II-6.1.1 shows the annual costs of cutting over the ten years, which are calculated based on the above estimation.

Table II-6.1.1 Annual costs of cutting (cruising costs) over the ten years

(Unit: 1,000 VND)

Cutting period	Planned volume	Unit cost	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr.	Total
1st period	19,578 m^3	20,000 VND/m^3	78,312	78,312	78,312	78,312	78,312						391,560
2nd period	24,131 m^3	20,000 VND/m^3						96,524	96,524	96,524	96,524	96,524	482,620
Total (1000 VND)			78,312	78,312	78,312	78,312	78,312	96,524	96,524	96,524	96,524	96,524	874,180
10% reserve fund (1000 VND)			7,831	7,831	7,831	7,831	7,831	9,652	9,652	9,652	9,652	9,652	87,418
Sum Total (Total + Reserve fund) (1000 VND)			86,143	86,143	86,143	86,143	86,143	106,176	106,176	106,176	106,176	106,176	961,598
In dollar terms (US$)			5,743	5,743	5,743	5,743	5,743	7,078	7,078	7,078	7,078	7,078	64,107

6.1.2 Silviculture costs

On the basis of section 5.2, the silviculture costs have been estimated on the assumption that both the area of land for the afforestation plan and the area of land for the forest stand improvement plan are evenly distributed over the ten years. The costs for tending in the second year begin to be incurred in the second year of the ten-year period. During the period, these costs are not incurred for the areas to be afforested in the tenth year. The costs for tending in the third year begin to be incurred in the third year. During the period, the cost is not incurred for the areas to be afforested in the ninth and tenth years. The estimated costs are divided into those financed by the FE and those financed through external funds under Program 661. The former is for the production forests and the latter is for the protection forests. Table II-6.1.2 shows the annual silviculture costs over the ten years, which are calculated on the basis of the above estimation.

Table II-6.1.2 Annual silviculture costs over the ten years

(Unit: 1,000 VND)

Source of funds	Item	Target area	Unit cost	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr.	Total
Funds provided by the FE	First-year planting costs (nursery + planting + tending)	60.49 ha	2,300,000 VND/ha	13,913	13,913	13,913	13,913	13,913	13,913	13,913	13,913	13,913	13,913	139,127
	Second-year tending	54.44 ha	700,000 VND/ha		4,234	4,234	4,234	4,234	4,234	4,234	4,234	4,234	4,234	38,108
	Third-year tending	48.39 ha	700,000 VND/ha			4,234	4,234	4,234	4,234	4,234	4,234	4,234	4,234	33,873
	Forest stand improvement	28.14 ha	900,000 VND/ha	2,533	2,533	2,533	2,533	2,533	2,533	2,533	2,533	2,533	2,533	25,326
	Total (1,000 VND)			16,445	20,680	24,914	24,914	24,914	24,914	24,914	24,914	24,914	24,914	236,434
	10% reserve fund (1,000 VND)			1,645	2,068	2,491	2,491	2,491	2,491	2,491	2,491	2,491	2,491	23,643
	Sum total (1,000 VND)			18,090	22,747	27,405	27,405	27,405	27,405	27,405	27,405	27,405	27,405	260,077
	In dollar terms (US$)			1,206	1,516	1,827	1,827	1,827	1,827	1,827	1,827	1,827	1,827	17,338
External funds	First-year planting costs (nursery + planting + tending)	102.01 ha	2,300,000 VND/ha	23,462	23,462	23,462	23,462	23,462	23,462	23,462	23,462	23,462	23,462	234,623
	Second-year tending	91.81 ha	700,000 VND/ha		7,141	7,141	7,141	7,141	7,141	7,141	7,141	7,141	7,141	64,267
	Third-year tending	81.61 ha	700,000 VND/ha			7,141	7,141	7,141	7,141	7,141	7,141	7,141	7,141	57,127
	Forest stand improvement	18.33 ha	900,000 VND/ha	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	1,650	16,497
	Total (1,000 VND)			25,112	32,253	39,394	39,394	39,394	39,394	39,394	39,394	39,394	39,394	372,514
	10% reserve fund (1,000 VND)			2,511	3,225	3,939	3,939	3,939	3,939	3,939	3,939	3,939	3,939	37,251
	Sum total (1,000 VND)			27,623	35,478	43,333	43,333	43,333	43,333	43,333	43,333	43,333	43,333	409,765
	In dollar terms (US$)			1,842	2,365	2,889	2,889	2,889	2,889	2,889	2,889	2,889	2,889	27,318

6.1.3 Cost of developing the forestry infrastructure

The costs of developing the forestry infrastructure are represented by the costs of constructing spur roads, which are estimated based on the forestry infrastructure development plan outlined in 5.3. Since the cutting plan sets the volume of the cutting for each five-year period, not for each year, the estimates for costs of constructing spur roads are made for each of the first and second five-year periods. The costs for the first period are allocated equally to each year between 2003 and 2007. Likewise, the costs for the second period are allocated equally to each year between 2008 and 2012. Table II-6.1.3 shows the annual costs of constructing spur roads over the ten years, which are calculated based on the above estimation.

For reference, the total required costs of constructing the related public roads are shown in Table II-6.1.4 these are based on the plan outlined in 5.3.1, although the costs of constructing public roads are financed by the government budget. The cost is estimated based on two assumptions. One is that a overflow bridge about ten meters in length will be constructed along the newly planned public road near the end of the existing public road that runs through Dak Xo village. The other is that a culvert

will be constructed every kilometer in accordance with the master plan. Please note that these costs are not accounted for in the operation income (profit and loss) in 6.3.

Table II-6.1.3 Annual cost of constructing spur roads over the ten years

(Unit: 1,000 VND)

Construction period	Planned length	Unit cost	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr.	Total
1st period	10,072 m	150,000 VND/m	302,160	302,160	302,160	302,160	302,160						1,510,800
2nd period	15,512 m	150,000 VND/m						465,360	465,360	465,360	465,360	465,360	2,326,800
Total (1,000 VND)			302,160	302,160	302,160	302,160	302,160	465,360	465,360	465,360	465,360	465,360	3,837,600
10% reserve fund (1,000 VND)			30,216	30,216	30,216	30,216	30,216	46,536	46,536	46,536	46,536	46,536	383,760
Sum total (1,000 VND)			332,376	332,376	332,376	332,376	332,376	511,896	511,896	511,896	511,896	511,896	4,221,360
In dollar terms (US$)			22,158	22,158	22,158	22,158	22,158	34,126	34,126	34,126	34,126	34,126	281,424

Table II-6.1.4 Cost of constructing public roads

Item		Planned length/No.	Unit cost	Total (VND)
New construction costs	New roads	4,716 m	400,000 VND/m	1,886,400,000
	A ford	10 m	600,000 VND/m	6,000,000
	Culverts	4	350,000 VND per culvert	1,400,000
	Subtotal			1,893,800,000
Repair costs for the existing logging road	Repairs	2,296 m	250,000 VND/m	574,000,000
	Culverts	2	350,000 VND per culvert	700,000
	Subtotal			574,700,000
Repair costs for the existing public roads	Repairs	11,550 m	250,000 VND/m	2,887,500,000
	Culverts	11	350,000 VND per culvert	3,850,000
	Subtotal			2,891,350,000
Total (VND)				5,359,850,000
10% reserve fund (VND)				535,985,000
Sum total (VND)				5,895,835,000
In dollar terms (US$)				393,056

6.1.4 Cost of the wildlife conservation program

The wildlife conservation program will principally be implemented at the district level based on the master plan, and the program will not be carried out by the Mang La FE alone. Therefore, an

operational plan to implement the program by the Mang La FE has not been drafted in Chapter 5. Instead, this implementation schedule over the ten years is outlined in Table II-6.1.5 since it constitutes a basis for estimating the operation costs. The master plan classifies the target region into three types: (i) strict wildlife protection area, (ii) wildlife rehabilitation area, and (iii) wildlife respect area. Since only (i) and (ii) are established in the jurisdiction of the Mang la FE, the implementation plan only considers these two types of areas. The plan puts implementation in the strict wildlife protection area before the wildlife rehabilitation area according to the priority of urgency. Table II-6.1.6 shows the distribution of the three types of areas in the communes.

Table II-6.1.5 Schedule for the conservation program in the Mang La FE

Item	Type of areas	Period/frequency/target	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr.
Training of staff of the relevant organization	Strict wildlife protection area	2 weeks × 1	▨									
	Wildlife rehabilitation area	2 weeks × 1		▨								
Workshop on protection and management of wildlife	Strict wildlife protection area	3 days × 1	▨									
	Wildlife rehabilitation area	3 days × 1		▨								
Organizing local hunting patrol teams	Strict wildlife protection area	2 weeks × 1, Hieu Commune		▨								
	Wildlife rehabilitation area	2 weeks × 1, Po E Commune		▨								
Establishing patrol system	Strict wildlife protection area Wildlife rehabilitation area	Installing radio communications facilities			▨							
Limitation of illegal activities	Strict wildlife protection area Wildlife rehabilitation area	Posters, 18 villages + 3 schools		▨								
		Loudspeaker cars, one week per year			▨	▨	▨	▨	▨	▨	▨	▨
Education on environmental conservation	Strict wildlife protection area Wildlife rehabilitation area	18 villages + 3 schools 1 day per village/school					▨					
Training in monitoring methods	Strict wildlife protection area Wildlife rehabilitation area	2 days × 1	▨									
Establishing evaluation	Strict wildlife protection area Wildlife rehabilitation area	Every two years in Hieu Commune		▨		▨		▨		▨		▨
		Every two years in Po E Commune		▨		▨		▨		▨		▨

▨ : Implementation period

Table II-6.1.6 Distribution of the three types of areas in the communes

Commune	Strict wildlife protection area	Wildlife rehabilitation area	Wildlife respect areas
Kon Plong		○	○
Tan Lap		○	○
Dak Ruong			○
Dak Tre			○
Dak Koi		○	○
Dak Pne		○	○
Mang Canh	○	○	○
Hieu	○	○	
Po E	○	○	
Mnag But	○	○	
Ngoc Tem	○	○	
Dak Ring	○	○	

The annual cost of the program is estimated in Table II-6.1.7 based on the presupposition of implementation of the schedule mentioned above. Please note that only the portion of the cost to be borne by the Mang La FE is shown. Since the program will be implemented at the district level, the cost of training of staff for the strict wildlife protection area in the region, for example, will be shared by the FEs involved in the strict wildlife protection area. In fact, the six FEs are all involved in both the strict wildlife protection area and the wildlife rehabilitation area.

Table II-6.1.7 Annual cost of the wildlife conservation program in the Mang La FE

(Units: 1,000 VND)

Item		1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr.	Total
Training of staff of the relevant organization	Strict wildlife protection area	4,275										4,275
	Wildlife rehabilitation area		4,275									4,275
Workshop on protection and management of wildlife	Strict wildlife protection area	1,258										1,258
	Wildlife rehabilitation area		1,258									1,258
Organizing local hunting patrol teams	Hieu Commune		21,940									21,940
	Po E Commune		21,940									21,940
Establishing patrol system				126,000								126,000
Limitation of illegal activities	Poster-making		440									440
	Loudspeaker cars			583	583	583	583	583	583	583	583	4,667
Education on environmental conservation						27,900						27,900
Training in monitoring methods		650										650
Establishing evaluation	Hieu Commune		7,450		7,450		7,450		7,450		7,450	37,250
	Po E Commune		7,450		7,450		7,450		7,450		7,450	37,250
Total		6,183	64,753	126,583	15,483	28,483	15,483	583	15,483	583	15,483	289,103
Reserve funds (10% of the total)		618	6,475	12,658	1,548	2,848	1,548	58	1,548	58	1,548	28,910
Sum total		6,802	71,229	139,242	17,032	31,332	17,032	642	17,032	642	17,032	318,014
Sum total in dollar terms (US$)		453	4,749	9,283	1,135	2,089	1,135	43	1,135	43	1,135	21,201

As the table shows, the activities are concentrated in the first three years, especially the second and third years, when a large amount of funds are required. In all, this period requires an exceptionally large amount of funds compared with the other years.

6.1.5 Cost of the villager support program (VSP)

As outlined in 5.4, the cost of the VSP includes four types of costs: the cost of technical guidance and extension (personnel expenses), the cost of constructing irrigation facilities for newly planned paddy fields, the cost of constructing irrigation facilities for the existing paddy fields, the cost of promoting agroforestry (the cost of seedlings and beekeeping equipment). These costs are estimated over the ten years.

(1) Cost of technical guidance and extension (personnel expenses)

As for the cost of technical guidance and extension, Table II-6.1.8 shows the cost of short-term experts for technical guidance and the allowance for extension coordinators who will be chosen from the villagers to maintain contact with the long-term extension technicians. The short-term experts will be invited from outside to support through specialized technical guidance that cannot be covered by the long-term extension technicians (in about ten fields). These extension technicians will be hired by the FEs and assigned to the communes (refer to subsection 6.1.7 mentioned below). The travel expenses for short-term experts are estimated based on the assumption that they will be shared by the six FEs since such experts are expected to tour all the communes every time they visit Kon Tum. Note, however, that these travel expenses are estimated based on the schedule in which the VSP will be implemented only by the Mang La FE in the first two years as a pilot phase and they will be expanded to the other FEs from the third year onward. This means that the Mang La FE will bear the cost of all these travel expenses during the first two years.

Table II-6.1.8 Cost of experts for technical guidance and extension coordinators over the ten years

Item	Breakdown		Unit cost	Period, etc.	No. of years	Targeted administrative districts	Total (VND)
Cost of short-term experts	Experts remuneration		750,000 VND/man-day	40 days/yr.	10	2 communes	600,000,000
	Travel expenses (in the region)		50,000 VND/day	40 days/yr.	10	2 communes	40,000,000
	Travel expenses (to the region)	Air fares	1,900,000 VND/man/ round trip	5 round trips	10		31,667,000
		Bus and other fares	500,000 VND/man,/ round trip	10 round trips	10		16,667,000
	Total (VND)						688,334,000
Cost of extension coordinators	Allowance		120,000 VND/month	12 months	10	18 villages	259,200,000
	Total (VND)						259,200,000

(2) Cost of constructing irrigation facilities for the newly planned paddy fields

Table II-6.1.9 shows the estimated cost of constructing irrigation facilities in connection with the development of new paddy fields. The area of newly planned paddy fields is set at 1.5 hectares per village based on 5.4.4 (3). Therefore, one irrigation facility is required for each village, although the area of such paddy fields is small. These irrigation facilities will be small in scale and will be built by local people using gabions, since the construction of medium-scale irrigation facilities will be built with external funds under Program 135 and other such programs. It is assumed that stones for the gabions need to be purchased for half of the irrigation facilities due to the difficulty in procuring them locally.

Table II-6.1.9 Cost of constructing irrigation facilities over the ten years in connection with the development of new paddy fields

Item		Size of target area	No. of facilities required	Unit cost	Required amount per facility	Amount of rice provided	Total (VND)
Facilities for which stones need to be purchased	Cost of materials	13.5 ha	9	Gabions: 81,000 VND/gabion/m^3	5 gabions		3,645,000
				Stones: 69,000 VND/cu.m	5 m^3		3,105,000
	Sub total						6,750,000
	Labor costs in terms of rice provided			Rice: 3,350 VND/kg	50 man-days	1 kg/person/day	1,507,500
	Total						8,257,500
Facilities for which stones are locally available	Cost of materials	13.5 ha	9	Gabions: 81,000 VND/gabion/m^3	5 gabions		3,645,000
	Labor costs in terms of rice provided			Rice: 3,350 VND/kg	50 man-days	1 kg/person/day	1,507,500
	Total						5,152,500
Grand total (VND)							13,410,000

(3) Cost of constructing irrigation facilities required for the existing paddy fields

Table II-6.1.10 shows the estimated cost of constructing irrigation facilities required for the existing paddy fields. The area to be irrigated is estimated based on the following assumptions:

(i) The total area of the existing paddy fields in the jurisdiction of the Mang La FE is estimated at 475 hectares. Of this 475 hectare area, 307 hectares are in the Hieu Commune and 168 hectares in the Po E Commune. These two figures have been estimated after interpreting the aerial photographs newly taken during this study.

(ii) The total area of existing paddy fields that is within the two communes but outside the jurisdiction of the Mang La FE is estimated at 684 hectares. Of this 684 hectare area, 441 hectares are in the Hieu Commune and 243 hectares in the Po E Commune. These two figures are calculated based on Table II-3.2.7. It is assumed that the 441 hectares in the Hieu Communes include all the paddy fields in Vi G Long, Dak Lom, Kon Klung Villages, half of the paddy fields in Dak Lieu and Tu Can villages, and all the paddy fields except

for four hectares in Vi Chong Village. It is also assumed that the 243 hectares in Po E Commune include all the paddy fields in Po E 1, Po E 2 and Kon Roa village, and half of the paddy fields in Vi O Lak village.

(iii) The area of paddy fields that has already been irrigated is estimated at 56 hectares based on the interview survey. Of this 56 hectare area, 14 hectares are in the Hieu Commune and the remaining 42 hectares in the Po E Commune. The 14 hectares are irrigated by two facilities financed from external funds under Program 135. Of the 42 hectares, 16 hectares are irrigated by eight small-scale facilities using gabions and the remaining 26 hectares by three medium-scale facilities financed from external funds under Program 135. The area of paddy fields that has already been irrigated (56 hectares) is subtracted from the total area of existing paddy fields.

(iv) Of the remaining paddy fields after the subtraction of paddy fields already irrigated, 20% are assumed to be cultivatable with rainfall only. After subtracting this area, the total area to be irrigated is finally estimated at 502 hectares, of which 342 hectares are in the Hieu Commune and the remaining 161 hectares in the Po E Commune.

The number of irrigation facilities required based on the area to be irrigated is calculated based on the idea that the area to be covered by one facility should be smaller than the average area in Kon Plong District, given in the Master Plan . This is because it is impossible to secure a large area of paddy fields in one place since the two communes reside in a mountainous region. Based on the average figures obtained by an interview survey, the area to be irrigated by a small-scale facility using gabions is set at two (2) hectares, while the area to be irrigated by a medium-scale facility financed under Program 135 is set at eight (8) hectares.

Table II-6.1.10 Cost of constructing *irrigation facilities* for the existing paddy fields over the ten years

Source of funds	Item		Size of target area	No. of facilities required	Unit cost	Required amount per facility	Amount of rice provided	Total (VND)
Funds provided by the FE	Facilities for which stones need to be purchased	Cost of materials	151 ha	76	Gabions: 81,000 VND/gabion/m^3	5 gabions		30,780,000
					Stones: 69,000 VND/cu.m	5 m^3		26,220,000
		Subtotal						57,000,000
		Labor costs in terms of rice provided			Rice: 3,350 VND/kg	5 man-days	1 kg/person/day	12,730,000
		Total						69,730,000
	Facilities for which stones are locally available	Cost of materials	151 ha	76	Gabions: 81,000 VND/gabion/m^3	5 gabions		30,780,000
		Labor cost in terms of rice provided			Rice: 3,350 VND/kg	50 man-days	1 kg/ person /day	12,730,000
		Total						43,510,000
	Grand total (VND)							113,240,000
External funds	Concrete facilities		201 ha	26	218,000,000 VND/facility			5,668,000,000

(4) Cost of promoting agroforestry

Table II-6.1.11 shows the cost of seedlings required to promote agroforestry. For the method of promoting agroforestry, see sub-section 5.4.7. Based on the components of agroforestry shown in Figure II-5.4.3, the targeted areas are divided into four types in terms of land use: (i) home gardens and live fence, (ii) alley cropping and live fence, (iii) tree gardens, and (iv) complex agroforest (beekeeping). Of the total area for agroforestry, 20% is allotted to (i), 50% to (ii), 20% to (iii) and the remaining 10% to (iv). The target areas for agroforestry shown in Table II-4.2.5 are all within the jurisdiction of the Mang La FE. It is assumed that each village outside the jurisdiction of the FE within Hieu Commune also has the same size target area for agroforestry as the average among the villages in the commune. The same assumption is thought to apply to the Po E Commune as well. Based on these assumptions, the total target area for agroforestry is estimated at 425 hectares.

It is assumed that the required number of seedlings is 100/ha for home gardens, 800/ha for live fence (on the assumption that seedlings will be planted at intervals of 0.5 meters along the perimeter), 1,180/ha for alley cropping (on the assumption that seedlings will be planted at intervals of one meter along the rows that are laid at intervals of 5-10 meters or 7.5 meters on average), and 670/ha for tree gardens and complex agroforest (on the assumption that seedlings will be planted in accordance with the 4 m x 4 m formula). The unit price per seedling of fruit tree species and leguminous trees is shown in 3.9.2 (3) 2) in Part II, Vol. I. The unit price per seedling for coffee and cinnamon for tree gardens is estimated at 1,500 VND per seedling based on an interview with the District People's Committee.

Table II-6.1.11 Cost of seedlings in connection with agroforestry over the 10 years

Agroforestry type	Size of target area	Unit price per seedling	No. of seedlings to be planted		Total (VND)
			Fruit trees	Leguminous trees	
Home gardens and live fence	85 ha	4,000 VND	100/ha		33,974,000
		100 VND		800/ha	6,794,800
Alley cropping and live fence	212 ha	100 VND		2,000/ha	42,467,500
Tree gardens	85 ha	1,500 VND	670/ha		85,359,675
Complex agroforest	42 ha	100 VND		670/ha	2,845,323
Total	425 ha				171,441,298

Table II-6.1.12 shows the estimated cost of materials for the beekeeping operation. Three beehives (each containing a hive, a queen-bee, and one (1) herd of bees) will be provided to each of the poorest and poor households in both communes in line with this operation's objective to raise the income levels of local people. The numbers of the poorest households and poor households are calculated

based on the findings of the on-site survey shown in 3.2.4 (3). According to the results of the survey, the poorest households and poor households account for 17% and 12%, respectively, of all the households in the Hieu Commune. In the Po E Commune, the poorest households and poor households account for 13% and 14%, respectively. Although the cost is calculated by the unit of households, the beekeeping operation aims to pursue joint production and sales managed by groups of these bee farmers as shown in 5.4.4 (5).

Table II-6.1.12 Estimated cost of materials for the beekeeping operation over the ten years

Commune	Unit price per beehive	No. of beehives per household	No. of households	Total (VND)
Hieu	300,000VND	3	104	93,600,000
Po E	300,000VND	3	60	54,000,000
Total			164	147,600,000

(5) Total cost of the VSP

Table II-6.1.13 shows the total of the costs estimated in (1)-(4), that is, the total cost of the VSP, which is distributed over the ten years based on the annual plans in Figure II-5.4.2. Since the annual plans fail to specify which villages will be targeted in what year, the average cost per village, which is calculated by dividing the total cost by 18 villages, is distributed over the ten years based on the annual plans. Note, however, that the costs of the short-term technical experts and the extension coordinators are allotted equally for each year. Based on the assessment that irrigation facilities for the existing paddy fields should be constructed early if possible, the original external funds under Program 135 and other such programs were allocated to the five-year construction plan.

Table II-6.1.13 Annual cost of the VSP over the ten years

(Unit: 1,000 VND,)

Item		1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr.	Total
Short-term experts		78,500	78,500	66,417	66,417	66,417	66,417	66,417	66,417	66,417	66,417	688,333
Extension coordinators		25,920	25,920	25,920	25,920	25,920	25,920	25,920	25,920	25,920	25,920	259,200
Irrigation facilities for planned paddies		745	745	1,490	1,490	1,490	1,490	1,490	1,490	1,490	1,490	13,410
Irrigation facilities for the existing paddies	Funds provided by the FE	6,291	6,291	12,582	12,582	12,582	12,582	12,582	12,582	12,582	12,582	113,240
	External funds	1,133,600	1,133,600	1,133,600	1,133,600	1,133,600						5,668,000
Seedlings for agroforestry		9,525	9,525	19,049	19,049	19,049	19,049	19,049	19,049	19,049	19,049	171,441
Beehives for beekeeping		8,200	8,200	16,400	16,400	16,400	16,400	16,400	16,400	16,400	16,400	147,600
Total	Funds provided by the FE	129,181	129,181	141,858	141,858	141,858	141,858	141,858	141,858	141,858	141,858	1,393,225

	External funds	1,133,600	1,133,600	1,133,600	1,133,600	1,133,600	0	0	0	0	0	5,668,000
	Total	1,262,781	1,262,781	1,275,458	1,275,458	1,275,458	141,858	141,858	141,858	141,858	141,858	7,061,225
Reserve funds (10% of Total)	Funds provided by the FE	12,918	12,918	14,186	14,186	14,186	14,186	14,186	14,186	14,186	14,186	139,322
	External funds	113,360	113,360	113,360	113,360	113,360	0	0	0	0	0	566,800
	Total	126,278	126,278	127,546	127,546	127,546	14,186	14,186	14,186	14,186	14,186	706,122
Sum total	Funds provided by the FE	142,099	142,099	156,044	156,044	156,044	156,044	156,044	156,044	156,044	156,044	1,532,547
	External funds	1,246,960	1,246,960	1,246,960	1,246,960	1,246,960	0	0	0	0	0	6,234,800
	Total	1,389,059	1,389,059	1,403,004	1,403,004	1,403,004	156,044	156,044	156,044	156,044	156,044	7,767,347
In dollar terms (US$)	Funds provided by the FE	9,473	9,473	10,403	10,403	10,403	10,403	10,403	10,403	10,403	10,403	102,170
	External funds	83,131	83,131	83,131	83,131	83,131	0	0	0	0	0	415,653
	Total	92,604	92,604	93,534	93,534	93,534	10,403	10,403	10,403	10,403	10,403	517,823

6.1.6 Cost of the institutional enhancement program

The institutional enhancement program will be primarily implemented on a provincial or district level based on the master plan. Few such activities will be carried out by the Mang La FE alone. As a result, a plan to implement the institutional enhancement program in the FE has not been drafted in Chapter 5. Here, the cost of the program is estimated based on the schedule over the ten years shown in Table II-6.1.14, as is the case with the estimation of the cost of the wildlife conservation program. Note that each FE will hold residents' meetings and distribute newsletters. The plans for these activities will be detailed later.

Table II-6.1.14 Schedule for the institutional enhancement program

Item		Period/frequency/target	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr.
Training programs for field leaders		5 months × 2			▨					▨		
Meeting with local people		Once a year for each commune	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
Newsletter publishing		One copy for each household (366 in Hieu, 232 in Po E)/yr.	▮	▮	▮	▮	▮	▮	▮	▮	▮	▮
Monitoring by third party		1 week per year		▮	▮	▮	▮	▮	▮	▮	▮	▮
Utilization of IT	Procurement of PCs	1 set	▮									
	PC training course	1 week	▮									
Manpower development training course		2 weeks × 3		▮				▮				▮

▨: Implementation period

Table II-6.1.15 shows the annual cost estimated based on Table II-6.1.14. Note that since the costs of the operations at the provincial or district levels will be shared among the FEs, only the portion borne

by the Mang La FE is shown.

Table II-6.1.15 Annual cost of the institutional enhancement program over the ten years

(Units: 1,000 VND)

Item		1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr	Total.
Training programs for field leaders				37,900					37,900			75,800
Newsletters publishing		598	598	598	598	598	598	598	598	598	598	5,980
Monitoring by third party			9,150	9,150	9,150	9,150	9,150	9,150	9,150	9,150	9,150	82,350
Utilization of IT	Procurement of PCs	30,000										30,000
	PC training course	1,833										1,833
Manpower development training course			3,900				3,900				3,900	11,700
Total		32,431	13,648	47,648	9,748	9,748	13,648	9,748	47,648	9,748	13,649	207,663
Reserve funds (10% of the total)		3,243	1,365	4,765	975	975	1,365	975	4,765	975	1,365	30,766
Sum total		35,674	15,013	52,413	10,723	10,723	15,013	10,723	52,413	10,723	15,013	228,430
Sum total in dollar terms		2,378	1,001	3,494	715	715	1,001	715	3,494	715	1,001	15,229

As this table shows, the costs of the training programs for field leaders, which require a larger amount of money than other items, are concentrated in the third and eighth years.

6.1.7 Management and administrative costs

The management and administrative costs consist of the salaries for FE employees and the office overheads. Note that two extension technicians, who will each stay in Po E and Hieu communes, have been added to the current staff. The estimated management and administrative costs over the ten years are shown in Table II-6.1.16.

Table II-6.1.16 Management and administrative costs over the ten years

Expense item		Unit cost		No. of persons	Annual cost	Total cost
Salary	Head of FE	1,113,000	VND/month	1	13,356,000	133,560,000
	Deputy head of FE	903,000	VND/month	1	10,836,000	108,360,000
	Accountant	504,000	VND/month	1	6,048,000	60,480,000
	Cashier	504,000	VND/month	3	18,144,000	181,440,000
	Technicians	777,000	VND/month	4	37,296,000	372,960,000
	Drivers	504,000	VND/month	1	6,048,000	60,480,000
	Total			11	91,728,000	917,280,000
Office overheads (VND)					77,457,250	774,572,500
Total (VND)					169,185,250	1,691,852,500
In dollar terms					11,279	112,790

6.2 Estimated operation revenues

The operation revenues consist of two types of revenues: (i) the revenues from stumpage sales by the FE, which can be calculated by multiplying the volume of the cutting under the cutting plan in 5.1.1 by the average unit selling price of stumpage in Table II-6.2.1, and (ii) external funds under Program 661 and other such programs.

Table II-6.2.1 shows a calculation table for the average unit selling price of stumpage. In the table, data from a plot survey conducted in the jurisdiction of the Mang La FE are first classified according to tree species groups (see 6, Volume III) into Groups I to VIII and the excluded group. The stem volume of each of these groups and their proportions are calculated. Trees in Group I and II, which contain scarce and precious species and often require special permission for logging, as well as those in the excluded group, are excluded from the species to be cut. Then the volume proportion of each of Groups III to VIII to the total volume of these groups is calculated. It is assumed that the trees belonging to these groups will be cut according to these proportions. Then the following two assumptions are made. One assumption is that out of the marked trees with a yield percentage of 25%, 90% are no less than 50 cm in diameter at breast height (DBH) while the remaining 10% are more than 25 cm and below 50 cm in DBH. The other assumption is that out of the non-marked trees (obstacle trees of the trees marked for cutting operation and/or trees in the path of road construction) with a yield percentage of 5%, 30% are no less than 50 cm in DBH while the remaining 70% are more than 25 cm and below 50 cm in DBH. Based on these assumptions, it is estimated that out of the total timber volume to be cut, the trees of no less than 50 cm in DBH account for 80%, with trees of less than 50 cm in DBH representing the remaining 20%. These percentages for the large and small DBH classes are multiplied by the volume proportion of each of Groups III to VIII in order to calculate the volume proportion by the DBH classes and Groups III to VIII. Such proportions and the average unit selling price of stumpage for each group shown in 2.5.1 (3), Part II, Vol. I are used to estimate the average unit selling price of stumpage---219,502 VND per cubic meter.

Table II-6.2.2 shows the revenue from stumpage sales estimated based on the average unit selling price of the stumpage and the volume of the cutting under the cutting plan.

The total revenue from external funds is equivalent to the amount estimated in 6.1 (the operation cost). Of the total revenue of US$ 442,971 over the ten years, US$ 27,318 comes from funds under Program 661, which are to be used for afforestation in the protection forests, and the remaining US$ 415,653 comes from funds under Program 135, which are to be used to construct medium-scale irrigation facilities.

Table II-6.2.1 Calculation table for the average unit selling price of stumpage

Group	Subgroup	Plot survey data		Percentages of volume of Group III to VIII (%)	Standard unit selling price of stumpage by *DBH* classes (VND/m^3)		The composition of the average unit selling prices of stumpage in proportion to the volume percentages of *Groups III to* VIII by DBH classes (VND/m^3)		
		Volume (m^3)	Percentage of volume (%)		25cm<D<50cm	D>=50cm	25cm<D<50cm	D>=50cm	Total
I	1	9.90	0.96						
II	1								
	2								
	3								
	4								
III	1								
	2	2.09	0.20	0.589	300,000	365,000	353	1,720	2,073
IV	1								
	2								
	3	5.27	0.51	1.482	235,000	230,000	697	2,727	3,423
	4	145.81	14.14	41.002	170,000	230,000	13,941	75,444	89,384
V	1								
	2								
	3	160.42	15.55	45.110	175,000	250,000	15,789	90,220	106,009
VI	1								
	2	19.46	1.89	5.472	140,000	220,000	1,532	9,631	11,163
VII	1	0.36	0.04	0.102	140,000	220,000	29	180	208
	2	4.26	0.41	1.198	100,000	120,000	240	1,150	1,390
VIII		17.94	1.74	5.045	100,000	120,000	1,009	4,843	5,852
Subtotal		355.63	35.44						
Others		665.93	64.56						
Total		1,031.46	100.00	100.00			33,588	185,914	219,502

Note: The following two assumptions are made. One assumption is that out of the marked trees with a yield percentage of 25%, 90% are no less than 50 cm in DBH while the remaining 10% are more than 25 cm and below 50 cm in DBH. The other assumption is that out of the non-marked trees with a yield percentage of 5%, 30% are no less than 50 cm in DBH while the remaining 70% are more than 25 cm and below 50 cm in DBH. Based on these assumptions, it is estimated that out of the total volume to be cut, the trees no less than 50 cm in DBH account for 80%, with the trees less than 50 cm in DBH representing the remaining 20%. Based on these percentages of the large and small DBH classes, the average unit selling price of stumpage is calculated, which is in proportion to the volume percentages of Groups III to VIII by the DBH classes.

Table II-6.2.2 Estimated revenue from stumpage sales over the ten years

	Average annual revenue from stumpage sales (US$)	Total revenue from stumpage sales for the period (US$)
First period	57,299	286,495
Second period	70,624	353,120
Total	63,962	639,615

6.3 Operation income (profit and loss)

Table II-6.3.1 shows the operational profits and losses calculated based on the estimated operation costs in 6.1 and the estimated operation revenues in 6.2. As already discussed, external funds will not affect the profits and losses since it is assumed that the revenues and expenditures will be balanced as far as external funds are concerned. Therefore, the profits and losses here represent the difference between the revenues from stumpage sales and the portion of the operation costs to be borne by the FE. According to the table, the operation will produce a surplus of US$ 25,362 over the ten years. To compensate for a deficit of US$ 6,888 in the third year, the following three options can be considered:

Option 1: Maintaining the volume of the cutting over the period

The profits in the first and second years (US$ 5,988) will be pooled and then used to make up for part of the deficit in the third year. The remaining deficit of US$ 900 will be covered by bank loans, etc. The loans will be repaid using the profit of US$ 4,039 in the fourth year.

Option 2: Changing the volume of the cutting between the first and fourth years

The volume of the cutting will be reduced in the first, second and fourth years so as to keep the profits in these years to a minimum. Instead, the volume of the cutting will be increased in the third year (by about 500 m^3) to avoid a deficit.

Option 3: Changing the volume of the cutting between the third and fourth years

The volume of the cutting will be maintained as it is in the first and second years. The profits in these two years (US$ 5,988) will be pooled and then used to make up for part of the deficit in the third year. The remaining deficit of US$ 900 will be compensated for by increasing the volume of the cutting (by about 70 m^3) in the third year. The volume of the cutting will be reduced by the corresponding amount in the fourth year.

Due to the fact that the annual plans had not been formulated, as mentioned above, each item of the revenues and expenditures is only indicative.

Table II-6.3.1 Annual profit and loss account over the ten years

(Unit: US$)

Item			1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr	Total.
Revenues													
	Operation revenues		57,299	57,299	57,299	57,299	57,299	70,624	70,624	70,624	70,624	70,624	639,615
	External funds		84,972	85,496	86,020	86,020	86,020	2,889	2,889	2,889	2,889	2,889	442,971
	Total		142,271	142,795	143,318	143,318	143,318	73,513	73,513	73,513	73,513	73,513	1,082,586
Expenditures													
	Cost of the cutting		5,743	5,743	5,743	5,743	5,743	7,078	7,078	7,078	7,078	7,078	64,105
	Cost of developing the forestry infrastructure		22,158	22,158	22,158	22,158	22,158	34,126	34,126	34,126	34,126	34,126	281,420
	Silvicultur e costs	Funds provided by the FE	1,206	1,516	1,827	1,827	1,827	1,827	1,827	1,827	1,827	1,827	17,338
		External funds	1,842	2,365	2,889	2,889	2,889	2,889	2,889	2,889	2,889	2,889	27,318
	Cost of the wildlife conservation program		453	4,749	9,283	1,135	2,089	1,135	43	1,135	43	1,135	21,201
	Cost of the VSP	Funds provided by the FE	9,473	9,473	10,403	10,403	10,403	10,403	10,403	10,403	10,403	10,403	102,170
		External funds	83,131	83,131	83,131	83,131	83,131	0	0	0	0	0	415,653
	Cost of the institutional enhancement program		2,378	1,001	3,494	715	715	1,001	715	3,494	715	1,001	15,229
	Management and administrative cost		11,279	11,279	11,279	11,279	11,279	11,279	11,279	11,279	11,279	11,279	112,790
	Total	Funds provided by the FE	52,691	55,919	64,187	53,260	54,214	66,849	65,471	69,343	65,471	66,849	614,253
		External funds	84,972	85,496	86,020	86,020	86,020	2,889	2,889	2,889	2,889	2,889	442,971
		Total	137,663	141,415	150,206	139,280	140,233	69,738	68,359	72,231	68,359	69,738	1,057,224
Balance		Funds provided by the FE	4,608	1,380	- 6,888	4,039	3,085	3,775	5,154	1,282	5,154	3,775	25,362
		External funds	0	0	0	0	0	0	0	0	0	0	0
		Total	4,608	1,380	- 6,888	4,039	3,085	3,775	5,154	1,282	5,154	3,775	25,362

6.4 Evaluation of the benefits to the villagers

The benefits to the villagers in Hue and Po E communes are evaluated by estimating the benefits the villagers can earn if this forest management plan is implemented compared with if the plan is not implemented. That is, the level of benefit that the villagers can receive over the period of ten years is estimated by implementation of the VSP on the assumption that village support would not be implemented with funds from the FE if the forest management plan was not drawn up. Basically, the direct benefits from better harvests and increased sales are evaluated in monetary terms. The indicators for the evaluation are the area of fields, including paddy rice cultivation, livestock management, and agroforestry (cultivation of crops, cultivation of fruit, and beekeeping).

Besides the VSP, villagers can earn cash income by implementing the silviculture program through

employment contracts between the FE and villagers. However, there is some possibility that silviculture could be implemented even though this forestry management plan is not formulated. It is therefore not clear which net benefits the villagers can receive if this plan is implemented compared with if the plan is not implemented. Thus the benefits from silviculture are not included in the whole range of beneficial effects (6.4.4), and the estimated cash income is indicated in the last sub section.

6.4.1 Rice cultivation in the paddy fields

The expected benefits in connection with rice cultivation in the paddy fields are represented by an increase in the rice yield due both to irrigation and upgraded cultivation techniques and to an increase in the size of the cultivated area in connection with the development of the paddy fields.

Table II-6.4.1 shows the expected amount of annual benefits (the rice yield basis) in the existing paddy fields and the planned paddy fields after implementation of the VSP over the ten years. The amount of the benefits is calculated based on the figures shown in 5.4.4 (3). The expected amount of the benefits in connection with the existing paddy fields is represented by the difference between the target yield and the current yield. The expected amount of the benefits in connection with the planned paddy fields is represented by the targeted yield alone.

Table II-6.4.1 Expected amount of the benefits in the form of an increase in rice yields over the ten years

Existing paddy fields					Planned paddy fields			Total expected amount of the benefits
No. of targeted households (all the households)	Total size of the area (ha)	Current yield (tons) (Average: 2 tons/ha)	Target yield (tons) (Average: 3.5 tons/ha)	The expected amount of the benefits (ton/yr)	No. of target households (26% of the total)	Total size of the area (ha)	Expected amount of the benefits (ton/yr) (Average: 3.5 tons/ha)	
598	6,84.44	1,368.9	2,395.5	1,026.7	155	27	94.5	1,121.2

Notes:

1. The average yield from the existing paddy fields is taken from the statistics of the district branch office of DARD. This figure is larger than the findings of an interview survey.
2. The number of the target households for the planned paddy fields is calculated based on the total number of households with insufficient land. The total number of such households is estimated based on the average per village.

The VSP will be implemented according to the annual plans using the village cluster approach as shown in Figure II-5.4.3. Therefore, the expected amount of the benefits (the rice yield basis) is calculated for each cluster in each year based on these annual plans (see Table II-6.4.2). It is assumed that the rice yields will begin to increase in the second year. For example, Cluster 1 and 2 will begin to see an increase in rice yields in the second and fourth years of the program, respectively. Since the annual plans fail to specify which villages will be targeted in what year as discussed in 6.1.5 (5), the expected amount of the benefits on average per village, which is calculated by dividing the total by 18 villages, is distributed over the ten years based on the annual plans. Based on this table, it is estimated

that the total amount of the benefits over the ten years will be 4,678 tons from the existing paddy fields and 431 tons from the planned paddy fields.

Table II-6.4.2 Expected amount of the benefits (the rice yield basis) in connection with rice cultivation in paddy fields for each year and cluster

(Unit: ton)

	Existing/ planned paddies	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr	Total.
Cluster 1 (2 villages)	Existing		114	114	114	114	114	114	114	114	114	1,027
	Planned		11	11	11	11	11	11	11	11	11	95
Cluster 2 (4 villages)	Existing				228	228	228	228	228	228	228	1,597
	Planned				21	21	21	21	21	21	21	147
Cluster 3 (4 villages)	Existing						228	228	228	228	228	1,141
	Planned						21	21	21	21	21	105
Cluster 4 (4 villages)	Existing								228	228	228	685
	Planned								21	21	21	63
Cluster 5 (4 villages)	Existing										228	228
	Planned										21	21
Total	Existing		114	114	342	342	571	571	799	799	1,027	4,678
	Planned		11	11	32	32	53	53	74	74	95	431

Table II-6.4.3 shows the expected amount of the benefits for local people in monetary terms. The simple average of the expected money amount of the benefits per household in the table is calculated simply by dividing the expected money amount of the benefits in total by the number of target households. On the other hand, the annual average of the expected money amount of the benefits per household is not calculated by dividing the simple average of the expected money amount of the benefits per household by 10 years. The annual average of the expected money amount of the benefits per household is calculated by dividing the expected money amount of the benefits in one year by the number of households that are actually benefiting from the program in one year. Therefore, for example, since all the households will be benefiting from the program in the 10th year, the annual average of the expected money amount of the benefits per household is calculated by dividing the expected money amount of the benefits in the 10th year by the number of all the targeted households.

Table II-6.4.3 Expected amount of the benefits for local people in monetary terms in connection with rice cultivation

Existing/ planned paddies	Total increment in yields	Unit price	The expected amount of the benefits in total (VND)	Simple average of the expected amount of the benefits per household (VND)	Annual average of the expected amount of the benefits per household (VND)
Existing	4,678 t	3,350,000 VND/t	15,671,635,000	26,206,747	5,752,701
Planned	431 t	3,350,000 VND/t	1,442,175,000	9,304,355	2,042,419

6.4.2 Livestock management

The expected benefits of the VSP to local people in connection with livestock management are represented by an expected decrease by half in the number of deaths of farm animals due to epidemics. It is assumed that the number of deaths in Hieu Commune (for which data from an interview survey is available) due to an epidemic that broke out in 2000 can be represented by the difference in the number of farm animals between 1998 and 2001.

Table II-6.4.4 Decrease in the number of farm animals in Hieu Commune

	Buffaloes	Pigs	Chickens
No. of animals as of 1998	1,196	950	3,405
No. of animals as of 2001	570	430	2,500
Difference (decrease)	626	520	905

The number of deaths of farm animals in Po E Commune is estimated as follows. First, the average decrease in the number of farm animals by the kinds of livestock of a household with livestock in Hieu Commune is calculated based on the total decrease in the number in the commune and the number of households with livestock as shown in Table II-6.4.5. The estimated number of deaths of farm animals in Po E Commune is then multiplied by the number of households with livestock in Po E to calculate the average number of deaths of farm animals in Hieu Commune, as shown in Table II-6.4.6.

Table II-6.4.5 Number of households with livestock

Commune	Total Number of households	Number of households with livestock		
		Buffaloes	Pigs	Chickens
Hieu	366	231	212	293
Po E	232	142	234	227
Total	598	373	446	520

Table II-6.4.6 Estimated number of deaths of animals in Po E Commune

	Buffaloes	Pigs	Chickens
Estimated Number	385	574	701

Table II-6.4.7 shows the expected money amount of the benefits estimated based on two assumptions. One is that a disastrous epidemic similar in scale to the one in 2000 will occur twice a decade of the period for the VSP. The other is that the VSP will halve the number of deaths. The annual average of

the expected amount of the benefits per household is calculated by dividing the simple average of the expected money amount of the benefits per household by 10. The unit selling price is represented by the average price according to the interview survey.

Table II-6.4.7 Expected amount of the benefits to local people in connection with livestock management in monetary terms

Kind of animals	Number of animals expected to survive	Unit selling price	The expected amount of the benefits in total (VND)	Average of the expected amount of the benefits per household (VND)	Annual average of the expected amount of the benefits per household (VND)
Buffaloes	1,011	2,500,000	2,527,500,000	6,776,139	677,614
Pigs	1,094	120,000	131,280,000	294,350	29,435
Chickens	1,606	27,500	44,165,000	84,933	8,493
Total			2,702,945,000		

6.4.3 Agroforestry

The expected benefits of agroforestry to local people can be represented by increases in crop yields, fruit yields, and honey production. It should be emphasized that agroforestry not only produces these direct benefits but also has indirect effects, contributing to the control of topsoil losses and slash and burn cultivation.

(1) Crop cultivation

The benefits in connection with crop cultivation will be produced by alley cropping as in Figure II-5.4.4 (the agroforestry implementation model). For the estimates of the expected amount of the benefits on the assumption that crop yields by the cultivation will be boosted, the Maize varieties have been selected.

The expected increase in maize yields per ha is estimated at 0.18 tons as shown in Table II-6.4.8. In the table, the number of target households is estimated based on the percentage of households engaged in upland farming (69%) as shown in 3.2.3 (1) 2). The size of the area for alley cropping is estimated in line with the approach outlined in 6.1.5 (4). The current yield is taken from Table II-3.2.5. The target increase in the yield is set at 10%.

Table II-6.4.8 Number of target households, size of the target area and the expected increase in maize yields

Number of target households	Size of the area for alley cropping (ha)	Current yield (ton/ha)	Target increase in yield (%)	Expected increase in yields (ton/ha)
413	212	1.8	10	0.18

Table II-6.4.9 shows the expected yield amount of the benefits in connection with maize production for each village cluster over the ten years, which is calculated in line with the approach for rice cultivation in paddy fields outlined in 6.4.1. Based on this table, the expected amount of the benefits in total over the ten years is estimated at 173.8 tons.

Table II-6.4.9 Expected amount of the benefits in connection with maize cultivation for each village cluster over the ten years

(Unit: ton)

	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr	Total.
Cluster 1 (2 villages)		4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	37.8
Cluster 2 (4 villages)				8.5	8.5	8.5	8.5	8.5	8.5	8.5	59.5
Cluster 3 (4 villages)						8.5	8.5	8.5	8.5	8.5	42.5
Cluster 4 (4 villages)								8.5	8.5	8.5	25.5
Cluster 5 (4 villages)										8.5	8.5
Total		4.2	4.2	12.7	12.7	21.2	21.2	29.7	29.7	38.2	173.8

Table II-6.4.10 shows the expected amount of the benefits for local people in monetary terms based on the above expected yield amount of the benefits. In the table, the simple average of the expected amount of the benefits per household and the annual average of the expected amount of the benefits per household are calculated in line with the approach outlined in 6.4.1.

Table II-6.4.10 The expected amount of the benefits for local people in monetary terms in connection with crop cultivation as part of agroforestry

Total increment in yield	Unit price	The expected amount of the benefits in total (VND)	Simple average of the expected amount of the benefits per household (VND)	Annual average of the expected amount of the benefits per household (VND)
173.8 t	1,500,000 VND/t	260,700,000	631,235	138,741

(2) Fruit cultivation

The benefits in connection with fruit cultivation will be produced by the home gardening shown in Figure II-5.4.4 (the agroforestry implementation model). For the estimates of the expected amount of the benefits on the assumption that fruit yields by the cultivation can be produced, orange trees have been selected.

The expected orange yields per tree are estimated in Table II-6.4.11 according to the results of an interview survey with Kon Plong District People's Committee. In the table, the number of target households is estimated based on the percentage of households engaged in home gardening (83%) as shown in 3.2.3 (1) 3). The size of the area for home gardens and the number of orange trees to be planted are calculated in line with the approach outlined in 6.1.5 (4).

Table II-6.4.11 Number of target households, size of the target area and the expected orange yields

Number of target households	Size of the area for home gardening (ha)	Number of trees to be planted per ha	Expected yields between the 4th and 5th years (kg/tree)	Expected yields between the 6th and 10th years (kg/tree)
496	85	100	3.5	10

Table II-6.4.12 shows the expected amount of the benefits in connection with orange yields for each village cluster over the ten years, which is calculated in line with the approach for rice cultivation in paddy fields outlined in 6.4.1. Based on this table, the expected amount of the benefits in total over the ten years is estimated at 108,611 kilograms. It is assumed that orange trees will be planted in the first year of the introduction of the VSP in the villages in each cluster and the yield will be expected from the fourth year onward after planting. Consequently, the expected amount of the benefits will not be produced in the villages in Cluster 4 and 5 during the ten-year period.

Table II-6.4.12 Expected amount of the benefits in connection with orange cultivation for each village cluster over the ten years

(Unit: kg)

	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr.	Total.
Cluster 1 (2 villages)					3,306	3,306	9,444	9,444	9,444	9,444	44,389
Cluster 2 (4 villages)							6,611	6,611	18,889	18,889	51,000
Cluster 3 (4 villages)									6,611	6,611	13,222
Cluster 4 (4 villages)											0
Cluster 5 (4 villages)											0
Total	0	0	0	0	3,306	3,306	16,056	16,056	34,944	34,944	108,611

Table II-6.4.13 shows the expected amount of the benefits for local people in monetary terms based on the above expected yield amount of the benefits. In the table, the simple average of the expected money amount of the benefits per household and the annual average of the expected money amount of the benefits per household are calculated basically in line with the approach outlined in 6.4 1. Note, however, that the annual average of the expected money amount of the benefits per household is based on the maximum expected amount of the benefits in the 6th year and onward after planting.

Table II-6.4.13 Expected amount of the benefits for local people in monetary terms in connection with fruit cultivation as part of agroforestry

Total yield	Unit selling price	Expected amount of the benefits in total (VND)	Simple average of the expected amount of the benefits per household (VND)	Annual average of the expected amount of the benefits per household (VND)
108,611 kg	8,000 VND/kg	868,888,000	1,751,790	1,370,968

(3) Beekeeping

The benefits in connection with beekeeping will be produced by complex agroforest as shown in Figure II-5.4.4 (the agroforestry implementation model). It is expected that this will develop honey production.

The expected yield is estimated in Table II-6.4.14. In the table, the number of target households and the number of beehives per household are based on the figures in 6.1.5 (4). Honey production per beehive is set based on the target of the people's committee in Kon Plong District, that is, 20 kilograms. The unit (kg) is converted to liters (1.4 kg = 1 L) because the unit selling price is on a liter basis as mentioned below.

Table II-6.4.14 Expected yield amount of the benefits due to honey production

Commune	Number of target households			Number of beehives per household	Total number of beehives	Production per beehive	Expected amount of the benefits
	Poorest households	Poor households	Total				
Hieu	62	42	104	3	312	14.3 L	4,461.6 L
Po E	27	33	60	3	180	14.3 L	2,574.0 L
Total	89	75	164		492		7,035.6 L

Table II-6.4.15 shows the expected amount of the benefits in connection with honey production for each village cluster over the ten years, which is calculated in line with the approach for rice cultivation in paddy fields outlined in 6.4.1. Based on this table, the expected amount of the benefits in total over the ten years is estimated at 32,051 liters.

Table II-6.4.15 Expected amount of benefit in connection with honey production for each cluster over the ten years

(Unit: liter)

	1st yr.	2nd yr.	3rd yr.	4th yr.	5th yr.	6th yr.	7th yr.	8th yr.	9th yr.	10th yr	Total.
Cluster 1 (2 villages)		782	782	782	782	782	782	782	782	782	7,035
Cluster 2 (4 villages)				1,564	1,564	1,564	1,564	1,564	1,564	1,564	10,945
Cluster 3 (4 villages)						1,564	1,564	1,564	1,564	1,564	7,818
Cluster 4 (4 villages)								1,564	1,564	1,564	4,691
Cluster 5 (4 villages)										1,564	1,564
Total		782	782	2,345	2,345	3,909	3,909	5,472	5,472	7,036	32,051

Table II-6.4.16 shows the expected amount of the benefits for local people in monetary terms based on the above expected yield amount of the benefits. In the table, the simple average of

the expected amount of the benefits per household and the annual average of the expected amount of the benefits per household are calculated in line with the approach outlined in 6.4.1.

Table II-6.4.16 Expected amount of the benefits for local people in monetary terms in connection with beekeeping

Total sales	Unit selling price	Expected amount of the benefits in total (VND)	Simple average of the expected amount of the benefits per household (VND)	Annual average of the expected amount of the benefits per household (VND)
32,0511 L	20,000 VND/L	641,026,000	3,908,695	857,963

6.4.4 Total benefits to the villagers

Table II-6.4.17 shows the expected money amount of total benefits to the villagers from each program. The two totals in the table show the sum of the simple averages of the total expected amount of benefits per household over the ten years and the annual average of the target expected amount of benefits per household from the programs. Cash income, including the benefits, is listed. Contributions to cash income cover all of the expected amount through improvement of the livestock management techniques and 70% of the expected amount of the fruit production and 90% of the expected amount of honey production supplied through beekeeping by the implementation of agroforestry. It is assumed that the remainder of the benefits are used for home consumption and do not contribute to cash income.

Since the targeted households vary from program to program, the total expected amount of benefits per household in the table shows the expected amount of benefits for cases where a household benefits from all the programs. Therefore, the expected amount of benefits to each individual household is represented by deducting those benefits from programs that are not applicable to the household from the total expected amount of benefits per household. For example, the annual average of the target expected amount of benefits per household is 10,878,334 VND (including cash income of 2,447,387 VND) in cases where the household benefits from all the programs. On the other hand, the annual average for the target expected amount of benefits to a household that does not raise buffalo and does not cultivate fruit is 8,829,752 VND (including cash income of 810,095 VND). This is represented by deducting the amount of benefits from buffalo breeding and fruit cultivation from the total expected amount of benefits per household.

Table II-6.4.17 Total expected amount of benefits to villagers in monetary terms

(Unit:VND)

Benefit factor		Number of target households	Total expected amount of benefits	Simple average of the expected amount of benefits per household over the ten years		Annual average of the expected amount of benefits per household	
				Total amount	Cash income	Total amount	Cash income
Increase of the rice yield in existing paddies		598	15,671,635,000	26,206,747		5,752,701	
Rice yield in the planned paddies		155	1,442,175,000	9,304,355		2,042,419	
Improvement in livestock management techniques	Decline in the number of deaths of buffaloes	373	2,527,500,000	6,776,139	6,776,139	677,614	677,614
	Decline in the number of deaths of pigs	446	131,280,000	294,350	294,350	29,435	29,435
	Decline in the number of deaths of chickens	520	44,165,000	84,933	84,933	8,493	8,493
Implementation of agroforestry	Increase in crop yields	413	260,700,000	631,235		138,741	
	Fruit yields	496	868,888,000	1,751,790	1,226,253	1,370,968	959,678
	Honey yields	164	641,026,000	3,908,695	3,517,826	857,963	772,167
Total			21,587,369,000	48,958,244	11,899,501	10,878,334	2,447,387

Concerning the present average annual income per household in the Hieu and Po E Commune, the total income of added value in monetary terms by converting untraded agricultural products to cash as mentioned in 3.2.4 (2) is about 8,000,000 VND and 8,870,000 VND, respectively. Cash income included in the total income is about 1,750,000 VND and about 2,790,000 VND, respectively. On the assumption that the income per household increases due to the benefits to villagers through the implementation of the VSP, the total expected income per household in the Hieu Commune and Po E Commune multiplies 2.36-fold and 2.23-fold to the present average annual income per household, respectively. The total expected cash income per household multiplies 2.40-fold and 1.88-fold to the present average annual cash income per household, respectively. For the calculation, the total annual average of the expected amount of benefits per household shown in Table II-6.4.17 was used.

6.4.5 Cash income provided through silviculture activities by the FE

The amount of benefits to villagers provided under employment contracts between Mang La FE and the villagers by the silviculture activities is estimated on the basis of the concept described as follows:

Concerning the cash income to villagers per ha in each silviculture program, the unit cash income in its first year is 1,900,000 VND/ha, which is calculated by deducting the cost of raw materials for seedlings from the first year cost per ha for the afforestation (consisting of nursery, planting and weeding cost) based on the afforestation plan in 2000 by the Thach Nham PFMC. The unit cash income in its second year and third year is 700,000 VND/ha, which is the total cost in each of the second and third year in the afforestation program, since the unit cost consists of only wages. The unit

cash income by the program of forest stand improvement is 900,000 VND/ha, which is the total cost per ha of this program, since this unit cost also consists of only wages. The planned area is mentioned in 5.2. The cash income per household is calculated assuming that 598 households make employment contracts with Mang La FE.

The cash income per household from silviculture programs based on this assumption is shown in Table II-6.4.18.

Table II-6.4.18 Cash income per household from the silviculture programs

		Total planned area (ha)	Cash income per ha (VND)	Cash income per household (VND)		
				For ten years		Annual income per household
				Total income	Income per household	
Afforestation	First year activity	162.50	1,900,000	308,750,000	516,304	51,630
	Second year activity	146.25	700,000	102,375,000	171,196	17,120
	Third year activity	130.00	700,000	91,000,000	152,174	15,217
	Subtotal			502,125,000	839,674	83,967
Forest stand improvement		46.47	900,000	41,823,000	69,938	6,994
Total				543,948,000	909,612	90,961

In consideration of the past circumstances surrounding silviculture carried out by the Vietnamese government, there is every possibility that the Vietnamese government will execute silviculture plans on its own terms even tough the silviculture program in this forest management plan was not drawn up. Under this situation, it is difficult to estimate the difference between the benefits of silviculture executed by the Vietnamese government and that based on the forest management plan. Consequently, concerning the benefits to villagers from executing the silviculture plan already mentioned, it is difficult to estimate the increase in the income of villagers. Therefore, here cash income provided to villagers by executing the silviculture plan is a simple calculation.

7 Evaluation from the viewpoints of ITTO C&I

7.1 Methodology of the evaluation

'Criteria and indicators for sustainable natural forest management' of ITTO (hereafter referred to as C&I) are tools to evaluate change and dynamics of forest conditions and management systems aimed at sustainable management on both national level and forest management entity level. Therefore, establishment of a monitoring system of the change and dynamics is essential.

Criteria are considered to be important items in evaluating sustainable forest management, while indicators are considered to be quantitative and qualitative scales in measuring or monitoring the items regularly. The C&I are not guidelines suggesting methods of forest operation. Direction of numeral change of indicators provides information to judge whether forest management is coming to or going far from a sustainable one, but it cannot be used in judging whether management is sustainable or not. Judgment of sustainability should vary from country to country or from management body to management body.

As the present survey is limited to Mang La Forest Enterprise (defined as Forest Management Unit: FMU), Kon Plong District, Kon Tum Province, it is difficult to evaluate by national level criteria and indicators. In the present plan, quantity/quality change regarding the criteria and indicators on the level of the forest management body from the present to year 2010 after the proposed operations in the forest management plan are initiated is prospected to evaluate whether sustainable forest management can be achieved. However, internationally, agreed standards or procedures on the judgment for sustainability have yet to be formed; therefore, it should be understood that in this report every evaluated item only presents comments from the survey team. Despite this fact, as future operation results are evaluated based on C&I in the present survey, incorporation of available and appropriate indicators into the monitoring system is considered.

The discussion progressed item by item of the C&I based on the ITTO guideline "action to be made". The proposed management plan for the FMU (Mang La FE) presented many operational plans. These operational activities initially proposed are always examined along with C&I, then after, the proposed operational plans are finalized. The following sections explain how the plan was discussed and built in management tools to suit the requirement levels for sustainable forest management. If the FMU implements the plan, it is expected the forests of the FMU will advance towards the achievement of sustainable conditions. Of course, the plan is only a plan, and the plan does not realize sustainable management. To implement every operation planned is the most important part for sustainable management. The Plan also proposed procedures for implementing the operational plans by means of transparency, participation, record keeping in a open manner, etc. These processes are also an

important condition to direct sustainable forest management. The C&I expects to confirm that the management is heading towards sustainability; therefore, periodic monitoring and input to the results in public is also an important aspect. The plan proposed such actions for the FMU; nevertheless, the plan cannot handle every formality after its implementation and can not guarantee the management authority of the FMU to do so. To realize sustainable forest management depends on the willingness of the management body (FMU) as well as higher authorities in district, province, and state.

7.2 Components of the C&I

The ITTO C&I consist of 7 criteria. Each criterion shows indicators. Each indicator is examined through several questions "actions to be taken". The Criteria focused on (a) Institutional stability of the FMU, (b) Suitability to hold latest forest condition (related to resource and management areas), (c) Degree of effect of human activities on ecosystem health, (d) Sustainability of forest products, (e) Impact on bio-diversity by human activities, (f) Stability of forest functions by means of water, soil, and land conservation, (g) Impact on social and cultural aspects of indigenous society. Sustainable forest management means not only sustainable forest product extraction but also the maintenance of various aspects for forest functions, therefore, the C&I request the FMU managers to ensure their forest management operations using the indicators.

The study team discussed the proposed management plan of the FMU and how to harmonize the plan to meet the requirements for sustainable management. The following section presents how to establish mechanisms to direct the FMU to realize sustainable management according to the ITTO C&I item by item. Detailed discussions by item (action to be taken) are shown in the supplement data book (ITTO criteria and indicators for forest management unit/Mang La Forest Enterprise).

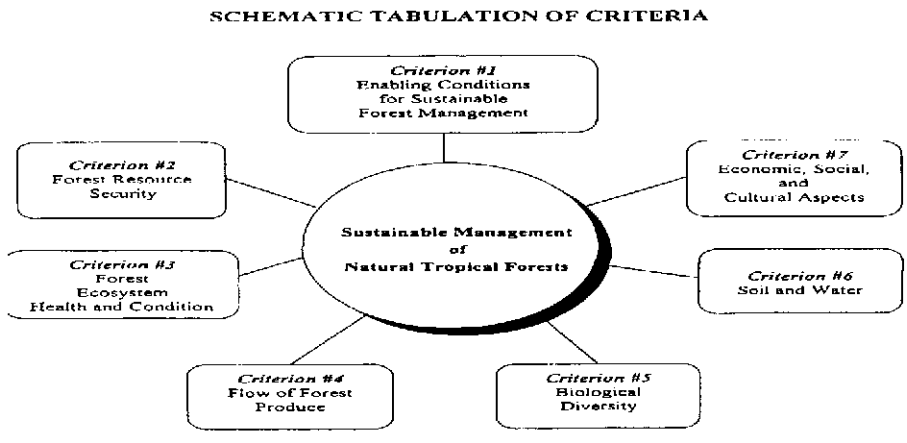


Figure II-7.2.1 Scheme of Criteria and Indicators of ITTO

7.3 Discussions on C&I

7.3.1 Enabling Conditions for Sustainable Forest Management: Criterion 1

This criterion requests to examine whether the FMU has the capability to manage its forests. The points are whether the FMU has enough right to manage forests based on the Governmental authorization, enough technical capability, support by financial stability, good coordination with governmental bodies as well as people living in the FMU managed areas.

The forest management plan (hereinafter referred to as "the plan") proposes various operation plans. To implement those activities, sufficient funds are needed. The plan considers that the needed funds based on continuous budgetary support/approval from concerned authorities and income from mainly stumpage sales, and the concerned authorities will assure the FMU use of those funds generated from stumpage sales, mainly for forest management operations.

This criterion covers the general institutional requirements for sustainable forest management to succeed. It addresses policy, legislation, economic conditions, incentives, research, education, training and mechanisms for consultation and participation. Indicators are as follows:

1.1 Existence of a framework of laws, policies, and regulations to govern:

1.2 Amount of investment and reinvestment in forest management administration research, and human resource development from:

1.3 Existence of economic instruments and other incentives to encourage sustainable forest management.

1.4 Number and adequacy of institutions to support sustainable forest management.

1.5 Number and adequacy of trained professional and technical personnel at all levels to perform and support management implementation, research and extension.

1.6 Existence and application of appropriate technology to practice sustainable forest management and the efficient processing and utilization of forest produce.

1.7 Capacity and mechanisms for planning sustainable forest management and for periodical monitoring, evaluation and feedback on progress.

1.8 Degree of public participation in forest management such as in planning, decision-making, data collation, monitoring and assessment.

1.9 Adequacy and timeliness of information to increase public awareness about forest policies, legislation and sustainable forests management practices.

Note: Letter - means to apply for National Level

The plan fulfills the conditions for forest operations to meet rules and regulations of Vietnam. The plan also proposes a mechanism to secure the funds to coordinate with the FE, provincial PC, district PC, and villagers in a periodical manner.

For institutional framework, the plan proposed a plan on capacity building; therefore, the staff of the FMU will improve their management capability through implementing the operations. For the capability for extension works, the plan proposed to enforce technical staff and to establish channels to cooperate with relevant institutions and the Forestry College in Pleiku.

7.3.2 Forest Resource Security: Criterion 2

This criterion requests to examine whether the FMU surely maintain forest conditions or not. The factors to record the latest conditions of the forests are areas by extended forest types (vegetation, crown density, land use other than forest, encroachment, boundary of the territory of the FMU, future land use plans for forest conversion, and others).

For this criterion, the plan prepared a land-use and forest type map using satellite data, aerial photographs and field verification. The map data were stored in GIS. All requested data were examined, then the plan finalized management forest areas, including small areas of land used by the villagers, are fixed. Therefore, the latest forest situation was grasped on a 1/10,000 map. To maintain the target areas for forest management is indispensable to realize sustainable management. In the Kon Plong district, there are broad areas facing slash-and-burn cultivation. Encroachment into forests including the FMU management areas exists, therefore, the plan proposed the villager support program to reduce human pressure to encroach on forest areas. The plan also proposed a rehabilitation plan to recover forest areas by agro-forestry with the FE and villagers.

This criterion relates to the extent to which a country has a secure and stable forest estate, which could include plantations, to meet the production protection, biodiversity conservation, and other social, cultural, economic and environmental needs of present and future generations. Indicators are as follows:

2.1 Extent (area) and percentage of total land area under:(a) natural forest (b) plantation forest, (c) permanent forest estate, and (d) comprehensive integrated land-use plans.

2.2 Extent (area) and percentage of total land area under each forest type.

2.3 Length and percentage of external boundaries of the permanent forest estate demarcated or clearly *defined*.

2.4 Area of the permanent forest estate converted to permanent non-forest use.

2.5 Existence of procedures to control encroachment of fire, grazing and illegal exploitation of forests.

7.3.3 Forest Ecosystem Health and Condition: Criterion 3

This criterion requests to examine whether the FMU recognizes the situation that the management forests are growing in, be it in a healthy condition or facing some kind of problem. The indicators show reasons to threaten the health condition such as encroachment, fire, pest and diseases, and natural disasters. To identify the reasons affecting the forest health depends on the past records and mechanisms for prediction.

The causes to affect the forest health are divided into 2 aspects. One is human factor, and the other is natural factor. The plan proposed measures to avoid forest degradation from human factors. Encroachment, and un-controlled cutting are not serious in this FMU now. Nevertheless, slash-and-burn cultivation, and fuel wood collection, still exist. The young generation of the villagers who married require farm-lands for new families. To reduce such villagers' pressure on the forests, the plan proposed the villager support program to prepare lands for agro-forestry for poverty elimination.

Concerning forest operations made by the FMU, the team surveyed logged over areas. In open areas after harvesting, an eroded skid pass was found but it was not so serious as far as the team observed. Inadequate practices such as over exploitation, shortened cutting cycle, and rough logging operation were not observed. However, it is not assured that all practices had been done in a very good condition. Formally, after harvesting, local authorities used to send an inspection team to examine whether the logging operation had been done according to the agreed conditions, rules and regulations. The team could not confirm these inspection results because the FMU did not present these reports. The team received information only orally that the inspection team found no unacceptable events. The plan did not incorporate mechanisms to predict activities out of the rules made by the FMU or contractors under the supervision by the FMU, though the plan suggested that the inspection should be implemented in an open manner with participation of representatives of villages and opinion leaders from provincial wise men/women.

Regarding other factors such as mining, dams and grazing, the plan did not propose special measures to stop these developments. The reasons are (a) no existing movement of new development to cause damage to the FMU's forest are identified such as a large-scale dam plan, mining development plan or factory construction plan that may produce acid rain or the like, (b) the villagers living in the FMU area are not practicing systematic grazing.

Concerning natural disasters, the plan is not assumed to face serious incidents affecting forest degradation. Forest fire is a serious factor to maintain forest boundary. In the southern communes of the study area, there is slash-and-burn cultivation threatening the forests. Burning of a small area by the villagers is the main cause of uncontrolled fire and then the degraded forests are targets for cultivation by the new free immigrants. This cycle has not started in the FMUyet, nevertheless, this

phenomena creates serious anxiety even in the FMU/Mang La for the near feature. The plan requests to strengthen the forest protection contract scheme, and to implement the villager support program to ease human pressure on the forest areas.

With regard to pests and diseases, the plan did not propose systematic and continual use of pesticide and chemical fertilizer.

This criterion relates to the condition of a country's forests and the healthy biological functioning of forest ecosystems. Forest condition and health can be affected by a variety of human actions and natural occurrences, from air pollution fire, flooding and storms to insects and disease. Indicators are as follows:

3.1 Within the permanent forest estate, the extent and nature of encroachment by: (a) agriculture, (b) roads, (c) mining (d) dams (e) unplanned fire, (f) sifting agriculture, (g) nomadic grazing, (h) illegal exploitation (i) bad harvesting practices, (j) harvesting more than once during (k) the cutting cycle (re-entry), (l) hunting (m) other forms of forest damage such as change in hydrological regime, pollution, introduction of harmful exotic plants and animal species, browsing and grazing.

3.2 Within the permanent forest estate, the extent and nature of forest damage, caused by: (a) wild fire, (b) drought (c) storms or natural catastrophes, (d) pests and diseases, and (e) other natural causes.

3.3 Existence and implementation of quarantine and phytosanitary procedures to prevent the introduction of pests and diseases.

3.4 Existence and implementation of procedures to prevent the introduction of potentially harmful exotic plants and animal species.

3.5 Availability and implementation of procedures covering: (a) use of chemicals in the forest, and (b) fire management.

7.3.4 Flow of Forest Produce: Criterion 4

This criterion requests to examine whether forest products are harvested on a sustainable level and how to assure the extraction to maintain the sustainable level. The indicators shows six checking points (a) how to grasp the forest products situation (inventory), (b) how to identify yielding level (yielding limit), (c) how to record/evaluate the results of harvest (real harvest), (d) how to control/order forest products harvesting (management plan, long focused target for management), (e) how to control forest operations to meet sustainable objectives (operational guideline), (f) how to secure the operational results to meet requirements of the sustainable objectives (monitoring).

The plan discussed the logging operation plan and yielding level of wood, based on the latest forest condition. The forest inventory was done as explained in 6.3.1 above. The proposed management plan covers the whole area of the FMU except existing paddy field within two communes. The yielding

size/limit was examined based on the growth increment and demand/marketability that do not exceed the level equivalent to the volume of the annual growth. This sustainability of the log production is examined for the total area of matured (reached harvestable volume, size, quality) forests except the forests to be protected for various reasons for sustainable ecosystem and forest functions conservation. The yielding level is defined under the sustainable level (concerning the above (a), (b), and (d)).

Regarding harvesting methods, logging practice, and skid road design, the plan suggested basically following the Vietnamese guidelines and some additional operational guidelines to reduce damage to forest floor and stands for next harvesting (concerning the above (c), (e)).

Concerning inspections of stumpage sales result, the plan suggested that the rule existing in Vietnam should be strictly applied. In addition to implementing inspection, the plan also suggested the inspection should be implemented in an open and transparent manner. To secure the transparency, the plan proposed formation of the inspection team including some representatives mentioned in 6.3.3 above (concerning (f)).

Concerning record keeping in forest operation and harvest areas, the team prepared a GIS database and an operation manual. The team expects the FMU to record every activity on the GIS map. This GIS map will contribute to the future evaluation.

The plan did not calculate quantitative yielding limit for NTFPs, because of the difficulties to implement suitable inventory of main forest NTFPs such as rattan, bamboo, mushroom, honey, reign, etc. To compensate for this, the plan proposed a mechanism to harmonize harvesting level by each village. The plan proposes periodical meetings with villager's group/commune to discuss places and quantity of each product to harvest, and how to inspect the harvested results.

Concerning post harvest, the plan did not address special description. The FMU basically is not planing to construct wood processing mills. The FMU basically implements stumpage sales, therefore, the plan did not insert the rationalized measures for wood processing.

The efficient use of branches and other remaining parts of stems for fuelwood may also be a necessary aspect to reduce waste of resources. Nevertheless, from an economicangle, to produce fuelwood from those materials and transport them to Kon Tum town or other areas may not realize substantial benefit because of cheap market price and less competitiveness than the surrounding villages.

This criterion is concerned with forest management for the production of wood and non-wood forest products. Such production can only be sustained in the long-term if it is economically and financially viable, environmentally sound and socially acceptable. Forests earmarked for production are able to fulfill a number of other important forest functions, such as environmental protection and the conservation of biological diversity.

These multiple roles of forest should be safeguarded by the application of sound management practices that maintain the potential of the forest resource to yield the full range of benefits to society. The indicators are as follows:

4.1 Extent and percentage of forest for which inventory and survey procedures have been used to define: (a) the quantity of the main forest products, and (b) resource rights and ownership.

4.2 Estimate of level of sustainable harvest for each main wood and non-wood forest product for each forest type.

4.3 Quantity (volume) of wood and important non-wood forest products harvested, existence for each forest type.

4.4 Existence and implementation of: (a) forest management plans, and (b) forest harvesting (operational) plans.

4.5 Extent and percentage of : (a) production forest covered by management plans, and (b) compartment / coupes harvested according to harvesting (operational) plans.

4.6 Existence of long-term projections, strategies and plans for production including the use of tree plantations.

4.7 Availability of historical records on the extent nature and management of forest.

4.8 Availability and implementation of management guidelines for each of the main wood and non-wood forest products to be harvested, to cover: (a) the assessment of natural regeneration and (b) measures to supplement natural regeneration where necessary.

4.9 Availability and implementation of procedures to monitor and review the management guidelines.

4.10 Availability and implementation of guidelines for reduced/low impact logging to minimize damage to residual stand.

4.11 Availability and implementation of: (a) procedures for comprehensive evaluation of the implementation of management guidelines, (b) procedures to assess damage to the residual stand, and (c) post-harvest surveys to assess the effectiveness of regeneration.

4.12 Percentage of area harvested for which: (a) management guidelines have been completely implemented; and (b) post-harvest surveys have been conducted to assess the effectiveness of regeneration.

7.3.5 Biological Diversity: Criterion 5

This criterion requests to examine whether or how the FMU take care of bio-diversity in their management practice. The indicators address three checking points: (a) how the FMU recognizes

important flora and fauna existing in its territory, (b) what guidelines were developed to conserve flora and fauna in general forest operation areas, (c) how are the special treatment areas for protection of flora and fauna within general forest operation areas.

This Criterion relates to the conservation and maintenance of biological diversity including ecosystem, species and genetic diversity. At the species level, special attention should be given to the protection of endangered, rare and threatened species. The establishment and management of a geographic system of protected areas of representative forest ecosystems can contribute to maintaining biodiversity. Biological diversity can also be conserved in forests managed for other purposes, such as for production through the application of appropriate management practices. Indicators are as follows:

5.1 Statistics of protected areas[1] in each forest type.

5.2 Percentage of total number of protected areas connected by biological corridors or 'stepping stones' between them.

5.3 Existence and implementation of procedures to identify endangered, rare and threatened species of forest flora and fauna.

5.4 Number of endangered, rare and threatened forest dependant species.

5.5 Percentage of original range occupied by selected endangered, rare and threatened species.

5.6 Existence and implementation of a strategy for in situ and/or ex situ conservation of the genetic variation within commercial endangered rare and threatened species of forest flora and fauna Management Guidelines.

5.7 Existence and implementation of management guidelines to: (a) keep undisturbed a part of each production forest (b) protect endangered; rare and threatened species of forest flora and fauna, and (c) protect features of special biological interest, such as seed trees, nesting sites, niches and keystone species.

5.8 Existence and implementation of procedures for assessing changes of biological diversity of the production forests, compared with areas in the same forest type kept free from human intervention.

Concerning identification for important flora and fauna, the team implemented the forest survey and animal survey. The team identified the existence of or the possibility of the existence of these flora and fauna. The list of animals is shown in the supplement book (List of fauna recorded in Kon Plong District).

To conserve mainly mammals, the plan proposed to set up a bio-corridor to secure the movement of mammals between the existing biological nature reserves' gazette. This bio-corridor is established outside the logging operation forest and is strictly protected from human influence. The plan proposed several dense forest areas to be put outside from the logging operation areas to contribute to animal resting or hiding places. The plan did not propose subsistent areas within the ordinal forest operation areas for protection of individual animal species, nevertheless, the plan proposed the logging operation under the selective cutting system, therefore, a broad area is expected to contribute to animal

habitation. In addition to this, the plan proposed a guideline for marking procedures for selecting stand whereby the stands for cutting are not to be marked in (a) surrounding streams and (b) nesting stand.

Concerning hunting, the plan proposed a wildlife protection and conservation program including setting up a mechanism to regulate hunting to avoid serious damage to the animal population. The functions of this mechanism are to establish a villager cooperative body in each commune, to work against or detect illegal hunting implemented by outsiders, to report to commune authorities to stop or arrest them and to discuss ordered hunting practice within the villages.

7.3.6 Soil and Water :Criterion 6

This criterion requests to examine whether the forest management is carried out to recognize and identify the needed areas for soil, water and land conservation. These forest functions affect the outside downstream of the FMU. The indicators show six checking points: (a) how the FMU has allocated substantial areas to conserve these functions, (b) how the FMU identified the areas sensitive for conserving these functions, (c) how the FMU implements substantial treatment for stream protection, (d) how the FMU implements measures to avoid serious damage to forest floor for securing soil and water conservation on road construction and skidding, (e) how the FMU implements measures to recognize the forest operation results and whether the operation had had serious affect on the conservation of the forest function for soil and water, (f) how the FMU examines the water quality change of the streams to compare with the areas with no forest operation and the streams that run through logged over area.

The whole of the FMU is recognized as an important area for watershed conservation, and several blocks are categorized into watershed protection area. The team examined sensitive areas for water, soil, and land conservation by topographic analysis. Then areas to be excluded from ordinary logging operation areas are defined and mapped both as protection forest and production forest ((a) and (b)).

For the stream protection concern, protection areas of water sources for villagers are also identified and mapped. The areas located just on the upper side from water fetching points, and expanding 100-200 m both sides of the stream are defined as no timber product area. The areas are also transferred on the map (c).

Regarding the forest floor protection, the plan proposed a general guideline for skid way setting to avoid serious damage to the forest floor during logging operation. The Vietnamese regulation requests to make inspection as to whether the logging operation had caused intolerable damageto the forest floor ((d), (e)). The plan expects loggers will do their logging operation following the guideline and if they cause damage they will carry out rehabilitation planting or other measures to avoid soil loss. The plan requested that the inspection procedures should be implemented in an open and transparent

manner as explained above.

For monitoring measures of stream water quality the plan did not prepare substantial proposals. The plan did not propose to use chemicals for plantation for protection from pests and diseases; therefore, the stream water will not be affected by chemical pollution. The imaginable effect from logging

This criterion deals with the protection of soil and water in the forest. The importance of this is two-fold. First it has a bearing on maintaining the productivity and quality of forest and related aquatic ecosystems (and therefore on the health and condition of the forest, Criterion 3); secondly, it also plays a crucial role outside the forest in maintaining downstream water quality and flow and in reducing flooding and sedimentation. The environmental and social effects of mismanagement (landslides, flooding, water pollution) can be enormous and restoration very costly. National-level data for indicators will normally be derived from the aggregation of data collected periodically at the forest management unit level. Indicators are as follows:

6.1 Extent and percentage of total forest area managed primarily for the protection of soil and water.

6.2 Extent and percentage of area to be harvested for which off-site catchments values have been defined, documented and protected before harvesting.

6.3 Extent and percentage of area to he harvested which has been defined as environmentally sensitive (e.g. very steep or erodible) and protected before harvesting.

6.4 Extent and percentage of area to be harvested for which drainage systems have been demarcated or clearly defined and protected before harvesting.

6.5 Percentage of length of edges of watercourses, water-bodies, mangroves and other wetlands protected by adequate buffer strips.

6.6 Existence and implementation of procedures to identify and demarcate sensitive areas for the protection of soil and water.

6.7 Availability and implementation of guidelines for forest road lay-out, including drainage requirements and conservation of buffer strips along streams and rivers.

6.8 Availability and implementation of harvesting procedures: (a) to protect the soil from compaction by harvesting machinery, and (b) to protect the soil from erosion during harvesting operations.

6.9 Existence and implementation of procedures for assessing changes in the water quality of streams emerging from production forests as compared with streams emerging from the same forest type kept free from human intervention.

operation to stream water quality may be mud flow and muddy water flow into paddy fields. To avoid mudflow into streams, the plan proposed small stream protection forests both sides of the streams just on the upper part of water fetching places.

7.3.7 Economic, Social and Cultural Aspects: Criterion 7

With Criterion 7, there are broad aspects and the largest numbers of indicators are listed. This criterion

requests to examine how the FMU consider social effect within the management activities implemented. Indicators of this criterion connect roughly on five different aspects. The first aspect is supplying forest products for economic activities to the societies outside of the FMU. The second point discusses benefits and cost sharing with societies outside the FMU. The third point involves employment or creation of job opportunities, and health and welfare of the staff (including workers directly/indirectly employed). The forth point concerns relation to historical monuments, recreation, and R&D. The fifth point is related to land tenor, traditional forest dependent communities and assisting to meet the needs for traditional and customary lifestyles.

For securing the land use right, the plan did not include activities to carry out formal procedures such as land survey and recording the land use right. These activities are implemented under the cadastral office of the District. By 2002, paddy fields cultivated by local people had been surveyed and recorded under the formal recording system in Vietnam. The FMU has no authority to permit or allocate lands to the villagers. Nevertheless, the plan proposed a mechanism to secure the land use of agroforestry through conducting an agreement with villagers in the villager support program. To facilitate agroforestry is the main part to help people generate income, therefore, land use by the supported villagers and to secure their continuous use and responsibility to manage these lands isessential.

For the first group concern, the plan proposed and presented continuous supply of wood products for local market. For logs, the plan proposed that the FMU should decide the production quantity to meet consumption size in Kon Tum. The plan considered to maintain forest resources, and to use these resources mainly to contribute to economic development of the province but not other provinces nor foreign countries. Concerning the forest resources of NTFPs, these resources are expected to supply only the villagers living in the communes located in the FMU area as sustainable production and over exploitation is to be avioded.

The plan did not propose wood processing. The FMU has no function for wood processing. To reduce wood waste is mainly considered to improve the usage of branches, treetops and other parts not taken out from the forest. The plan examined the economical possibility to use these wastes for fuelwood. Nevertheless, to bring the material to market for fuelwood, mainly in Kon Tum, is uneconomical, and less competitive than other districts because of transportation cost. The plan did not propose fuelwood marketing, only expecting to supply fuelwood for surrounding villages for establishing friendly relationships with villagers.

For the second group concern, the plan did not mention a cost and benefit sharing system with the FMU and other parties concerned. Nevertheless, the benefits to local villagers living in the FMU area is duly considered and estimated. The main benefits coming from stumpage sales formally belong to the Vietnamese Government, but at the same time some part of the budget of the state and province should be mobilized to be returned to the people for implementation of the villager support program.

The income of the FMU will be sent to the government, and the government shall send back the same amount to the FMU to be used for the villagers. In this process, the benefits from forest management are expected to be shared with villagers.

For the third group concern, the plan proposed that the forest operations planned other than logging, constructing roads etc. that need capital for machinery, special skills and the like, are implemented through direct employment of villagers or contract with the villager's group to create job opportunities

This criterion deals with the economic, social and cultural aspects of the forest, besides those mentioned under Criteria 4, 5 and 6. As a renewable resource, the forest has the potential, if sustainably managed, to make an important contribution to the sustainable development of the county. Indicators are as follows:

7.1 Value and percentage contribution of the forestry sector to the Gross Domestic Product.

7.2 Quantity (volume) and value of wood and non-wood forest products traded in: (a) the domestic market and (b) the international market.

7.3 Quantity (volume) and value of wood and non-wood forest products for subsistence use, including fuel-wood.

7.4 Ratio of domestic log production to the processing capacity of wood-based industries.

7.5 Efficiency of utilization in terms of the percentage of felled volume processed.

7.6 Existence and implementation of mechanisms for the effective distribution of incentives and the fair and equitable sharing of costs and benefits among the parties involved.

7.7 Existence and implementation of procedures to ensure the health and safety of forest workers.

7.8 Employment in the forestry sector: (a) number employed, (b) percentage of total work force, (c) average wage rate, and (d) injury rate.

7.9 Number and extent of forest sites available primarily for (a) research (b) education (c) the direct use and benefit of local communities, and (d) recreation.

7.10 Number of people dependent on the forest for subsistence uses and traditional and customary lifestyles.

7.11 Area of forest upon which people are dependent for subsistence uses and traditional and customary lifestyles.

7.12 Number of visitors to forest for recreational purposes.

7.13 Total amount of carbon stored in forest stands.

7.14 Number of important archaeological and cultural sites identified, mapped and protected.

7.15 Extent to which tenure and user rights over the forest are documented and recognized.

7.16 Extent to which forest planning and management practices and processes consider and recognize legal or customary rights with respect to indigenous people and local communities, forest dwellers and other forest-dependent communities.

7.17 Extent of participation by indigenous people and local communities, forest dwellers and other forest dependent communities in forest-based economic activities.

7.18 Number of agreements involving local communities in co-management responsibilities.

and income generation for the villagers. The plan also proposed safety management practice training to reduce work accidents for contractors. For the forth group concern, the plan did not mention or prepare special areas for R&D, archeological and /or historical monuments, or recreational use. The team did not identify needs or economically suitable activities for these tasks or areas.

For the fifth group concern, the plan proposed the villager support program. Within the implementation of the activities, the plan suggested to give first priority to prepare forest products for the ethnic minority communities.

8 Discussion for feasibility of the master plan and the model management plan

8.1 The principles/guidelines for the master plan

The required objective of the master plan was to specifically lay down the approach to sustainable forest management. To meet this requirement, the master plan explored how to control timber production to ensure that forest management will fully take into consideration all the things and people related to the forests. Such considerations included headwater conservation and water recharge improvement, soil and land conservation, wildlife conservation, and safeguarding the traditional rights of access to the forests for local people. It is hoped that the forest management principles/guidelines of this master plan will be applied to the four provinces in the central highlands, which are similar in terms of social conditions.

The master plan lays down specific measures to maintain the functions of the forests in conserving water resources, soil and land. As for biodiversity conservation, the plan proposes the establishment of biological corridors since selective logging will be carried out throughout the forests. Such corridors are designed to secure places for animals to take temporary refuge from the forests that are being logged. They are also aimed at ensuring exchanges with groups of animals in the surrounding protection areas to appropriately preserve the species.

The master plan also aims at coexistence and coprosperity with local communities. To this end, the plan proposes a villager support program designed to ensure that local residents can enjoy a more stable livelihood and maintain their traditions as ethnic groups. The master plan sets aside the land required to achieve this objective from the sustainable forest management zone and designates it as land to which local residents have exclusive access. Forest managers support the self-help efforts of local residents to improve their livelihood in such exclusive areas of land. Specific areas of support include the development of agroforestry plantations, training in livestock management technology, the construction of irrigation channels and weirs aimed at developing rice paddies and achieving double cropping. Local residents, for their part, are expected to help forest managers in protecting and monitoring the forests, the protection of wildlife, and conserving biodiversity as a whole.

Putting into practice the spirit of the master plan requires not only efforts on the part of the forestry enterprises (FEs) and other agencies concerned, but also feedback from all the parties concerned. To ensure such feedback, the FEs and other agencies concerned need to disclose all kinds of information on the details and implementation of the management plan for monitoring by all the parties concerned.

The model forest management plan was formulated by applying the principles/guidelines of the master plan to the local circumstances. It was verified that the model plan is in line with ITTO's criteria and

indicators for sustainable forest management.

8.2 Formulating forest management plans for other FEs

The overarching objective of this plan was to apply the proposed principles/guidelines and the planning method of forest management to other FEs and communes. The land use classification, which serves as a basis for such application, draws on an accurate assessment of the qualitative and quantitative distribution of the existing forests and the activities of local residents in the forest zone. To this end, this study joint venture (JV) offered updated topographical maps of the whole area under the jurisdiction of the six FEs in the study region. The JV also offered recent aerial photographs, although the photos did not cover all the areas. In addition, the JV assessed the land use and vegetation distribution by analyzing the images taken by LANDSAT satellites. The results of the analysis were compiled into GIS data. These data are useful for macro-analysis and forest surveys to enable each FE to prepare a forest management plan.

In the process of studying and formulating the master plan and the model plan, the JV conducted various kinds of analyses and estimations (simulations) using GIS software. The JV offered, in the form of a CD-ROM, 1:10,000 digital maps of the areas covered by the six FEs in the study region, data obtained by mesh analysis, the block system, and basic data concerning land use and vegetation, so that the GIS will be used to study and formulate forest management plans by the remaining FEs in Vietnam.

Each FE is expected to follow the JV's example and draw various shapes and polygons using the GIS software. The JV hopes that such data will be used as a tool for studying and formulating a forest management plan and explaining such a plan to the parties concerned. Through this study, the JV provided personal computers, GIS software, training, and GIS manuals to the Department of Agriculture and Rural Development (DARD). What remains to be done is for the Vietnamese counterparts to become accustomed to using the GIS software (Arc View).

8.3 Implementation of the master plan

The JV took many considerations into account as shown below to ensure the feasibility of various operations conceived under the master plan.

(1) Timber production operations

Selective logging is the norm for logging and harvesting. The allowable annual cut is set at or below the actual growth increment. The actual cutting volume is appropriately determined based on the following factors. One factor is that a logging project should not result in a significant

change in the cutting volume from the current levels. The other is that forest resources in Kon Plong should be processed or used in Kon Tum Province and should not be put on the international market in the form of logs.

Since the stumpage sale method is to be adopted for the logging projects, FEs do not need to make a considerable investment in capital equipment. The main roads to be used for logging are the planned provincial roads. Therefore, the master plan requires the minimum length of main forest roads. To complement these categories of roads, the construction of spur roads, which serve as temporary passageways, is planned. Also planned is the construction of tractor roads for hauling the logs. The construction of tractor roads will be funded by the timber purchasers. The construction of the main forest roads and spur roads will be financed by the FEs.

The duties of the FEs include the selection of the trees for cutting, surveillance to ensure that trees excluded from logging are not cut, and the collection of contractual fines for illegal logging. The FE also needs to bear the costs related to management. All these duties entail appropriate investment to meet a number of requirements, including the implementation of programs aimed at increasing the number of technical staff and boosting their technical capabilities, the establishment of frontline bases near logging areas, the provision of motorcycles for watchkeepers and instructors, the procurement of telecommunications equipment, and the establishment of a crisis management system.

When subcontracting the selective logging operation, it is essential to select subcontractors with qualified technical capabilities and reliability. Strengthening the system for monitoring and guiding such subcontractors is the key to implementation of the master plan. Quite regrettably, forestry staff in charge of surveillance or their supervisors in many countries gain illegal profits from unplanned logging in collusion with the subcontractors. Many factors lie behind these wrongdoings. For one thing, the logging areas are in remote parts of the forest and are therefore hidden from the eyes of the public. For another, the forestry budget falls far short of the required amount of funds. Boosting the morale of forestry staff is important, but this is not sufficient to deter these wrongdoings. A more effective way to discourage such wrongdoings is to disclose information on the planning and implementation processes and thereby create an environment in which these wrongdoings will come to light soon or later.

(2) Afforestation and stand improvement operations

Afforestation projects incorporate not only industrial afforestation operations under the villager support program and those by the FEs and communes, but also plantation and stand improvement (environmental afforestation) operations by the FEs and communes which are aimed at restoration of the forest resources. Industrial afforestation operations will be funded and carried

out by pulpwood manufacturers under contracts with the local residents or the FEs. Neither the FEs nor communes will bear the direct costs. The central government is expected to offer general subsidies or loans to plantation businesses to support this plan.

Environmental afforestation under the master plan is designed to afforest grassland and bushland in the areas under the jurisdiction of FEs. Therefore, little profit is expected from harvesting planted trees growing in such harsh conditions. Afforestation costs will be financed by funds under Decree 661 as far as grassland and other applicable lands are concerned. The afforestation costs for other types of land will be financed from timber sales. The central government is encouraged to provide special tax breaks for the FEs to support their financing of the afforestation of grassland.

(3) Wildlife conservation

Wildlife conservation should be largely carried out by the district government. The planned cost is not so great since it only involves the cost of printing campaign tools and personnel expenditures for watchkeepers and instructors. Coordination with law enforcement agencies in the neighboring provinces and big cities such as Ho Chi Minh City and Hanoi is essential for cracking down on outside poachers and cutting off sales channels. A mechanism to allow certain levels of hunting by local residents entails authorization under some kind of ordinance issued by the district or provincial government.

(4) Support for local residents

The operation to support local residents requires funds for developing rice paddies and building water channels and weirs. The program to eliminate food shortages, which targets the poor suffering from shortages of food among others in the villages, is based on voluntary work by local residents without remuneration. However, given the fact that they cannot afford such volunteer activities, the master plan allows for a program to provide food to residents who join construction work for small-scale irrigation facilities according to the number of days worked.

In agroforestry and other programs, support from the FEs or communes centers on technical assistance. Although providing seedlings, fertilizers and other materials is certainly important as an incentive at the initial stages, extension workers who work with residents on a daily basis play a pivotal role. Therefore, the district or provincial government needs to bolster human resources development programs aimed at appropriately assigning staff in charge of agroforestry extension, improving their technical capabilities, and fostering their capacity to organize model groups of residents.

(5) Required funds

As far as the cost of logging and afforestation is concerned, the master plan allows for the introduction of policy funds wherever possible so as to lessen the burden on the FEs. The implementation plan therefore avoids a sharp increase in the cutting volume. The plan also lays out guidelines so that afforestation operations will gradually be extended from the forest reserves and other similar areas. The master plan is based on the concept that each FE will conduct villager support activities not only in the hamlets within its jurisdiction but also in other hamlets within the same commune, in coordination with—or under a subcontract from—the commune.

The master plan aims to strike a balance between the total amount of funds required for its own operations and the amount gained by the FEs from timber sales (in other words, the amount of taxes and levies that goes into the treasury of the central and provincial governments from the FEs). The JV expects that the central government will provide strong support to operations that are qualified to receive government funds (e.g., subsidies under Decree 661) under the current institutional arrangements. With all things considered, the JV is confident that the master plan will be able to strike a balance between the inputs and outputs and thereby achieve the objective of sustainable forest management—in an efficient manner as well.

8.4 Implementation of the model forest management plan

The model forest management plan has three main objectives: the maintenance of the commercial forests, the establishment of a relationship of mutual trust and cooperation between the FE and local residents, and the maintenance of forests that have been excluded from the logging areas to conserve the functions of the regional forests as a whole. The first objective, that is, sustainable timber production in the commercial forests (the forests managed by the FE) will be achieved if the FE follows this model plan. However, whether the other two objectives can be fully achieved depends on how closely the FE can associate itself with the local residents. In this sense, the performance of the villager support program will have a decisive impact on the sustainability of the forest environment.

(Managerial independence)

The tasks required to ensure that the villager support program is a success and promote similar activities throughout the Kon Plong District are described in section 5.4.4 (8) of Volume II in the form of recommendations. The first challenge in implementing these recommendations is securing the funds required for the FE. Under the current system, the revenues the FE gains from stumpage sales first go into the treasury of the central/provincial government and then the FE receives budget allocations from the central/provincial government in accordance with this plan. Unless the central/provincial government makes budget allocations promptly and appropriately, and unless the FE uses the budget

allocations flexibly to meet the needs of local residents, then it is difficult to win their confidence through the villager support program. Therefore, the FE needs to secure managerial independence that allows it to appropriate its budget for support to local residents under the villager support program as long as such allocations do not exceed the revenues of the FE. The assurance of such managerial independence, as well as the strengthening of the managerial competence of the FE, should be addressed as a matter of priority for the implementation of the model forest management plan.

(Information disclosure)

Under the current system, the competent provincial agency checks whether the FE's activities are in line with its annual business plan in the form of on-site inspections. This plan proposes improving transparency and sharing all the details and results of the business plan with local residents with a view to establishing a system that discourages irresponsible or malevolent behavior on the part of loggers and other outside businesses. Improved dialogue with the local residents makes it possible to place all the operations under public scrutiny. Improved dialogue also makes it easier to discover incidences of unexpected slash and burn cultivation and illegal logging by itinerant immigrants. Sharing information on business plans with the local residents is essential for establishing a relationship of mutual trust with them.

(Diffusion of technical skills)

As has been repeatedly discussed, ultimately, thorough and effective implementation of the villager support program constitutes the basis for the sustainability of forest management by the FE. For such thorough and effective implementation, it is necessary to first organize a model group of residents in each model hamlet and then develop activities for the diffusion of technical skills into a collective activity by the whole hamlet. This gradual process requires the persistent involvement of technicians. Yet the FE cannot deal with all the hamlets due to its limited human resources. It is therefore desirable that residents who receive training from FE technicians in the model hamlets will serve as technical instructors for other hamlets. Since even the central government cannot afford to hire extension workers to cover all the hamlets, it is essential to make use of such newly-trained technical instructors by providing remuneration for their services.

8.5 Support from the institutions concerned

The areas in which Kon Plong District, Kon Tum Province, or the central government, should support each FE and commune are described here. Each FE and commune is expected to formulate a forest management plan in line with the master plan and thereby put into practice the forest management principles outlined in the master plan.

The first area concerns immigration policy. Controlling itinerant immigrants is the key to stemming the tide of deforestation. Immigrants covered by the government's immigration plan can receive a certain amount of support and they are also given the time and opportunity to develop their fields for continuous farming. Itinerant immigrants, on the other hand, have no choice but to encroach on the forests managed by the FEs since they have no access to such support. The FEs are not given the authority to remove these immigrants and they cannot use force to do so.

The second area concerns special requirements to solidify the management of the FEs. The central government sets the annual target (target sales) for each FE, which has no control over its annual logging plans. This master plan clearly shows that sustainable forest management cannot be achieved unless the FEs promote logging, wildlife conservation, and support for local residents as a package. If the FEs take charge of a sizable portion of the operations to support local residents in line with the master plan, then the FEs have to continuously earn additional profits to cover the costs of subcontracting some of the operations of the FEs to local residents, providing technical guidance, holding residents' meetings, and other costs.

The third area concerns the planning and implementation of business plans and the transparency of information on business performance. The maps of the forest management areas, the results of inspections of the cut-over areas, business contracts concerning the afforestation areas, and other matters must be recorded, and these records must be made available for inspection by all the parties concerned. Such records, and free access to them, constitute a prerequisite for proving to the FSC and other certification organizations that the forests are managed in a sustainable manner. Sustainable timber production alone does not prove that sustainable forest management is taking place. Also at issue is what specific considerations are given to accommodate the interests of all the people concerned with forests. The interests of the ethnic minorities deserve special attention since such minorities constitute an important socioeconomic factor in the region. It should be remembered that recording the process of the dialogue with local residents is also an important element of the relationship with them.

The fourth area concerns organizational and technical matters. The knowledge and expertise of experts who are well-versed in such areas as assessment and management of forest resources, wildlife management, and socioeconomic issues are crucial for putting into practice the principles outlined in the master plan. To seek technical advice and other forms of cooperation, it is necessary to strengthen coordination with the following specialized institutions: the Forest Science Institute of Vietnam (FSIV) and the Headquarters of the Forest Inventory and Planning Institute (FIPI) in Hanoi; the Vietnam Forest Science Technology Association (VIFA); the Tropical Forest Research Center (TFRC), an affiliate of FSIV; and the Tay Nguyen Professional School of Forestry. It is desirable to establish a support system involving all these institutions by launching a committee of their representatives that aims to provide technical support for forest management planning. The main objective of this

committee is to facilitate effective and efficient management of forest management projects that will likely be launched in the areas in Kon Plong District under the jurisdiction of the FEs, excluding Mang La.

The fifth area concerns the procedures for implementing the villager support program. This program proposes targeting the hamlets of ethnic minorities and the poor in various hamlets as a top priority. It is impossible, however, to launch the program in all the hamlets in some 180 administrative villages over a short period of time. It is therefore necessary to go through the following process: (i) selection of some hamlets within each commune or under the jurisdiction of each FE as model hamlets, (ii) conducting the program intensively in these model hamlets, (iii) developing the capacity of extension workers, and (iv) organizing model groups of residents and improving their managerial competence. Since model hamlets play a pivotal role, their selection must be made with extra care.

List of Appendices

Appendix 1 On-the-Job Training (OJT) implementation

The OJT was executed based on the Technology Transfer Plan submitted and accepted at the same time of the discussion for the Inception Report of the Study on February 2000.

(1) Preparation of materials for aerial photograph interpretation on forests

The OJT on this title should have been executed in the first phase according to the Technology Transfer Plan. The OJT has not been, however, implemented yet because the Study Team has not carried out aerial photograph interpretation for preparing the land use and forest type map due to the delay of aerial photography. Therefore, the OJT will be executed at the timing of aerial photograph interpretation for the feasibility study in a model area in the second phase.

(2) Survey on forest land productivity identification (soil survey and analysis)

Technology transfer on soil survey and analysis was carried out following the on-the-job training plan. The items designed for the technology transfer were as follows:

1) Preliminary survey
2) Survey plan study
3) Observation survey
4) Environmental survey (vegetation, etc.)
5) Soil profile survey
6) Soil sampling
7) Data analysis
8) Site classification by soil condition

To a certain extent, techniques related to all the items were transferred to counterparts, particularly regarding items on soil profile and soil sampling, some staff of Forestry Office, DARD and forestry enterprises fully attended to the Study Team during the whole field survey term, from March to April 2000. After the completion of all the technology transfer process mentioned above, a seminar was organized in April 2000 to present and discuss the results of the soil survey and analysis, particularly with focus on site classification by soil condition and relationship between soils and forest status. The seminar could provide an opportunity with all the participants to enhance the knowledge on soils as well as revise the results of the soil survey and analysis.

(3) Supporting programs for local communities

The Study Team conducted socio-economic survey in Kon Plong District for preparing a profile of each commune and recognizing the actual rural livelihood during the period from February to April 2000 and April to May 2001. The OJT on the socio-economic survey was carried out during the field survey period. Staff from FDB of DARD, Kon Tum participated the OJT. The items of the OJT plan were as follows:

1) Necessity of socio-economic survey
2) Survey methodology
3) General information collection, stakeholder analysis and problem identification

In the OJT, the following points were particularly transferred to the participants:

a. Process of socio-economic survey and commune profiling
b. How to apply and use socio-economic survey tolls
c. Method of quantitative and qualitative data collection of forest status, NTFPs, agricultural production in the communes
d. Special attention to ethnic minority, social structure, sustainable rural livelihood, local needs

(4) Wildlife conservation

The field survey was implemented during the period from April to May 2001. The OJT plan was prepared following three steps:

1) Preliminary study
2) Survey plan design
3) Observation survey

Participants of the OJT was staff of FDB-DARD, Kon Tum and the following items were chiefly transferred:

a. Process of wildlife survey and study of relative environmental situation survey
b. Selection of sample plots for the wild animal survey
c. Identification of anima species by signs such as droppings, trace and others (skeleton, bone, leather, hair, feather, voice, sound, excretes)
d. Interview with local hunter, illegal hunter and plant collectors
e. Identification of endangered and useful species in the study area
f. Estimation of focal animal population and distribution
g. Focal species conservation and relative environmental condition

Appendix 2 Minutes of Meeting on the Inception Report

MINUTES OF MEETING
ON
THE INCEPTION REPORT
FOR
THE FEASIBILITY STUDY ON THE FOREST MANAGEMENT PLAN
IN THE CENTRAL HIGHLAMD IN SOCIALIST REPUBLIC OF VIET NAM

Pursuance to the objectives of the Scope of Work (S/W) for the Feasibility Study on The Forest Management Plan in The Central Highland in Socialist Republic of Vietnam (hereinafter referred to as "the Study"), the Preparatory Study Team of Japan International Cooperation Agency (hereinafter referred to as "JICA") and Ministry of Agriculture and Rural Development (hereinafter referred to as "MARD"), agreed on July 29, 1999, JICA sent a Study Team (hereinafter referred to as "the Team") headed by Mr. Nobumitsu Miyazaki who conducted the first phase of the Study starting from February, 2000.

The Team submitted 20 copies of Inception Report of the Study and conducted a series of discussion on the Inception Report with Dr. Nguyen Hong Quan, Deputy Director, Department of Forestry Development, MARD as well as technical staff of MARD and members of the steering committee. The main issues discussed by the both side in relation with the Study are shown in the document attached hereto. The list of steering committee members and participants in the meeting is shown in Appendix-1 attached hereto.

Hanoi
February 22, 2000

Dr. Nguyen Hong Quan
Deputy Director
Department of Forestry Development, MARD

Mr. Nobumitsu MIYAZAKI
Team Leader of the Study Team
Japan International Cooperation Agency

Witnessed by:

Mr. Nguyen Van Dang
Vise Minister
Ministry of Agriculture and Rural Development

Sayako Tokuda

Miss. Sayako TOKUDA
Forestry and Fisheries Development
Study Division, Agriculture,
Forestry and Fisheries
Development Study Department,
Japan International Cooperation Agency

Attached Document

The Team explained components and methods for the implementation of the Study based on the Inception Report. The Vietnamese side and the Team discussed and agreed on the contents as well as following items.

1. The master plan on the study area means not the integrated economic development plan on Kon Plong district but key factors how to maintain and management the forest areas of Kon Plong district. The plan will present principles how to demarcate and treat the forest land use, and technical guidelines for forest operations taking into account wildlife protection, watershed conservation.

2. The Team prepares a technical manual how to set up and maintain these landmarks substitution for setting up landmarks on the map.

3. The Team evaluates the management plan based on the applicable items of the C&I.

4. The 1/10,000 topographic map will cover the areas of the six Forestry Enterprises shown on a map here to as attache-1.

5. The compartment boundary lines of the study area will be adjusted to the GIS map to pay due attention the existing compartment system.

6. MARD assured to arrange the necessary permissions to enter forest and farm lands by the competence agencies in the Study area.

7. Technology transfer would be carried out through OJT based on the draft Technology Transfer Plan.

8. MARD will assign responsible counterparts to work with the Team in the study area for the OJT.

9. The team assured to convey a request to conduct a technical training in Japan within 2000 for two counterparts who are involved in the field study.

10. The members of the steering committee of provincial level will be decided by the end of this month.

Appendix-1

STEERING COMMITTEE MEMBERS

1. Mr. Nguyen Hong Quan	Deputy Director General, DFD, Chairman,
2. Mr. Nguyen Dinh Huong	Deputy Director, ICD, member,
3. ~~Mr.~~ Do Dinh Sam	Director, FSIV, member,
4. ~~Mr.~~ Nguyen Huy Phon,	Deputy Director, FIPI, member,
5. Mr. Pham Quang Minh,	Head of Silvicultural Division, DFD, member,
6. Mr. Ngo Sy Hoai,	Senior Expert, ICD,
7. Mr. Truong Khac Toi,	Deputy Director, DARD, Director of Sub-Department for Forestry Development, Kon-tum Province,
8. Mr. Tran Dong,	Deputy Director, Sub-Department for Forestry Development, Kon-tum Province, member.

LIST OF PARTICIPANTS

I. Vietnamese Side

1. Dr. Nguyen Ngoc Lung	Director of DFD-MARD
2. Dr. Nguyen Hong Quan	Vice director of DFD
3. Dr. Nguyen Huy Phon	Vice director of FIPI
4. Mr. Truong Khac Toi	Vice director of DARD-Kon Tum
5. Dr. Pham Quang Minh	Heard of silviculture Division of DFD
6. Dr. Vo Nguyen Huan	Heard of Economic Division of FSIV
7. Dr. Hoang Si Dong	Heard of IC Division of FIPI
8. Mr. Tran Dong	Vice director of Sub DFD of Kon Tum
9. Mr. Ngo Si Hoai	Expert of ICD - MARD
10. Mr. Le Canh Cu	Expert of ICD - MARD
11. Mr. Quach Dai Ninh	Expert of DFD
12. Mr. Phi Quang Dien	Researcher of FSIV
13. Miss Pham Ngan Hoa	Interpreter

II. Japanese Side

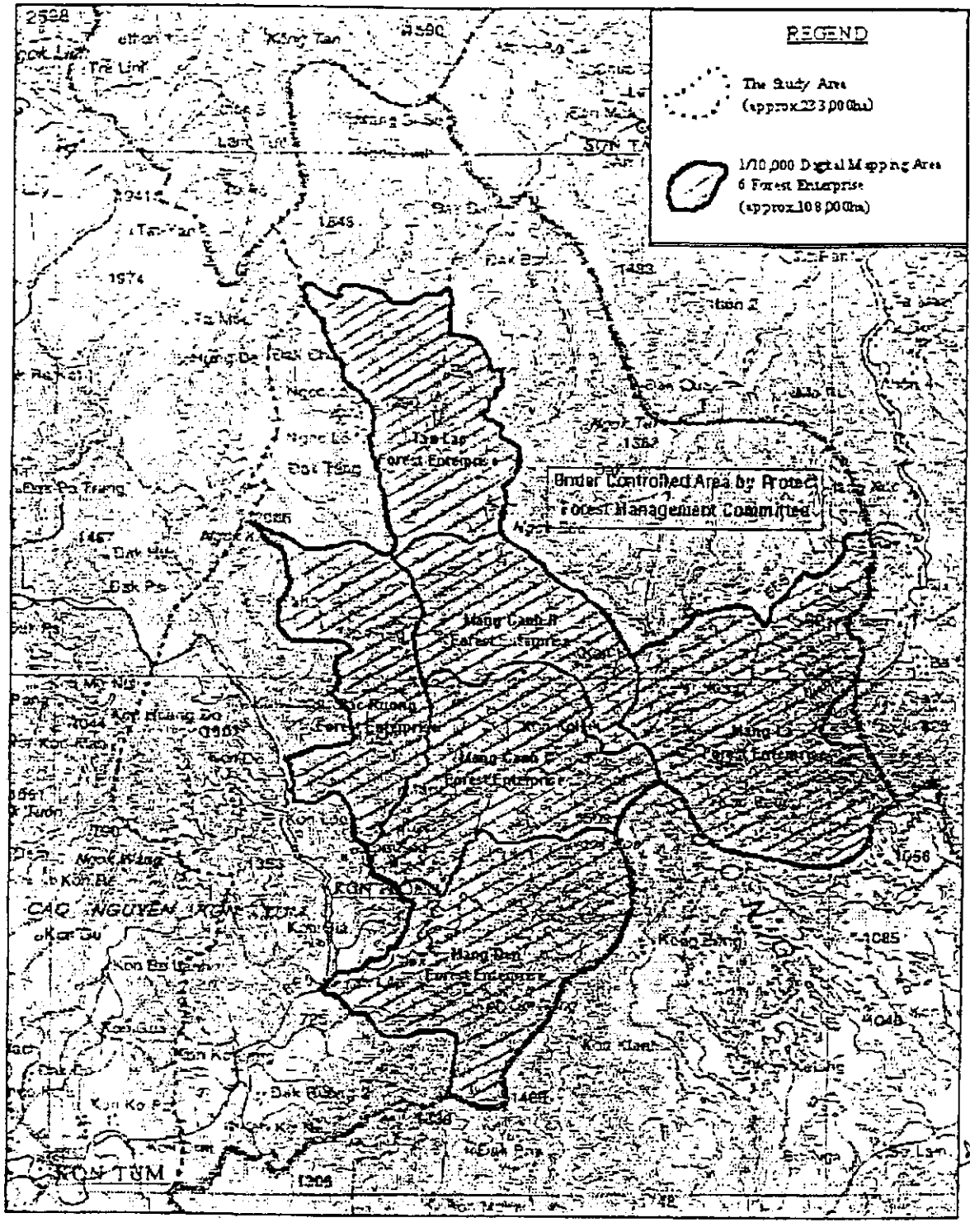
JICA Representatives

Mr. Takashi Hatakeyama	Deputy Resident Representative, JICA Vietnam Office
Miss. Sayako Tokuda	Forestry and Fisheries Development Study Division, Agriculture, Forestry and Fisheries Development Study Department, JICA Headquarters
Mr. Akira Suzuki	JICA Expert, MARD

JICA Study Team

Mr. Nobumitsu Miyazaki	Team Leader
Mr. Tsugio Namisato	Member
Mr. Makoto Fukuyama	-do-
Mr. Yutaka Nakada	-do-
Mr. Shoichi Yamashita	-do-

Appendix-2 1/10,000 Mapping area of the Study



Appendix 3 Minutes of Meeting on the Steering Committee Meeting

MINUTES OF MEETING
ON
THE STEERING COMMITTEE MEETING
FOR
THE FEASIBILITY STUDY ON THE FOREST MANAGEMENT PLAN
IN THE CENTRAL HIGHLAND IN THE SOCIALIST REPUBLIC OF VIET NAM

Pursuance to the objectives of the Scope of Work (S/W) for the Feasibility Study on the Forest Management Plan in the Central Highland in the Socialist Republic of Vietnam (hereinafter referred to as "the Study"), the Preparatory Study Team of Japan International Cooperation Agency (hereinafter referred to as "JICA") and Ministry of Agriculture and Rural Development (hereinafter referred to as "MARD"), agreed on July 29, 1999, JICA sent a Study Team (hereinafter referred to as "the Team") headed by Mr. Nobumitsu Miyazaki who conducted the first phase of the Study starting from February, 2000.

MARD and The Team conducted a series of discussion on the implementation of the first field survey and re-arrangement of the survey schedule to meet the latest conditions of aerial photography. The main issues discussed by the both sides in relation with the Study and participants to the meeting are shown in the document attached hereto.

Hanoi
May 11, 2000

Dr. Nguyen Hong Quan
Deputy Director
Department of Forestry Development, MARD

Mr. Nobumitsu MIYAZAKI
Team Leader of the Study Team
Japan International Cooperation Agency

Attachment 1

The Team explained results of the first survey in Vietnam as well as the aerial photography carried out until the end of April 2000. The Team also described difficulties to implement the remaining field surveys without aerial photographic data. The Vietnamese side and the Team discussed this issue and agreed that the field survey activities except for mapping would be temporarily paused until the aerial photographs can newly be obtained. The both parties also reached agreement on the following items:

1. The 1/10,000 topographic map will be prepared using the new and existing aerial photographs in Vietnam. The photographs will be provided for the Team by MARD for mapping and pre-analysis for forest inventory, and taken out from Vietnam to Japan for further study based upon the clearance arranged by MARD.

2. The Team will resume the survey activities in the dry season in Kon Plong District after the new aerial photograph will have been taken.

3. While the field survey is being temporarily paused, technical training of the counterpart personnel in Japan will be conducted within this Japanese fiscal year 2000 (April 1 to March 31) based on the formal procedures made by the Vietnamese side.

4. MARD requested to the Team to prepare a Vietnamese version of the Interim and Final Reports including technical manuals for effective use of the study findings by Vietnamese technical staff. The Team acknowledged the necessity and effectiveness to develop the Vietnamese version on the only main part of these reports and manuals, and assured to convey the request to JICA.

5. The Team clarified the necessity to obtain information about the land use plan in Kon Plong District that shows the forest areas to be maintained or allowed to develop for other land use in the future. The Team expressed that if the information is not available, the Team will consider that the forest zones to be maintained will be the same areas as the latest condition of the forest areas which will be interpreted from the new aerial photographs. MARD recognized that the forest management plan have to be followed by the land use plan and assured to suggest that the Team be provided with all the necessary information before the next field survey period (tentatively in early November 2000).

6. MARD assured to instruct relevant authorities to provide the Team with all the required data/information on forest management conditions of all the forest enterprises in Kon Plong District before the next field survey period.

7. MARD mentioned that the purchasing action for vehicles should be taken as soon as possible to use them at the beginning of the next field survey period because the clearance of registration is needed for several months. The team assured to convey the condition to the JICA.

Attachment 2

LIST OF PARTICIPANTS

I. Vietnamese side

1. Dr. Nguyen Hong Quan	Vice Director, DFD, MARD
2. Dr. Pham Quang Minh	Head, Silviculture Division, DFD
3. Mr. Ngo Si Hoai	Expert, ICD, MARD
4. Mr. Le Canh Cu	Expert, ICD, MARD
5. Mr. Quach Dai Ninh	Expert, DFD, MARD

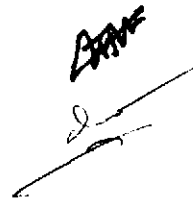
II. Japanese side

JICA Representatives

Mr. Kozo WATANABE	Assinstant Resident Representative, JICA Vietnam Office
Mr. Akira Suzuki	JICA Expert, MARD

JICA Study Team

Mr. Nobumitsu Miyazaki	Team Leader
Mr. Kazuhisa Kato	Member



Appendix 4 Minutes of Meeting, May 2001

MINUTES OF MEETING

FOR

THE FEASIBILITY STUDY ON THE FOREST MANAGEMENT PLAN IN THE CENTRAL HIGHLAND IN THE SOCIALIST REPUBLIC OF VIET NAM

Pursuance to the objectives of the Scope of Work (S/W) for the Feasibility Study on the Forest Management Plan in the Central Highland in the Socialist Republic of Vietnam (hereinafter referred to as "the Study"), the Preparatory Study Team of Japan International Co-operation Agency (hereinafter referred to as "JICA") and Ministry of Agriculture and Rural Development (hereinafter referred to as "MARD"), agreed on July 29, 1999, JICA sent a Study Team (hereinafter referred to as "the Team") headed by Mr. Nobumitsu Miyazaki who commenced to conduct the Study from February, 2000.

The Team explained re-arrangement of the Study contents as well as the aerial photography carried out until the end of April 2001. The Team also described difficulties to implement the aerial photography for the remaining areas to be taken originally. MARD and the Team discussed this issue and agreed as follows:

1. While the aerial photography has covered the only 65% of the whole study area, the further aerial photography for the remaining areas is terminated. The aerial photographs taken by the end of April 2001 will be the output of the Study.

2. The land-use/vegetation map as mentioned in the Scope of Work for the Study singed on 29 July 1999 will be mainly prepared using the satellite imaginary taken in January 2001.

3. The 1/10,000 topographic map prepared in 2000 using the aerial photographs taken in 1991 will be modified for the only areas where is covered by newly taken aerial photographs.

Hanoi, May 14, 2001

Mr. Nguyen Hong Quan
Deputy Director
Department for Forestry Development
Ministry of Agriculture and Rural Development

Mr. Nobumitsu MIYAZAKI
Team Leader of the Study Team
Japan International Cooperation Agency

Appendix 5 Minutes of Meeting, June 2001

MINUTES OF MEETING
ON
THE STEERING COMMITTEE MEETING
FOR
THE FEASIBILITY STUDY ON THE FOREST MANAGEMENT PLAN
IN THE CENTRAL HIGHLAND IN THE SOCIALIST REPUBLIC OF VIET NAM

Pursuance to the objectives of the Scope of Work (S/W) for the Feasibility Study on the Forest Management Plan in the Central Highlands in the Socialist Republic of Vietnam (hereinafter referred to as "the Study"), the Preparatory Study Team of Japan International Cooperation Agency (hereinafter referred to as "JICA") and Ministry of Agriculture and Rural Development (hereinafter referred to as "MARD"), agreed on July 29, 1999, JICA sent a Study Team (hereinafter referred to as "the Team") headed by Mr. Nobumitsu Miyazaki and the Team commenced to conduct the Study from February, 2000 and resumed the Study in Vietnam to conduct the second study in the first phase of the Study starting from March, 2001.

The Study Team submitted twenty (20) copies each of the Progress Report in English and in Vietnamese to the Vietnamese side, MARD and the Team conducted a series of discussion on the implementation of the second field survey. The main issues discussed by the both sides in relation to the Study and participants to the meeting are shown in the document attached hereto.

Hanoi
June 22, 2001

Dr. Nguyen Hong Quan
Deputy Director
Department of Forestry Development, MARD

Mr. Nobumitsu MIYAZAKI
Team Leader of the Study Team
Japan International Cooperation Agency

Mr. Masaru HONDA
Forestry and Fisheries Development Study Division,
Agriculture, Forestry and Fisheries Development Study Department,
Japan International Cooperation Agency

Attachment 1

The Team explained results of the first survey and second survey in Vietnam based on the Progress Reports. The both parties also reached agreement on the following items:

1. Presentation of the Progress Report

   The Team explained the Progress Report. MARD requested the Team to refer comments presented in the steering committee meeting and other additional comments that will be sent to the Team by 15th July 2001 in English, when the Team prepares the Interim Report. The Team assured to prepare the Interim Report taking these comments into the account as appropriate.

2. Modification of Data in the Progress Report

   The Team mentioned that all the data in the Part II of the Progress Report will be re-examined based on the data of satellite imaginary taken in January 2001 and the data of land-use/vegetation map under preparation, therefore, the almost data will be modified. MARD understood the situation and agreed with the modification to meet latest land use/vegetation condition.

3. Selection of the Model Area

   The Team explained the concept for selection of a model area for the feasibility study in the second phase of the Study. Both sides agreed that the management area of Mang La Forest Enterprise to be selected as the model area. Block No. 491, 492, 494 of protection forest, which was proposed as a part of the model area at the time of the Scope of Work, shall be excluded from the model area.

4. Strength of the Staff of Mang La Forest Enterprise

   The Team found during the field survey that the Mang La forest enterprise does not have sufficient counterpart personnel. The Team requested Vietnamese side that the organization as well as staff personnel in the Mang La forest enterprise will be reinforced and enhanced.

5. Technical Manuals

   The Team presented the contents of the technical manuals and MARD agreed the contents.

6. Intermediate Technical Seminar

   MARD strongly requested that an intermediate technical seminar for the Study shall be held on the suitable time and some members of the Team will be dispatched to the seminar. The Team assured to convey the request to the JICA HQs.

7. Safekeeping of the Equipment

   MARD assured to manage the safekeeping of the equipment such as two vehicles and ten motorbikes which have been maintained by MARD and Kontum DARD and to return the equipment to the Team on the date when the Team requested to conduct the third study in Vietnam in 2002.

8. Number of Copies for the Reports

The Team and MARD agreed re-arrangement of the number of copies for the Draft Final Report, the Final Report and the technical manuals to be submitted to Vietnamese side as follows:

The Draft Final Report	English Version 10 copies
	Vietnamese Version 20 copies
The Final Report	English Version 20 copies
	Vietnamese Version 50 copies
The technical manuals	English Version 20 copies
	Vietnamese Version 50 copies

9. Criteria & Indicator for Sustainable Forest Management

The Study Team shall submit a questionnaire, which is related to management condition of the Mang La Forest Enterprise in accordance with the ITTO's criteria and indicators for sustainable forest management, to MARD. MARD agreed to instruct DARD-Kon Tum to respond the questionnaire and inform the Team the response by the end of October 2001. Furthermore, MARD consented that, with consideration of viewpoints by the third parties' assessment, the Team shall determine the existence and/or situation of activities concerning the criteria and indicators in the Forest Enterprise on the basis of the response for the questionnaire.

Attachment 2

LIST OF PARTICIPANTS

I. Vietnamese side

Mr. Nguyen Ngoc Binh	Director DFD, MARD
Dr. Nguyen Hong Quan	Deputy Director DFD, MARD
Dr. Pham Quang Minh	Head SD, DFD, MARD
Mr. Nguyen Trong Hien	Forestry officer ICD, MARD
Dr. Do Dinh Sam	Director FSIV
Dr. Nguyen Hoang Nghia	Deputy Director FSIV
Mr. Pham Gia Hoi	FSIV (retired)
Mr. Do Tuoc	FIPI
Mr. Trieu Van Hung	Deputy Director DSTPQ, MARD
Dr. Nguyen Ngoc Lung	Chairman VIFA
Mr. Cao Chi Cong	Senior Officer, DFD, MARD
Mr. Le Canh Cu	ICD, MARD (retired)
Mr. Pham Hoai Duc	Senior Officer, DFD, MARD

II. Japanese side

JICA Representatives

Mr. Kozo WATANABE	Assistant Resident Representative, JICA Vietnam Office

JICA Advisory Team

Dr. Masahiro Amano	Leader/Natural Forest Operation
Mr. Masaru Honda	Coordinator

JICA Study Team

Mr. Nobumitsu Miyazaki	Team Leader
Mr. Kazuhisa Kato	Member
Mr. Hirotsugu Nishizawa	Member
Mr. Makoto Fukuyama	Member
Mr. Tsugio Namisato	Member

Appendix 6 Minutes of Meeting, January 2002

MINUTES OF MEETING
ON
THE STEERING COMMITTEE MEETING
FOR
THE FEASIBILITY STUDY ON THE FOREST MANAGEMENT PLAN
IN THE CENTRAL HIGHLAND IN THE SOCIALIST REPUBLIC OF VIET NAM

Pursuance to the objectives of the Scope of Work (S/W) for the Feasibility Study on the Forest Management Plan in the Central Highlands in the Socialist Republic of Vietnam (hereinafter referred to as "the Study"), the Preparatory Study Team of Japan International Cooperation Agency (hereinafter referred to as "JICA") and Ministry of Agriculture and Rural Development (hereinafter referred to as "MARD"), agreed on July 29, 1999, to send a study team (hereinafter referred to as "the Team") headed by Mr. Nobumitsu Miyazaki and the Team commenced to conduct the Study from February, 2000 and resumed the Study in Vietnam to conduct the third field survey in the second phase of the Study starting from January 2002.

The Study Team submitted twenty (20) copies each of the Interim Report both in English and Vietnamese to the Vietnamese side; MARD and the Team conducted a series of discussion on the implementation of the third field survey. The main issues discussed by the both sides in relation to the Study and participants to the meeting are shown in the document attached hereto.

Hanoi
21 January 2002

Dr. Nguyen Hong Quan
Deputy Director
Department of Forestry Development, MARD

Mr. Nobumitsu Miyazaki
Team Leader of the Study Team
Japan International Cooperation Agency

Mr. Takahiro Nakamura
Third Contract Division
Procurement Department
Japan International Cooperation Agency

Attachment 1

The Team explained the Interim Report to the Vietnamese side both in the intermediate technology transfer seminar and the Steering Committee Meeting in Hanoi. The both parties agreed on the following items:

1. Comments on the Interim Report

   The Vietnamese side agreed the contents of the Report and assured that the comments should be submitted to the Team through DFD by 20 March 2002.

2. Modification of survey contents

   As mentioned in the Part III of the Interim Report, the Team proposed to modify the survey contents on forest soil survey and socio-economic and environment survey which defined to be carried out in this survey time in the Inception Report. MARD agree with all the modification mentioned in the Interim Report.

3. Forest survey

   MARD requested the Study Team that the forthcoming forest survey shall be conducted taking concerned data of Sub-FIPI, Qui Nhon into account and assured to assist to acquire those data for the Study Team.

4. Technology transfer seminar held in the submission of the Draft Final Report

   The seminar shall be held only in Kon Tum to encourage more relevant people from the four provinces in the Central Highlands to participate.

Attachment 2

LIST OF PARTICIPANTS

I. Vietnamese side

Dr. Nguyen Hong Quan	Deputy Director DFD, MARD
Mr. Pham Quang Minh	Head, Silviculture Division, DFD, MARD
Mr. Nguyen Huu Thien	Expert, Silviculture Division, MARD
Dr. Nguyen Huy Phon	Deputy Director, Forest Inventory & Planning Institute
Mr. Phan Minh Sang	Researcher, Forest Science Institute of Vietnam
Dr. Tran Quang Viet	Head, Silviculture Division, FSIV
Dr. Vu Nham	Head, International Co-operation Section, Forest University of Vietnam
Mr. Dang Cao Du	Director, Central Highlands Forestry Technical School
Dr. Nguyen Van Con	Director, Pleiku Tropical Forest Center
Dr. Ngo Dinh Que	Director, Research Center for Forest Ecology & Environment
Mr. Pham Ngoc Mau	Researcher, Research Center for Forest Ecology & Environment
Dr. Nguyen Ngoc Lung	Chairman, Vietnam Forestry Scientific & Technical Association
Mr. Pho Duc Dinh	Head of a Division, Lam Dong DARD
Mr. Nguyen Canh Cu	Formal expert, ICD, MARD
Mr. Nguyen Van Hoi	FSIV

II. Japanese side

JICA Advisory Team

Mr. Takahiro Nakamura	Leader

JICA Study Team

Mr. Nobumitsu Miyazaki	Team Leader
Mr. Makoto Fukuyama	Member
Ms. Yukiko Yoshida	Member
Ms. Sachiko Takinaga	Member

Nakamura.

Appendix 7 Minutes of Meeting, October 2002

MINUTES OF MEETING
ON
THE STEERING COMMITTEE MEETING
FOR
THE FEASIBILITY STUDY ON THE FOREST MANAGEMENT PLAN IN THE CENTRAL HIGHLAND IN THE SOCIALIST REPUBLIC OF VIET NAM

Pursuance to the objectives of the Scope of Work (S/W) for the Feasibility Study on the Forest Management Plan in the Central Highland in the Socialist Republic of Vietnam (hereinafter referred to as "the Study"), the Preparatory Study Team of Japan International Cooperation Agency (hereinafter referred to as "JICA") and Ministry of Agriculture and Rural Development (hereinafter referred to as "MARD"), agreed on July 29, 1999, to send a study team (hereinafter referred to as "the Team") headed by Mr. Nobumitsu Miyazaki and the Team commenced to conduct the Study from February, 2000 and resumed the Study in Vietnam to conduct the fourth field survey in the second phase of the Study starting from September 2002.

The Study Team submitted the Draft Final Report both in English (10 copies) and Vietnamese (20 copies) to the Vietnamese side; MARD and the Team conducted a series of discussion on the completion of the Study as well as preparation of the Final Report. The main issues discussed by the both sides in relation to the Study and participants to the meeting are shown in the document attached hereto.

Hanoi
03 October 2002

Dr. Nguyen Hong Quan
Deputy Director
Department of Forestry Development, MARD

Mr. Nobumitsu Miyazaki
Leader of the Study Team
Japan International Cooperation Agency

Witnessed by:

Ms. Takako Tamai
Forestry and Fisheries Development Study Division
Agriculture, Forestry and Fisheries Development Study Development
Japan International Cooperation Agency

Attachment 1

The Team explained the Draft Final Report to the Vietnamese side both in the Steering Committee Meeting in Hanoi and Kon Tum, and the technology transfer seminar in Kon Tum. The both parties agreed on the following items:

1. Comments on the Draft Final Report:

The Vietnamese side basically agreed with the contents of the Draft Final Report and assured that comments for the report should be submitted to the Team through the Department of Forestry Development, MARD, by 31 October 2002.

2. Final outputs:

Within two (2) months after receipt of the comments from the Vietnamese side, JICA will send the Final Report and other outputs to the Vietnamese side based on the agreements in the Scope of Work, the Inception Report, and the Minutes of Meeting on 22 June 2001. Both sides agreed that the Final Report would be open to the public.

3. Future co-operation:

The Vietnamese side emphasised the needs for further assistance from the Japanese Government to establish a demonstration project in the Model Area, particularly focusing on the Villager Support Program (VSP) and sustainable forest management, to extend the implementation methods to other provinces in the Central Highlands.

The Vietnamese side further requested additional supports from the Japanese Government on a nation-wide training scheme for relevant staff to transfer methodologies and technologies applied in the Study in Kon Tum (2000-2002) for establishing forest management plans in the country.

The Study Team assured to convey the above requests to the JICA Headquarters.

Attachment 2

LIST OF PARTICIPANTS

I. Vietnamese side

Mr. Nguyen Ngoc Binh	Director General, DFD, MARD
Dr. Nguyen Hong Quan	Deputy Director, DFD, MARD
Dr. Nguyen Dinh Huong	Deputy Director, ICD, MARD
Dr. Pham Quang Minh	Head, Silviculture Division, DFD, MARD
Dr. Trieu Van Hung	Director, FSIV
Mr. Nguyen Quang Trung	International Cooperation Division, FSIV
Dr. Nguyen Phu Hung	FIPI

II. Japanese side

JICA Advisory Team

Mr. Masahiko Hori	Leader
Ms. Takako Tamai	Member

JICA Vietnam Office

Mr. Kunihiro Nakasone	Deputy Resident Representative

JICA Study Team

Mr. Nobumitsu Miyazaki	Team Leader
Mr. Kazuhisa Kato	Member
Mr. Makoto Fukuyama	Member
Ms. Yukiko Yoshida	Member