

4 Model forest management plan (Mang La FE)

4.1 Establishment of block, compartment and sub-compartment

Forest in Mang La was divided into several units for management convenience. These management units are usually called the compartment system. The area and name of each Block is maintained the same as in the master plan. The area of a Block is approximately 1000 ha. The Block is usually divided into approximately 100 ha units called compartments, basically following topographic features (stream line or summit line). Mang La Forestry Enterprise has been using a compartment system, therefore, in this management plan the team followed the existing compartment system for convenience and to tie in past forest operations with new proposed operations.

Table II-4.1.1 Area by Block and compartment (ha)

Compartment	Block												Total
	439	440	493	495	496	497	498	499	500	501	502	503	
1	175	345	265	79	118	90	84	127	71	106	127	97	1,683
2	221	176	132	134	120	86	170	109	108	110	97	130	1,593
3	193	142	226	110	117	89	149	61	119	133	118	138	1,597
4	253	122	242	139	91	137	86	118	176	83	115	120	1,682
5	285	171		65	94	127	123	64	137	134	125	126	1,452
6		109		126	87	155	117	151	185	87	150	98	1,265
7		173		84	105	129	139	86	179	136	90	108	1,229
8		170		149	104	174	75	143	170	93	74	110	1,261
9		241		81	62	154		111	90	148	130	89	1,107
10		172		130	50	120		119	180	167	114	110	1,161
11				61		137		139	163	109	56	79	745
12				157				123	155	109	169	80	793
13								144	141	79	121	157	643
14								98		94	150	114	457
15								134		57	127	105	422
16								195		72	103	165	536
17										106		117	224
18												136	136
19												101	101
20												130	130
21												75	75
Total	1,127	1,821	866	1,316	948	1,398	944	1,923	1,874	1,823	1,865	2,386	18,292

The Block system also follows the master plan. This means the areas of the blocks are almost the same as the Mang La FE ordinary map; nevertheless, the areas of blocks are slightly different from existing areas of the Block system because the team use a new 1/10,000 topographic map.

The compartments were made in the same manner as the Blocks. Each Block was divided into several compartments using existing compartment system maps used by the FE. Boundary lines of the compartments are readjusted to topographic features such as ridgelines, and streamlines as similar to the existing features of the compartment as possible.

The Block and compartment system of Mang La is shown in Figure II-4.1.1. Table II-4.1.1 shows the areas of the established compartments.

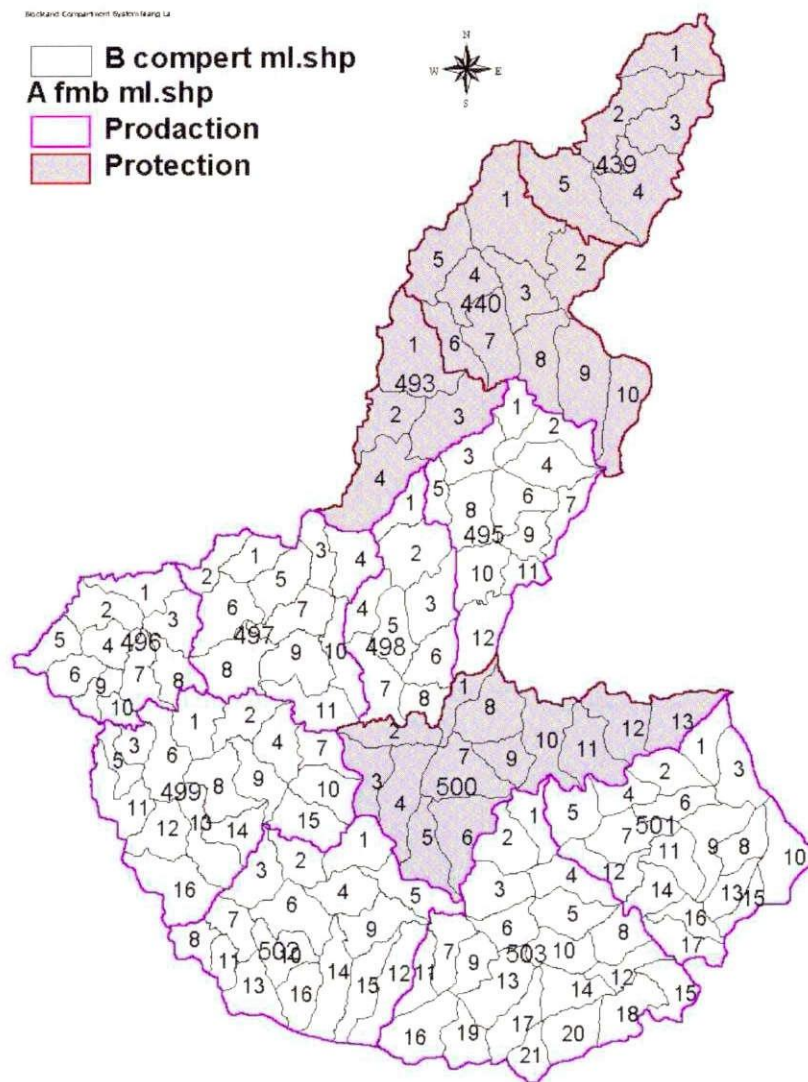


Figure II-4.1.1 Block and compartment system of the model area (Mang La FE)

Compartments were divided into sub-compartments (a-n) based on the management objectives. A sub-compartment is the smallest unit for forest operations. Farmland (paddy fields and upland farms), water bodies, and building lands (including back yard gardens) are defined as areas excluded from forest management.

Sub-compartments are created to divide the following areas.

- a. Areas excluded from logging operation for different reasons as explained later.
- b. Topographic features for unitization for logging operation.
- c. Forest types whether mature or not mature.
- d. Suitable size for logging operation for one operational period.
- e. Grassland and bush land.

For the yearly forest operation plan the team used this sub-compartment system. Figure II-4.1.2 shows an example of sub-compartment divided condition. Forest condition of each sub-compartment is shown in the “Forest Inventory Book” as supplemental data.

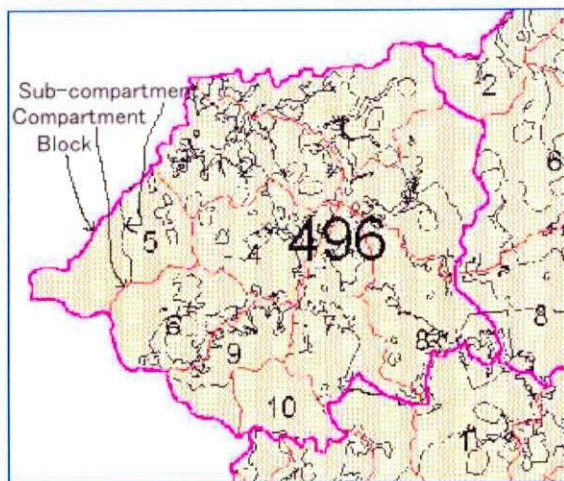


Figure II-4.1.2 Example of compartment

4.2 Set up of the Forest operation units

To fix the areas for logging operation the same procedures and principles presented in the Master Plan are followed. The master plan demands that logging operations are implemented on areas so as not to give serious negative impact and to maintain the forest multi functions. In this view, the master plan shows five aspects to be set aside from logging operation as 1) water, soil, and land conservation, 2) wildlife conservation, 3) steep lands, 4) water source for villagers, and 5) villager support programs. The management plan has examined these areas based on the new 1/10,000 topographic map, and drawn polygons on GIS.

4.2.1 Water, soil, and land conservation

For water, soil and land conservation, places to be set aside from logging operation are recognized basically as the same places as mentioned in the master plan, the places are re-examined to meet topographic features and the areas are drawn on the GIS map. The places presented are basically concentrated on small water channels, and complicated landscape. The places are normally not so

steep but there are many steep parts mixed in, so the surface water is easily led to channels and the grains of soil easily run away from the forest floor. The methods to fix the places to avoid disturbing the forest floor are explained in Figure II-4.2.1 below.

Almost all places for water, soil, and land conservation mentioned are followed by the master plan. Total area by Block is shown in Table II-4.2.1. This number is the same level as in the master plan (1,202 ha).

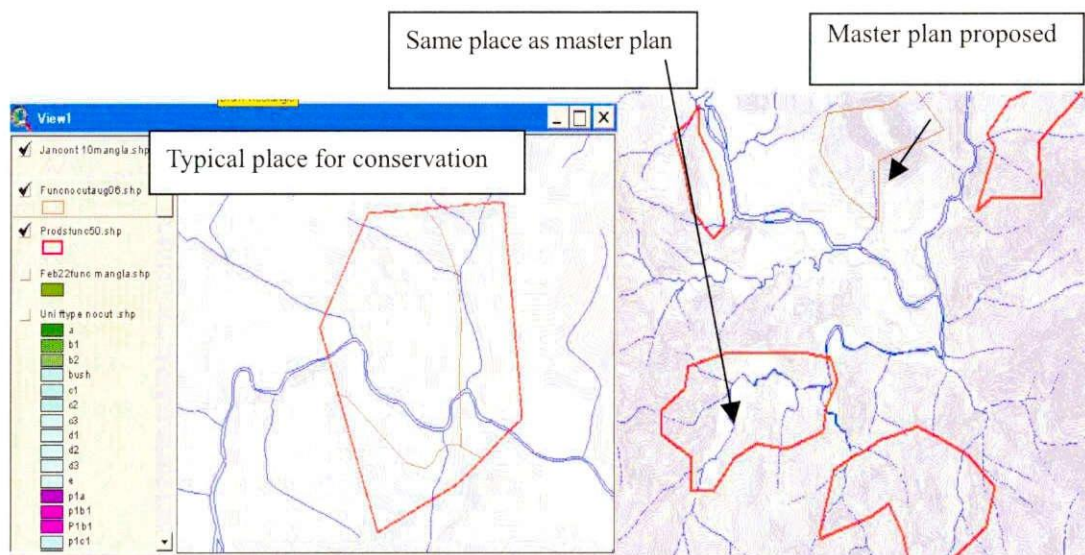


Figure II-4.2.1 Example of Area fixing procedure for soil, water, and land conservation

Table II-4.2.1 Areas set aside from logging operation for water, soil, and land conservation (ha, m³)

Block	439	440	493	495	496	497	498	499	500	501	502	503	Total
Forest	42.9	32.0	45.5	43.0	58.3	82.3	59.3	207.1	7.9	136.0	113.3	212.0	1,039.5
Paddy	1.9	0.0	2.4		7.0	0.3	4.0	12.6			8.9	0.3	37.4
Farm	2.5	1.0	7.9		15.8	3.4	0.2	4.1		1.8	3.4	0.4	40.5
Bush	0.1		1.5	2.2						0.3	2.3		6.4
Grass	0.2	0.1									4.0	0.3	4.6
Hamlet						0.2	1.9	3.8			0.0		5.9
Water											0.9		0.9
Tota area	47.6	33.2	57.3	45.2	81.1	86.2	65.4	227.5	7.9	138.1	132.8	213.0	1,135.1
Total Volume	11,363	6,553	10,150	10,693	11,936	15,570	15,201	40,780	1,412	32,937	22,781	46,110	225,486

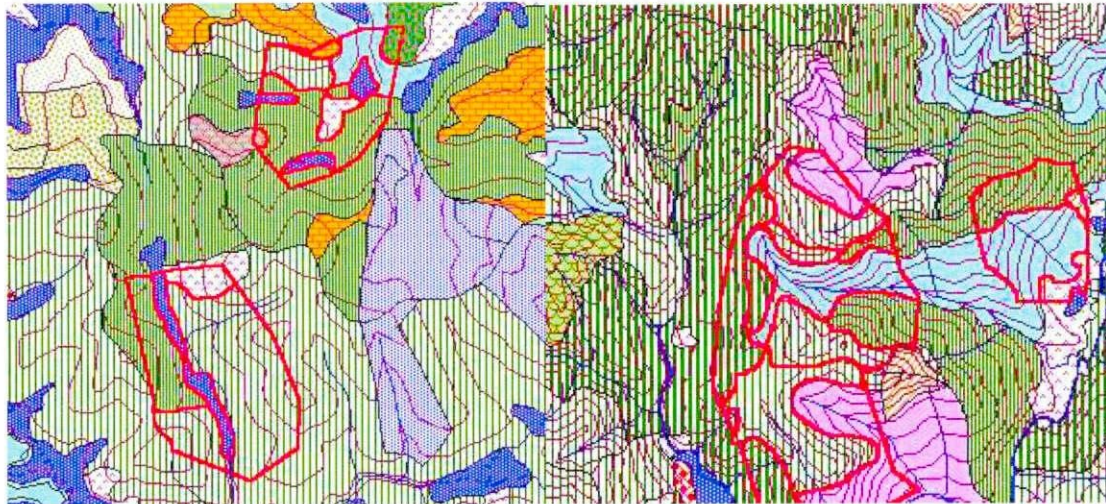


Figure II-4.2.2 Example of GIS analysis on forest types set aside from logging operation for water, soil, and land conservation

4.2.2 Wildlife conservation

For wildlife conservation, the master plan proposed to maintain a bio-corridor for securing the movement of wild animals. The management plan will follow this direction. The bio-corridor is planned to connect the natural sanctuary belt from Block 501 to Thach Nham protection forest. Location is shown in Figure II-4.2.3. To demarcate the bio-corridor from logging operation forest, the team took into account the following matters:

- a. As far as possible, the corridor passes through the dense forest area, but at the same time small areas of open lands are allowed to be passed through. Inclusion of large paddy fields should be avoided.
- b. To harmonize forest operations, the corridor will not divide logging operation areas into isolated narrow complexes.
- c. Areas set aside from

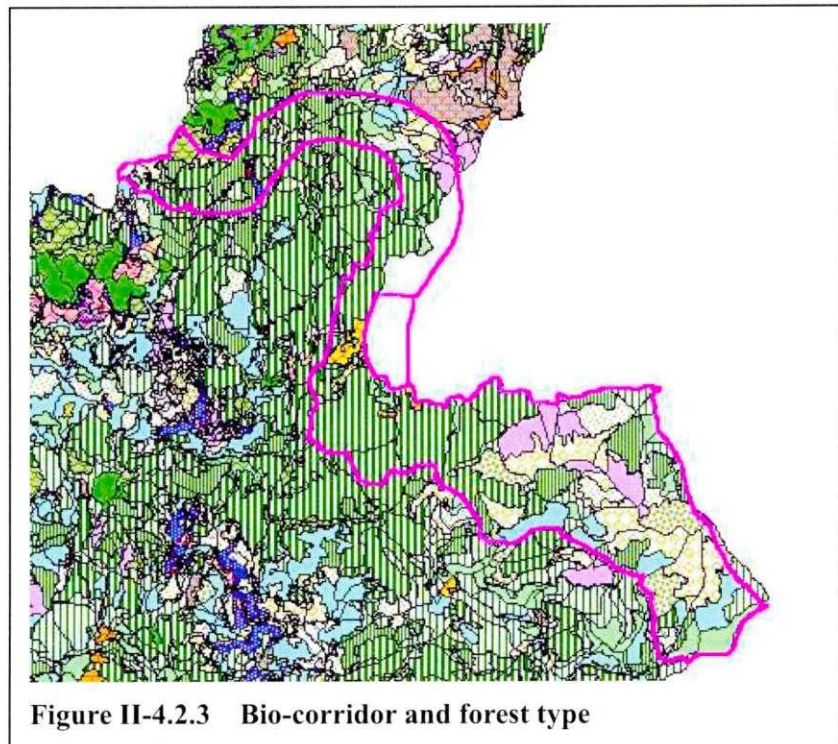


Figure II-4.2.3 Bio-corridor and forest type

- c. Areas set aside from logging operation areas are taken into the corridor as much as possible, especially surrounding

steep areas are added to the corridor; therefore, some parts of the corridor are wider.

- d. In the border area with Quang Nghai Province (Block 495), half of the corridor is expected to be demarcated in connecting areas of the Forest Enterprise of Quang Nghai.

Total area of the bio-corridor is 2,565 ha (Table II-4.2.2). The area of the bio-corridor slightly increased from that of the master plan (2,477 ha). This is because open forest areas in Block 501 were included in the bio-corridor but the area allocated for management by Quang Nghai Province balanced the increase. The additional area in Block 501 is located under a cliff and isolated from forest operation. Therefore this expansion does not have a significant effect on the logging operation plan. Meanwhile, the cliff makes it difficult for people to access the area, thus it is advantageous for wildlife and is a significant habitat. The total length of the bio-corridor within the production forest is approximately 14 km.

Table II-4.2.2 Area covered by the bio-corridor by land use type and block (ha)

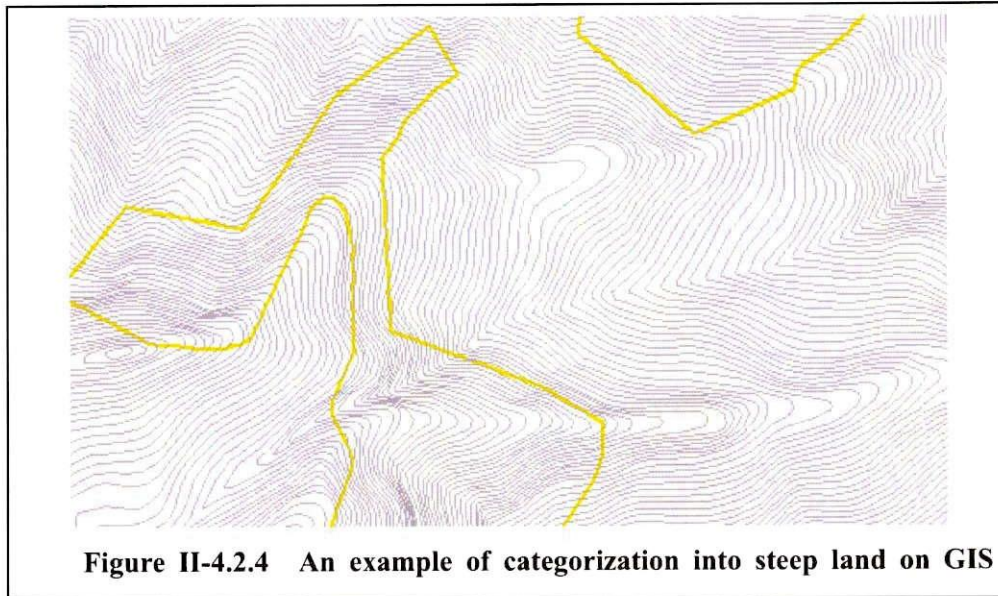
Land use	493	495	497	498	500	501	Total
Forest	80.95	503.51	54.26	124.70	840.26	935.22	2,538.90
Farm	4.47	2.84	4.77	3.44			15.52
Paddy	0.26	1.90	0.43	5.27			7.86
Hamlet				2.44			2.44
Total	85.68	508.25	59.46	135.85	840.26	935.22	2,564.72

4.2.3 Steep lands

Steep lands to be spared from logging operations are defined by the new 1/10,000 topographic map. Areas covered in the previously mentioned 1) and 2) are excluded (not duplicated), when making polygons on the GIS. The total area excluded from logging operation is 630 ha (Table II-4.2.3). The areas are the same level as the proposed areas of the master plan (452 ha).

Table II-4.2.3 Areas to be set aside from logging operations for Steep land protection (ha)

Category	439	440	493	495	498	499	500	501	502	503	Total
Forest	28.28	139.28	25.44	108.73	20.05	25.93	74.87	120.59	8.35	39.01	590.53
Planted	1.09		4.73								5.82
Bush		15.93		10.95							26.88
Farm	0.36	0.46		0.9	0.72		1.59				4.03
Grass		2.08		0.34							2.42
River							0.26				0.26
Area total (ha)	29.73	157.75	30.17	120.92	20.77	25.93	76.72	120.59	8.35	39.01	629.94
Volume (m ³)	5,987	29,180	4,348	17,877	4,935	5,108	9,957	23,903	1,728	9,438	112,461



4.2.4 Water source for villagers

In this model area, there are several villages. Other than the villages located beside National Road 24 they are in remote areas, therefore, villagers depend on streams for their drinking water. In this view, to protect water sources/forests and paddy fields for the villagers is indispensable. The management plan needs to consider village water protection. Forests set aside from logging operation for this purpose are defined by the following criteria.

- a. Streams connected to paddy fields have protected forest on the upper basin as far as possible.
- b. If the stream is not connected to protected forest, a small area of forest should be kept as water source protection forest (200 m long 200 m wide).
- c. The water source protection forest is defined on both sides of the stream within the water basin.

These water source protection forests are requested to be nominated only in production forest. In protection forest no logging operation is planned. If this kind of forest does not exist within the protection forest, villagers should rehabilitate it in collaboration with the forest enterprise. The plan presented water source protection forest in Block 439, 440, and 493 (protection forest). These areas in protection forest are the first priority areas for rehabilitation by the villagers if the forests are degraded.

Table II-4.2.4 Areas to be set aside from logging operation for water source protection (ha, m³)

Forest	439	440	496	497	498	499	502	Total
Forest	10.11	10.65	1.56	0.81	1.17	2.57	3.03	29.9
Manmad	0.33							0.33
Bush		0.23						0.23
Farm	4.58	6.73	1.32	0.79	0.85	2.56	3.03	19.86
Grass	5.1	3.61						8.71
paddy	0.1	0.08	0.24	0.02	0.32	0.01		0.77
Area total	20.22	21.3	3.12	1.62	2.34	5.14	6.06	59.8
Volume	18,517	13,541	4,709	7,892	2,624	8,729	2,144	58,156

Distribution of the water source protection forest is shown in Figure II-4.2.5. Total area proposed is 60 ha (Table II-4.2.4). This number is similar to the number proposed in the master plan (66 ha). This reflects the topographic condition of the model area. The model area is not rich in flat riverside areas to construct rice fields in a concentrated condition; therefore, there are a number of small paddy fields encroaching into the areas of small streams. The management plan has to consider the interests of the villagers who grow such rice.

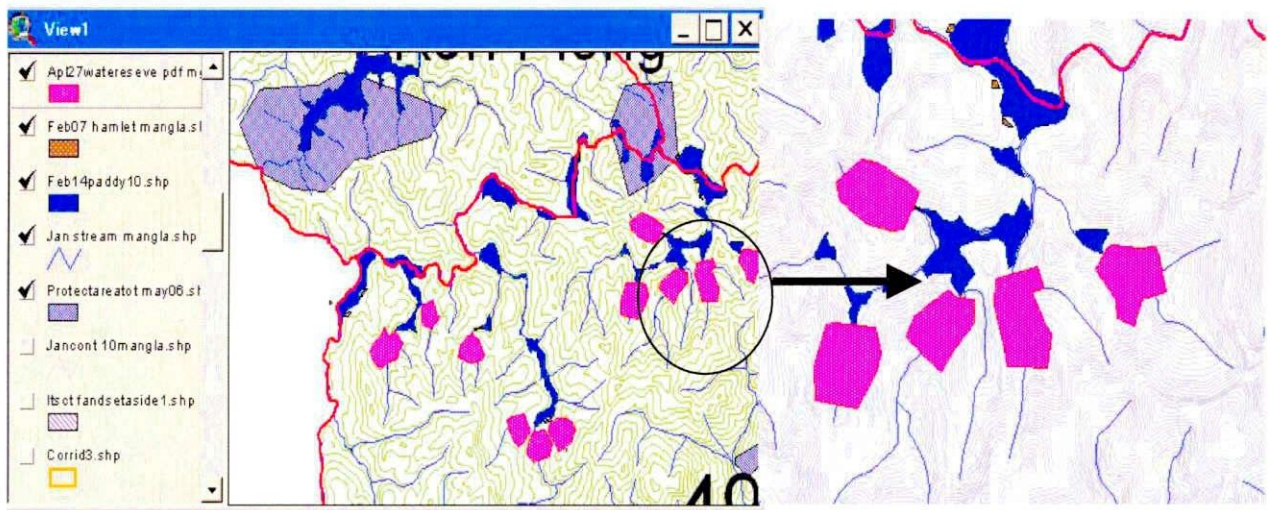


Figure II-4.2.5 Example of selection of water source protection areas

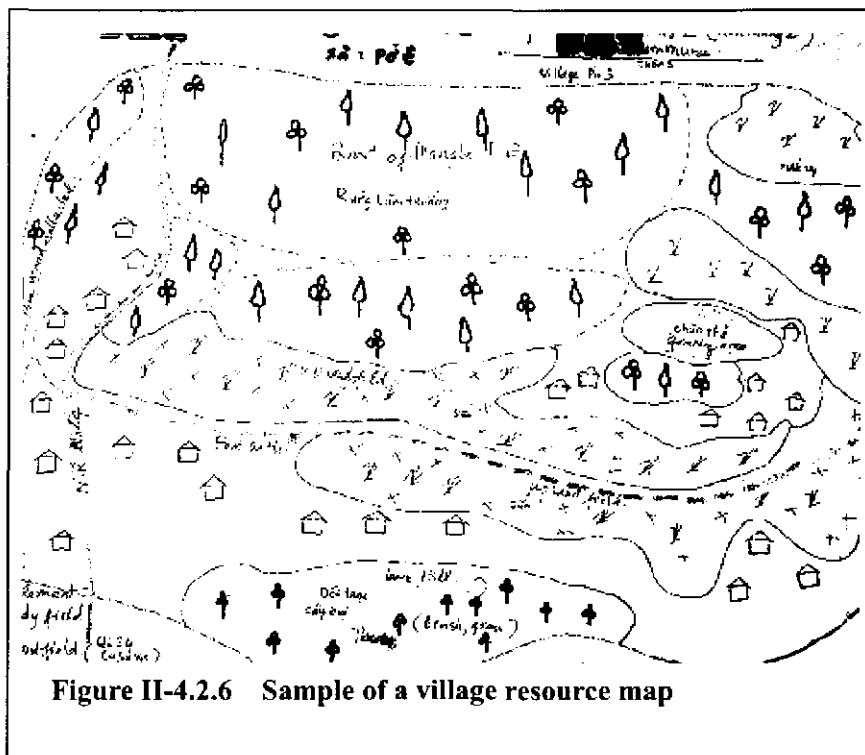
4.2.5 Villager support program

Target areas for the villager support program will be decided at the implementation stage through discussions with Mang La Forest Enterprise and villager groups. This management plan, therefore, shows the criteria to assign the target areas for the villager support program. These areas need to be

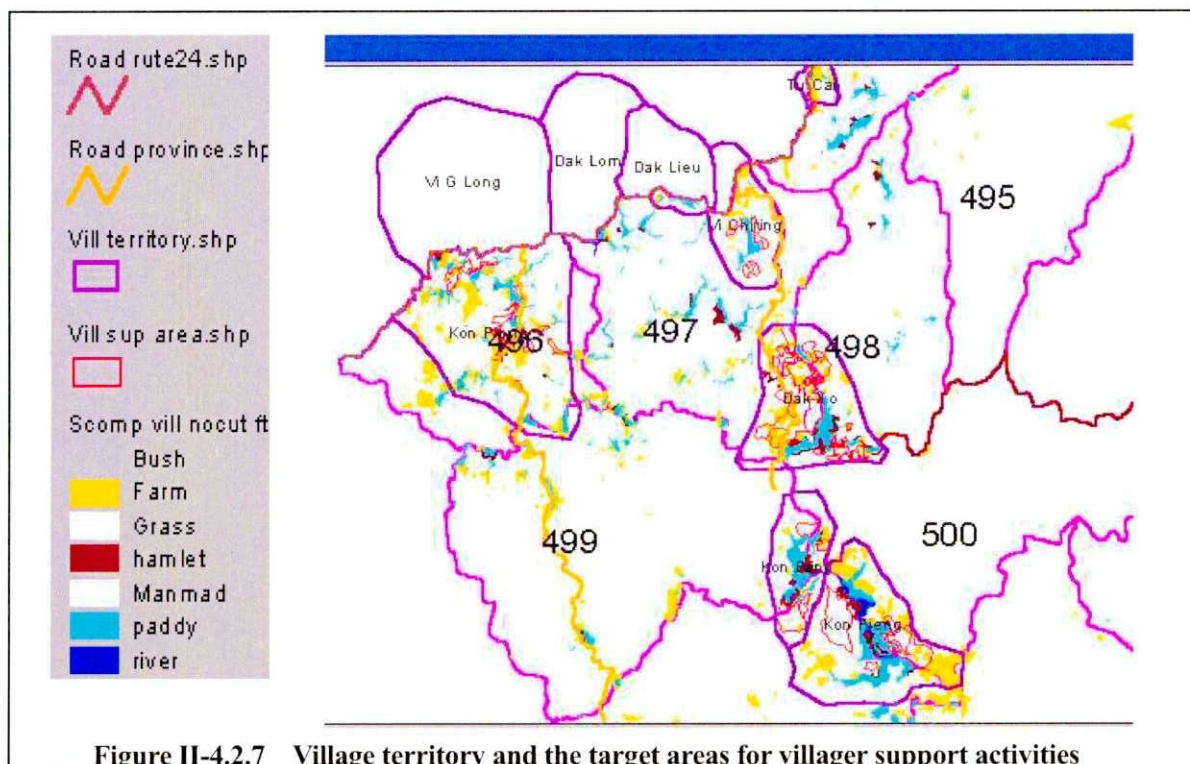
prepared and excluded from ordinal forest operations under the direct management of the Forest Enterprise. One effect of the villager support program on the logging operations is the development of new farms or agro-forestry farms. Through the village survey, the expectation of the villagers for new farmland development is not so clear. Recent expansion of slash and burn cultivation is limited and now not such intensive effects are recognized, at least in the model area. This means, the forest management planner is not requested to assign /allocate large areas of new forestland for villagers. Under these socio-economic conditions, the team basically considered that the new forest lands for the villager support program should be prepared for the areas surrounding exiting villages.

The criteria for setting aside land are as follows:

- a. The area surrounding the village is defined using the village resource map (a sample is shown in Figure II-4.2.6), drawn by the villagers to show village territory. The target area is prepared within the territory recognized by the villagers as their territory. (This territory is not the administration boundary but is the area generally understood by the villagers to be the land for their daily life and is controlled under traditional rule by the village society).
- b. The area where existing upland farms are scattered, except the parts which are too steep, is given first priority.
- c. Degraded forest (bush or open forest) is the second candidate for new farm (agro-forestry) development.



The village territory recognized is shown in Figure II-4.2.7. The areas set aside for logging operations for the villager support program are nominated as roughly 106 ha for village Dak Xo (Village No. 6 of Hieu), 54 ha for village Kon Picng (Village No. 8 of Hieu), 35 ha for village Kon Pling (Village No. 7 of Hieu), 25 ha for village Kon Plong (Village No. 1 of Hieu), and 11 ha for village Vi Chiling (village No. 5 of Hieu). Some examples of where the plan has prepared land for possible area selection for future land use for the villager support program are given in (Figure II-4.2.8).



In the protection forest, initial target areas for the villager support programs of 20 ha for village Kon K Tau (Village No3 Po E), 9 ha for village Kon Klang1 (village No1 Po E), 23 ha for village Kon Klang2 (Village No 2 Po E), and 16 ha for village Vi O Lak (Village No 7 Po E) are prepared.

For other villages located along the national road in Hieu and villages in Po E, no areas are mentioned to be set aside from logging operation. These villages have their territory mainly in Thach Nham protection forest.

Table II-4.2.5 Areas set aside from forestry operation by the FE for the villager support program (ha)

	Village	Agro	Paddy	Silvo	Total (ha)
PT Forest	Kon K Tau	19.71	0.00	0.00	19.71
	Kon Klang1	9.25	0.00	0.00	9.25
	Kon Klang2	23.59	0.00	0.00	23.59
	Vi O Lak	16.06	0.00	0.00	16.06
Sub Total		68.62	0.00	0.00	68.62
PD Forest	Dak Xo	52.15	0.00	53.61	105.75
	Kon Pieng	32.82	0.00	21.48	54.30
	Kon Pling	35.12	0.00	0.00	35.12
	Kon Plong	15.72	6.04	3.61	25.37
	Vi Chiring	2.64	0.00	8.16	10.80
Sub Total		138.45	6.04	86.86	231.35
Total		207.07	6.04	86.86	299.97

Note: Kon Pling covers part of Block 500 (protection forest)

Other villages have no target places within the territory of the FE

The real farmland development plan in the villager support program is examined further to adjust villagers' needs. This number of areas in the table does not show the needed areas for the villagers but shows capacity to allocate the land only focusing on its physical condition now.

The areas mentioned above are not intended to be used for, or converted to agro-forestry farms in this plan. These areas are only recognized for future possible use by the villagers; therefore, the plan considers that the land use plan for these areas basically belongs to the village community, the FE did not insist on land for wood production areas for commercial purposes. Forests of these areas discussed in the plan are not to be counted as resources for the sustainable yielding of wood.

The distribution of the total areas set aside from logging operations is shown in Figure II-4.2.9.

