

CHAPTER V
POPULATION GROWTH, LAND ALLOCATION
AND LAND-USE CHANGES

This chapter describes the growth of population in the historical dynamic, the land-use changes concerning to before and after the land allocation scheme implemented in the village of Huay Khang.

5.1 Population Growth

Since the beginning of the year 1973 the population in the study area has increased from 29 (7 households) to 253 (51 households) in 1985. Since 1985 the number slightly decreased to 196 (36 households) in 1998.

From its historical background, Huay Khang is a village of mixed ethnic groups, Khamu ethnic or “Lao Theung” and Lao ethnic or “Lao Loum”. Khamu group is the major one.

Table 5.1 Population and Rice Demand in Huay Khang Village

Year	Households	Population	Person/HH	Rice demand (kg)
1973	7	29	4.14	10,440
1985	51	253	4.96	91,080
1995	38	203	5.34	73,080
1998	36	196	5.44	70,560

Because of rapid population growth leading to cause land use change, especially the change in farming system after the villagers received the land use certificate from the Xieng Ngeun District in 1996. The villagers seem to cultivate other crops more than rice e.g. job's tear. But the changed farming system is still unlikely to be sustainable because of only mono-cropping is used, and it will lead to

soil or land degradation and the villagers are also poor with the traditional market system.

According to the data interviewed, Figure 5.1 shows the months of rice shortage in Ban Huay Khang. Ten households have sufficient rice for consumption all over the year. For six households, rice shortage starts as earlier as in late January and the beginning of February. As the time since the previous rice harvest lengths, more households have to buy or borrow rice. If they have to borrow money from a money lender, the interest rate is over 100%. Money borrowed from relatives is free of interest.

During the months of rice shortage the villagers move to other food to fill the gap in rice supply. This food mainly consists of tubers which are either grown in the upland fields (taro, sweet potatoes and yams) or collected in the forest. The most serious period of rice shortage is from June to September. In October the rice harvest season begins and rice shortages ends.

Figure 5.1 Calendar in Rice Shortage in Huay Khang Village

Calendar-Months ¹		Level of Rice Shortage	
International	Khamu	Low	High
1	2		
2	3		
3	4		
4	5		
5	6		
6	7		
7	8		
8	9		
9	10		
10	11		
11	12		
12	1		

In years when enough rice is available, taro, yams and sweet potatoes are usually used to feed only the animals. Wildlife and other products from the forest are major food supply of the villagers, particularly during the periods of rice shortage.

¹ The Khamu Calendar differs from the international Calendar by six weeks (earlier)

5.2 Land Use and Land – Forest Allocation (LFA) Process

The basis for the land – forest allocation are the Decree no 99/PM of 19/12/1992 and the Decree no 186/PM of 12/10 1994 on land and forest allocation (replaced by the Forest Law of 1997). The implementation has been started on an experimental basis in a number of villages in Luang-Prabang Province.

The land – forest allocation contains a number of new concepts – individual/household responsibilities of different types of land such as forest land for instance – as well as a number of novelties for the administration. It includes organizing teams to start up discussions with the villages, identifying different land types, drawings of village maps indicating the different land and forest land types, etc. Not the least was the initiative of a new issue to the villagers.

On the basis of the experiences so far and in order to facilitate this process, the government issued “Instruction on the continuation on implementing land management and land – forest allocation”, No 03/PM. June 25 1996. The first objective of the implementation instructions is to continue to make the policy on land management and land – forest allocation more deeply and extensively absorbed by government officials and people and in view to making the authorities of all levels and all Lao citizens clearly understand their obligations, benefits and responsibilities in protecting, managing, utilizing and enriching land and forest in perpetuity. The second objective concerns the need for socio-economic development, environmental concerns and the transformation of a nature – based economy into commercial economy.

It is up to the Provinces, the Municipality and the Special Zone to “organize the conclusion and evaluation on the implementation”. It is understood that this implies that the different Provinces (and Districts) take into considerations the particular circumstances in their respective areas.

The document also, in Section 6, clarifies that “In view to ensuring the trust for investment in land development as well as the stability of livelihood of all Lao citizens, the State therefore recognizes legal rights as follows: right of possession; right to use; usufruct rights; right to transfer; right of inheritance and rights to receive

compensation by the state. The required documentation to claim these rights are not discussed in the document.

The Ministry of Agriculture and Forestry is further requested to continue to promote tree planting and forest protection linked “with the land – forest allocation policy” The exemption of tax for plantation forestry is specially mentioned.

Between July 15 – 19 1996, the First National-wide Review Conference on Land Management and Land – Forest Allocation was held to evaluate that work so far and to give directions for further work. It was noted then that up to that time, the land – forest allocation had been completed in many villages.

At present, it is not the intentions to evaluate that statement in this paper. It is however done in the Resolution of the Conference. In the Resolution, a number of weaknesses and shortcomings are discussed. Briefly, they are: the dissemination and implementation of Decree 99/PM have been delayed and “generally very retarded” and the state agencies and the population have not absorbed this matter; the management of land has not been even performed; the land – forest allocation has covered only 10% of the total number of villages; the survey of the family registration and land titling has been experimented in only 8 villages of Vientiane Municipality and in general, the performance of the local organization and the state administration in this respect has not been “as high as it should be.

However, the Resolution recognizes that there was a lack of instruction and inspection at the central level which resulted in uncoordinated implementation or non implementation and finally, that there was a shortage of staff and budgetary support.

On this basis, the Conference put forward a number of suggestions (“Primary objectives and work directions from now to the year 2000”). This section of the Paper restricts itself presently to the land – forest allocation. The focus is to complete the land – forest allocation in Protected Areas, water sources, catchment areas of hydropower dams and in areas affected by shifting cultivation. In areas where this has already been done, inspections are to be conducted to ensure that the outcome is positive and if so, land titling should be issued to the population. In areas where the forest – land – forest allocation has not been successful, rectification should be made or re-appropriation of the land by the state.

An outcome of the Conference was the need of convening meetings of extending the outcome. In August 2 1996, "Instruction on land – forest allocation for management and use" (No 822/MAF) was issued. The Instruction initially indicates the relevant legislation to the issue at hand:

- Decree No 99/PM of 19/12/1992 concerning land;
- Decree No 186/PM of 12/10/1994 on Land – Forest Allocation for tree planting and protection;
- Decree No 169/PM of 03/11/1993 on management and use of forest and forest land;
- Provisional Regulation No 22/PM of 21/03/1989 on the management and use of agricultural land in Lao PDR;
- Instruction on the continuation of implementing land management and land – forest allocation No 03/PM of 25/06/1996;
- Resolution of the Nation-wide Review Conference on Land Management and Land – Forest Allocation of 19/07/1996.

(Some of the above legislation has been replaced by e.g. the Forest Law of 1997 and the Agricultural Land Law of 1999)

The Instruction emphasizes the objectives and also indicates more specific targets. Among those are for instance:

- To preserve and expand existing forest area;
- To ensure that "all plots in the villages across the country clearly have the owners to manage and use for long term";
- To "increase self-reliance, creativeness and enthusiasm of pluro-ethnic population to actively and seriously invest in production";
- To establish a uniform system for management of land and that each province should work out the plan for reducing and gradually eliminate shifting cultivation together with a plan for producing food and commodity by taking the land – forest allocation as a point of departure and focusing on the preservation of the forest and environment.

Land – forest allocation to families, villages, collectives and divisions as specified in the Instructions related to land use planning at village level. After

identification of different land types, land would be allocated. Land not suitable for agriculture must be allocated to families for tree planting. Past land – forest allocation is to be reviewed and amended if found not satisfactory. In section 6 of the Instruction, it is stated that the “land – forest allocation must be completed from village to village with the participation of local population and using simple method with the understanding and consent of the local population, nevertheless effective. A district might be selected for the experiment in one village to draw concrete lessons which will then be extended to other villages”.

The Instruction also states that villages “have access right to the allocation of different types of forest, including any adjacent forest which could be considered, depending upon the circumstances”. Based upon “actual practice in the past, the steps of implementation can be summed up into 8 steps as shown in the following table:

Table 5.2 Participatory Land-Forest Allocation (LFA) Methodology

Step 1:	Preparation for Implementing Land-Forest Allocation Activities <ol style="list-style-type: none"> a) Organize and train the LFA team; b) Prepare survey and mapping equipment and materials (1:50,000 topographic sheets, aerial photos, etc.); c) Arrange for neighboring villages to attend LFA exercise in target village; d) Explain implementation activities and methods of the LFA to village committees and village organizations; e) Explain Government LFA policies, regulations and objectives to villagers – including the rights, responsibilities and benefits accorded to villagers.
Step2:	Survey and Mapping of Village, Forest and Agricultural Land Use Zone Boundaries <ol style="list-style-type: none"> a) Determine village boundaries with villagers and prepare boundary agreement; b) Prepare a village base map with villagers; c) Survey village landmarks and topographic features to establish geographic reference points by identifying and demarcating village forest and agricultural land use zones.
Step 3:	Data Collection and Analysis <ol style="list-style-type: none"> a) Gather information on village land tenure, land use and land claims; b) Gather information on village socio-economic conditions and the perceived problems and needs of the villagers; c) Analyze and summarize village information and determine agriculture and land allocation criteria.

Table 5.2 continued.

Step 4:	Village Land Use Planning and Land Allocation Meeting a) Using land use zoning map, discuss land use management with villagers before allocating agricultural land; b) Conduct a village meeting to verify land ownership, review land claims and allocate land.
Step 5:	Field Measurement a) Conduct field measurement of agricultural fields, quantify and record information concerning land use.
Step 6:	Preparing Agricultural and Forestry Agreements and Transferring Rights to Villagers a) Prepare temporary agricultural land transfer form and contracts for each family; b) Confirm forest and agricultural land use zones with villagers using completed 1:50,000 village map; c) Prepare village forest and agricultural land management agreement, and summarize agreements with villagers.
Step 7:	Land Use Management Extension a) Develop and prepare extension work plan proposals with District Agriculture and Forestry Office staff; b) Identify and select farmers and sites for land use conservation farming demonstrations.
Step 8:	Monitoring and Evaluation a) Conduct field monitoring of the LFA activity in village in which land allocation has been conducted; and b) Analyze the data collected and prepare assessment report to improve LFA procedures, methods and practices in future programs based on the monitoring and assessment results.

The Instruction also contains technical guidelines about slopes and land use. None of the above documents presented here have indications upon what sort of specific legal instruments such as land titles are to be used.

At the District level, the government intentions have been translated into specific action with the District visiting the villages to inform and carry out the land – forest allocation process. Below is given a brief description of this process as it has materialized in the Study Area (Huay Khang Village) and what are the “implementation regulations” as understood by the researcher.

The District views the land – forest allocation as not only a scheme to distribute land but also as an instrument to achieve other objectives. It intends to improve land management, to improve production, to gradually decrease shifting

cultivation, to improve extension for increasing production, to develop trade and marketing and in general contribute to development of land use and management.

As a general rule, fertile soil should be used for agriculture and infertile or poor soils for forestry. It was also pointed out that land upon which there was a forest regeneration older than five years should be left as forest land. If the regrowth was younger than 5 years, the land could be used for agriculture. All land is owned and administered by the State but is leased to farmers for long-term use. Agricultural land is defined as land for planting crops, raising livestock, and agricultural experimentation. The Land Law permits the allocation of land under long-term leases to individuals and families under the following conditions (per adult laborer in a family): i) one hectare to grow paddy rice or raise aquatic animals; ii) three hectares for commercial crops; iii) three hectares for fruit trees/orchards; and iv) fifteen hectares to plant or maintain grassland for livestock production. Thus a family can be allocated up to 22 ha of land per family laborer. When receiving agricultural land use rights, individuals are first issued a temporary land certificate for a term of three years. If within the three-year period, the land is used in accordance with its specified use, the individual may request a land title for long-term (permanent) use. Land titles issued can be inherited, sold or leased, provided that the land has been registered. Paddy land titles are gradually being formalized in flatland areas and even though all paddy has not been formally allocated, but local communities recognize its long-term use rights.

Adult Labor is defined as 15 years old and above with a fluctuating upper limit. With the land – forest allocation, there are certain conditions, one of which being that if the land is not used for 3 years, the usufruct rights to it can be withdrawn by the government.

For land use, land tax is being paid. This also applies to shifting cultivation land. There are some exceptions. One is that land tax is not paid for land used for plantation forestry. The other is that there are tax incentives to promote a stabilization of shifting cultivation. Land tax paid is reduced if the land is being used annually rather than being shifted to another lot. The reduction varies and has been reported as a tax relief period of three years and as a gradual reduction in taxes for a number of years.

In the research area, Huay Khang, land – forest allocation has been carried out and registered in 1996. The 36 households have all been registered and agricultural land of 88.78 hectares has been recorded.

Before land – forest allocation, the choice of plots for shifting cultivation was individually based and there was no village based co-ordination, e.g. in terms of general directions that this year, the major thrust of the shifting cultivation is in this particular quadrant. In conjunction with the land – forest allocation, the village decides to co-ordinate the use of the individual plots. The principle is that all households during a particular year use the plots in one general direction – east of the village e.g. the reasons are that this facilitates livestock management (the livestock generally grazes in the fallow area) and possibilities for co-operation with regard to work on the shifting cultivation land. This is a village based strategy, worked out by the villagers.

Obviously, the size of the plots was in the magnitude of the area indicated. They have all been surveyed by the students of the Agro-forestry Extension and Training Center located nearby. From ocular inspection, it could also be verified that the village tries to enable all villagers to cultivate in the same general area.

Part of the land – forest allocation is the land – forest exclusion. The allocation committee defines and identifies areas with restrictions concerning its use. These areas are water catchment areas, protection forest, cemetery (conservation forest) and utilization forest. The utilization management and use restrictions of these forest types are under the responsibility of the village committee.

It can be pointed out that in the past since they first settled here, all lands belonged to the community; any one could cultivate as much as they need. Since the government has opened the country, used New Economic policy with more market oriented and implemented Land – Forest Allocation Scheme, the land has become more valuable and more privately owned.

5.3 Land-Use Changes

Apart from the land-use changes derived from the overlaying of the land-use maps for different periods, the change can be quantitatively summarized for each land-use type. Each change geo-dataset has a corresponding attribute table which will be used for the quantitative summary of thematic changes. The land-use type of time one and time two which exist in the attribute table of change geo-dataset will be used as keys for quantitative summary of change. The result from the quantitative summary of thematic change will be in the form of tables.

In this case study, the change is summarized for 3 periods: 1982 – 1989, 1989 – 1998 and 1982 – 1998. Each period has separate table of result.

The results of land-use change analysis can be presented in two forms: tables showing the quantitative data for each type of thematic change and the change maps showing the spatial occurrence of change.

Land-use change maps can be seen from the Figure 5.2 for 1982-89, Figure-5.3 for 1989-98 and Figure-5.4 for 1982-98.

5.3.1 Land-Use Change, 1982-1989

During the period 1982-89, it was observed that the major change is the change from forest to potential forest (forest fallow). This change was generally caused through the degradation process. The process initially began by first the forest clearing for shifting cultivation. The area was used for cropping for a maximum of 3 years and then abandoned as the production yield declined. Once the area was abandoned for 3 to 4 years, it became vegetated again and according to the classification system this area was categorized as potential forest. On the 1982-89 land-use map, it was apparent that the change from forest has occurred mostly along the roads and on gentle slope terrain.

Table 5.3 Land Use Change Expressed in hectare of the Total Land Area

LU class 1982	LU class 1989 (ha)							Total Change (Loss) 1982-89
	CF	FF	BF	ASC	PD	PL	OU	
CF				189				189
FF								
BF		88						88
ASC		31	122					153
PD								
PL								
OU								
Total Change (Gain)		119	122	189				430

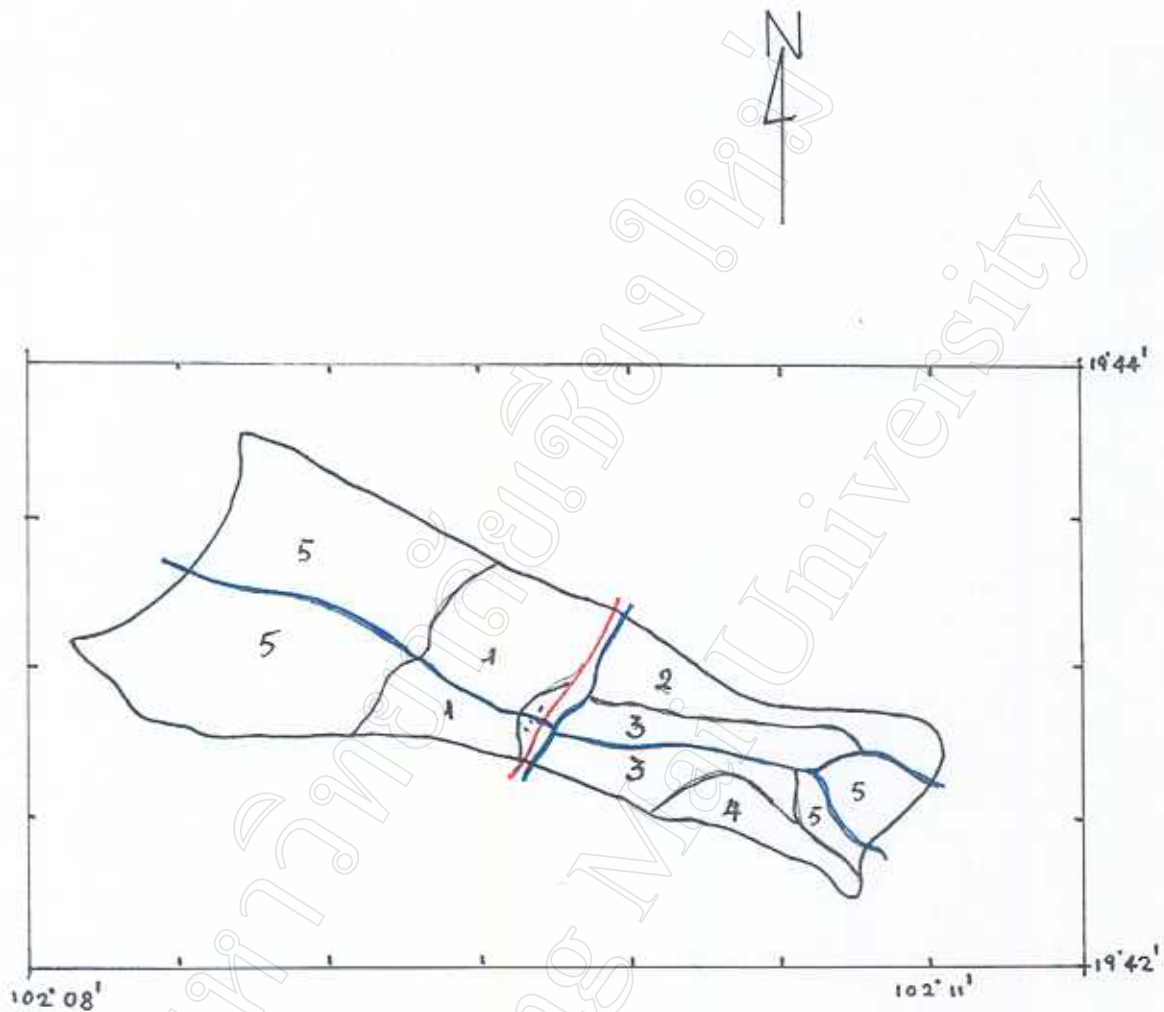
Remark:

- CF: Current Forest
 FF: Forest Fallow
 BF: Bush Fallow
 ASC: Active Swidden Field
 PD: Paddy Field
 PL: Plantation
 OU: Other Uses (settlement area, home-garden, water and road)

The changes are also symbolized by a number as below.

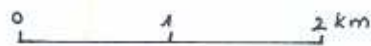
- 1: Change from active forest to shifting cultivation
- 2: Change from bush fallow to forest fallow
- 3: Change from shifting cultivation to bush fallow
- 4: Change from shifting cultivation to forest fallow
- 5: No change
- 6: Change from shifting cultivation to plantation
- 7: Change from bush fallow to shifting cultivation
- 8: Change from active forest to bush fallow
- 9: Change from active forest to plantation.

Figure 5.2 Huay Khang Village, Land-Use Change 1982-1989



		ha
1	Forest to Active Shifting Cultivation	189
2	Bush Fallow to Forest Fallow	88
3	Shifting Cultivation Field to Bush Fallow	122
4	Shifting Cultivation Field to Forest Fallow	31
5	No Change	260.5
Total Land Area		690.50

Scale- 1:50,000



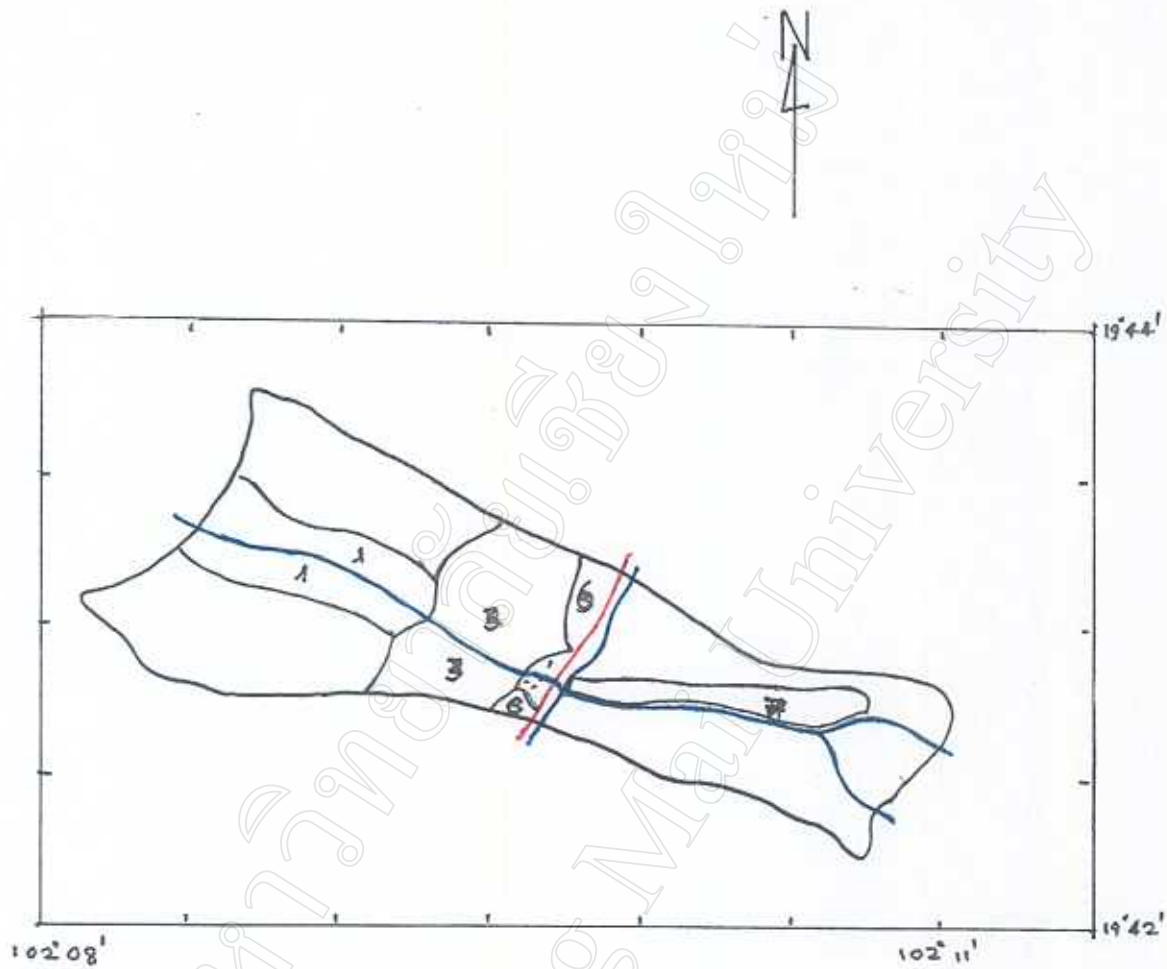
5.3.2 Land-Use Change, 1989-1998

During the period 1989-98, the land-use change was quite different from to the situation during the period 1982-89. The major change during this period was the change from the other wooded areas to potential forest. By comparing the 1982-89 and 1989-98 land-use change maps, it was found that the change originated from the areas on which were classified as change areas from forest to potential forest during 1982-89. It could be explained that after the period of 6-7 years with no repeated disturbance, the potential forest has increased the crown density.

Table 5.4 Land Use Change Expressed in ha of the Total Land Area

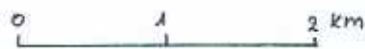
LU class 1989	LU class 1998 (ha)							Total Change (Loss) 1989-98
	CF	FF	BF	ASC	PD	PL	OA	
CF				72				72
FF								
BF				47				47
ASC			128			61		189
PD								
PL								
OU								
Total Change (Gain)			128	119		61		308

Figure 5.3 Huay Khang Village, Land-Use Change 1989-1998



		ha
1	Forest to Active Shifting Cultivation	72
3	Shifting Cultivation Field to Bush Fallow	128
5	No Change	382.50
6	Shifting Cultivation to Plantation	61
7	Bush Fallow to Shifting Cultivation	47
Total Land Area		690.50

Scale- 1:50,000



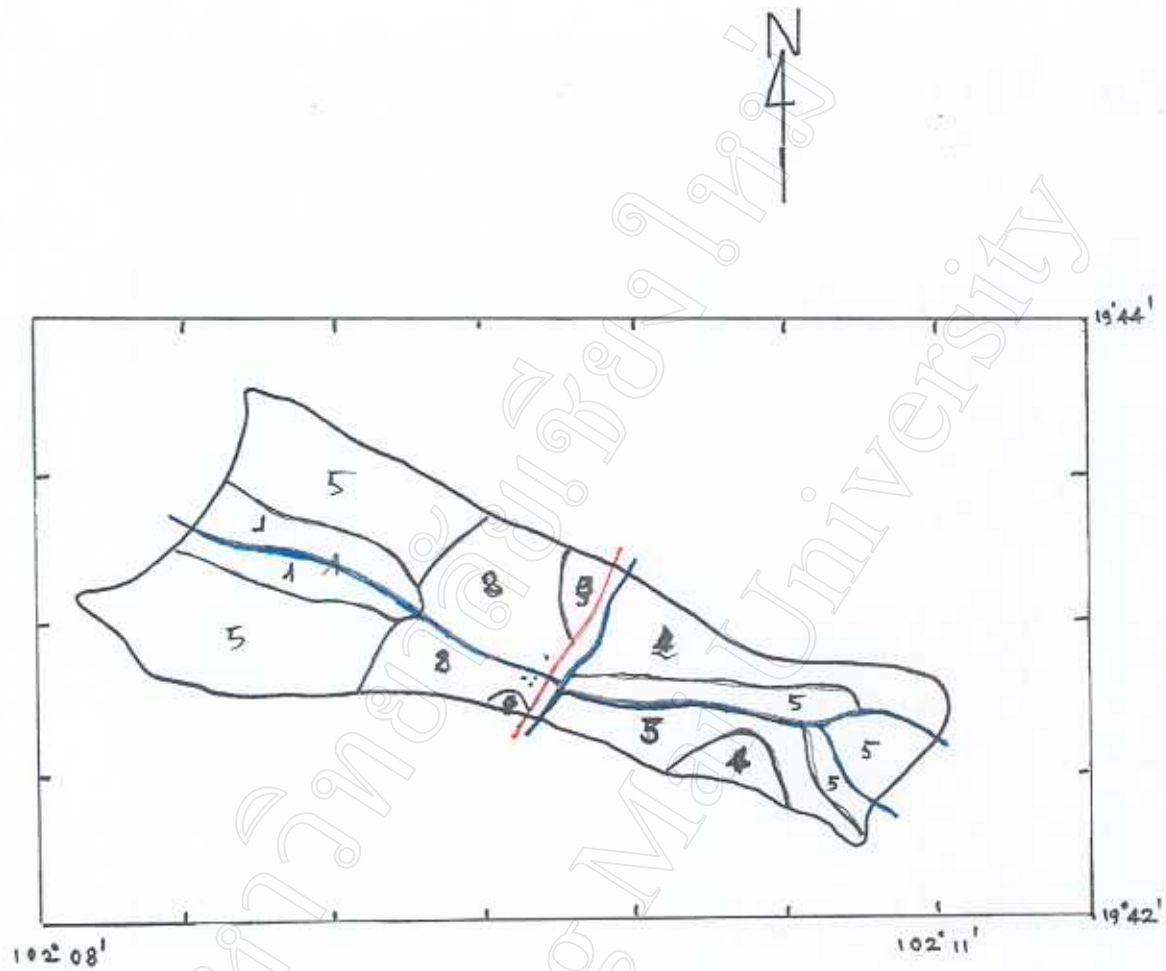
5.3.3 Land-Use Change, 1982-1998

The long-term change scenario during 1982-98 is more complex, although much similar to the period of 1989-98. The major change was also a transition from the forest to bush-fallow land and plantation. On the land-use change map of 1982-98, it is still obvious that the forest continued to change to shifting cultivation field. Moreover, the forest decreased as a result of expanding of agricultural land. At the same time we can see that agricultural land is also converted to bush fallow land and forest fallow land.

Table 5.5 Land Use Change Expressed in hectare of the Total Land Area

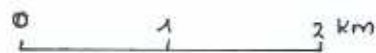
LU class 1982	LU class 1998 (ha)							Total Change (Loss) 1982-98
	CF	FF	BF	ASC	PD	PL	OU	
CF			122	72		61		255
FF								
BF		88						88
ASC		25	72					97
PD								
PL								
OU								
Total Change (Gain)		113	194	72		61		440

Figure 5.4 Huay Khang Village, Land-Use Change 1982-1998



		Ha
1	Forest to Active Shifting Cultivation	72
2	Bush Fallow to Forest Fallow	88
3	Shifting Cultivation Field to Bush Fallow	72
4	Shifting Cultivation Field to Forest Fallow	25
5	No Change	250.50
8	Forest to Bush Fallow	122
9	Forest to Plantation	61
Total Land Area		690.50

Scale- 1:50,000



Through the analysis of quantitative land-use change from 3 periods, it is found that there is a continuing trend of decreasing in forest land whereas the agricultural land is increasing. The major forest change is observed during 1982-1989 and continues to decrease during the period 1989-1998. The main reason is that since 1989, the area has become a pilot area for the Lao-Swedish Forestry project and the policy of Lao government on cash crop production (teak, mulberry and job's tear respectively), thereafter the farmers within the area have been given several incentives which are directed to stabilize the agricultural system. The main types of incentive are the agricultural extension, loan to the farmers for expansion of agricultural production, on-the-job training on cropping system, etc. Another important reason is that farmers have got inadequate land allocation from the government for agricultural production.

5.4 Some Factors Influencing Forest Land Use

Deforestation is normally the inverse of forest land use. A conclusion drawn from the study area is that almost all forest land not covered by original forest is used for agriculture. In this area, most agriculture is carried out by the people living within the area (except paddy fields, three-fourth owned by outsiders) and the products are used by the same people (subsistence agriculture).

Although, there is a direct relationship between the number of people of the area and their agricultural land. Such relationship is not linear. The population has increased faster (with a higher rate) than the total non-forest area.

There could be different reasons for this situation. First, it could be shortage of land for a growing population. People are forced to make the best out of the situation and hence intensify their land use. Second, when people start diversifying their agriculture and selling their products, the market demand and the economic growth will influence the size and the direction of agricultural activity. Third, there are changes in agricultural yield. How much crops could be produced within a defined area? Negative changes occur when the soil is being over utilized and impoverished. Positive changes are expected with new technology, seed improvement, fertilization

and irrigation. In addition, there are other factors such as import and export of goods and services.

In a subsistence economy with limited external contacts and relations the above factors could possibly explain a great deal of the changes taking place. When such a system “opens up” with more and more contacts with the outside market, the complexity of the system increases and it becomes more difficult to explain.

From the field research investigation, the collection of socio-economic data and information on land use changes and problems which has been summarised. The following tables are the summary of the changes and problems and suspected causes and activities of two key concepts—conflicts over land use and inappropriate forest use--which can be considered in helping to define future solutions. Two key problems are identified below (Table 5.6 and 5.7).

Table 5.6 Conflicts Over Land Use

Number	Suspected Problem Causes	Suggested Remedial Activities
1	Inadequate management plan for the village	<ul style="list-style-type: none"> • Study the existing development plan for the zone produced by the District Land-Forest Allocation Committee. • Develop a forest and agricultural land management plan with the communities, including conditions for their settlement in the area. • Develop work plans for community development, forest management, agricultural development and monitoring.
2	Rapid rate of in-migration	<ul style="list-style-type: none"> • Make an agreement with communities to stop more in-migration while a management plan is developed.
3	Inadequate criteria for land allocation	<ul style="list-style-type: none"> • Develop criteria for land allocation based on an analysis of village data. • Undertake participatory land use planning and allocation to re-distribute land based on the criteria

Table 5.7 Inappropriate Forest Use

Number	Suspected Problem Causes	Suggested Remedial Activities
1	High agricultural land demand, insufficient paddy areas	<ul style="list-style-type: none"> • Complete a forest category survey. • Conduct a survey of other agricultural land use to determine land availability for allocation.
2	Roles and responsibilities of the land-use planning and land-forest allocation committee are unclear/confused	<ul style="list-style-type: none"> • Prepare with the LUP and LFA committee of the village a list of roles and responsibilities for management of the natural resources, ie, forest , land and water.
3	Inadequate participatory forest and agricultural land management agreement for the village.	<ul style="list-style-type: none"> • Prepare forest and agricultural land management agreement in the village, including fire control. • Ensure representatives of the village are present when the agreement are being made. • Develop a village networking system for the management of natural resources between the surrounding villages, including fire control
4	Poor awareness of villagers about natural resource conservation and management	<ul style="list-style-type: none"> • Start a concentrated community awareness campaign on natural resource conservation and management.

Group discussions were used by the researcher and participants from offices concerned and villagers for discussing the five key problems affecting land-use in Huay Khang village and the solutions to those problems have been proposed. The results of these discussions are listed in Table 5.8.

Table 5.8 Causes of Land-Use Related Problems and Proposed Solutions

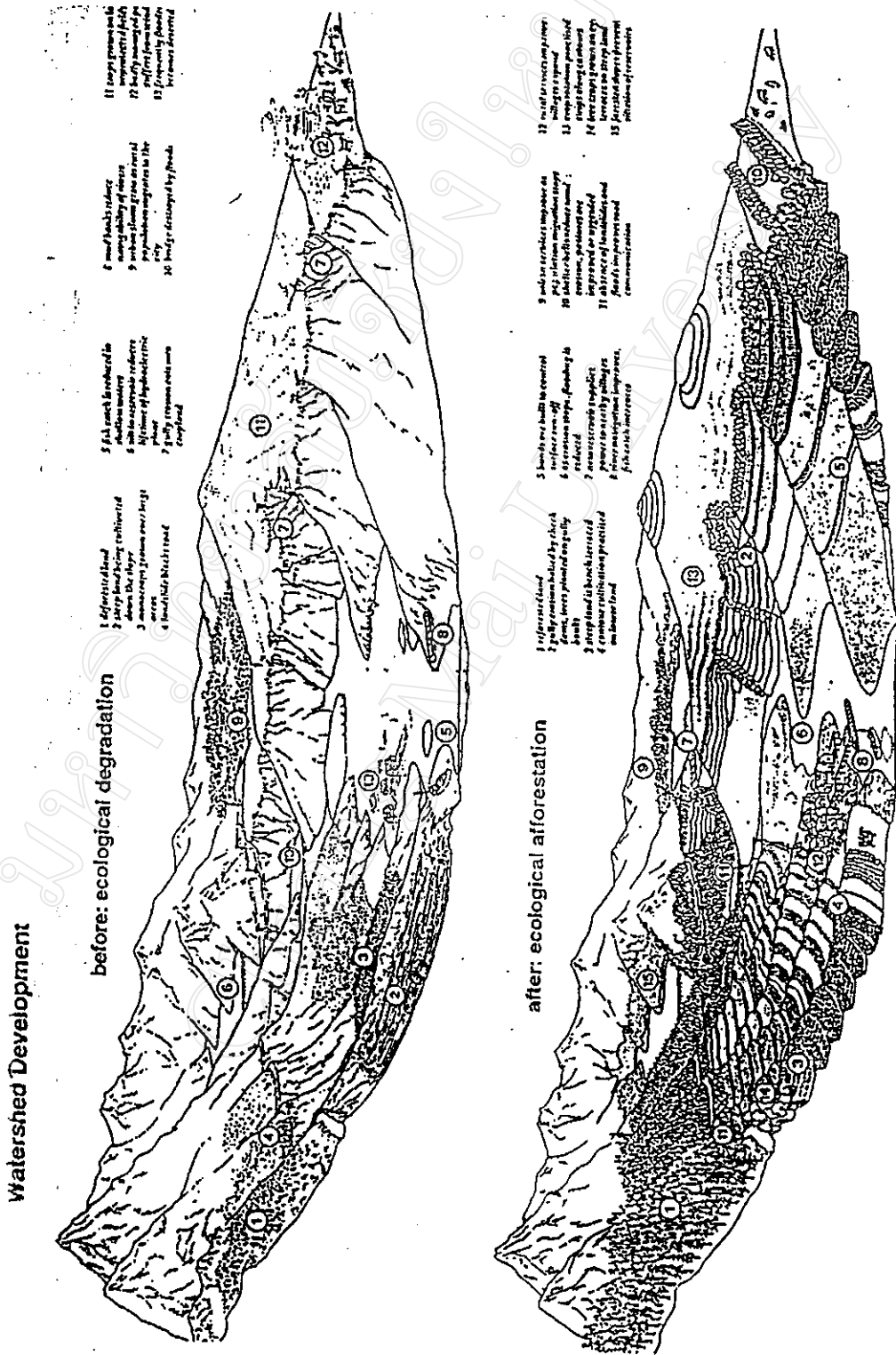
Problems	Causes	Proposed Solutions
a) Rapid population increase	<ul style="list-style-type: none"> • high birth rates • no family planning • inviting relatives to settle • traditional thinking of family unification • village in-migration plan not prepared 	<ul style="list-style-type: none"> • encourage birth spacing and family planning • prepare migration agreement • improve village committee work in population control • increase monitoring activity • assess the land potential (carrying capacity) delineate agriculture and forest land use areas • prepare new village land-use agreements • increase farmers participation in planning
b) Agricultural land is insufficient for villagers needs	<ul style="list-style-type: none"> • use wrong decision • the people retain traditional thinking of practicing shifting cultivation and lack of self reliance • lack of technical follow-up and extension activity 	<ul style="list-style-type: none"> • must provide education and training and explanations about the strategy and policy • recheck the agricultural land availability and land use • introduce a stronger method to implement village rules • Undertake intensive extension work • Introduce high-value cash crops • Improve productivity of land • Provide organization for market access, build up demonstration families, demonstration plots, trial plots and provide technical support
c) Forest encroachment	<ul style="list-style-type: none"> • families do not use allocated land • the agricultural land is insufficient • the implementation of the forest rules is not strict enough 	<ul style="list-style-type: none"> • check the lands which have been allocated and monitor the use of land • re-allocate land within village • improve the village forestry volunteers so they are stricter than before

Table 5.8 continued.

d) Extension is inadequate	<ul style="list-style-type: none"> • district extension staffs are not enough and frequently changed • technical knowledge of staff is limited • insufficient training and study trips • lack of experience • district staffs lack skills to involve farmers in extension • extension work is not considered 	<ul style="list-style-type: none"> • improve the level of extension knowledge; build up work capacity at local levels including village • encourage community extension service • improve extension planning for forestry, agriculture and community development • provide grant through saving group formation for extension works • give priority to set up demonstration and training programs
e) Villagers do not follow the forest and land allocation plans	<ul style="list-style-type: none"> • lack of cash crop markets • villagers do not understand targets and objectives of the concentrated rural development Project • the aspirations /production plans of the villagers do not match the Project production plans (traditional attitudes) • no forest management plans or methods 	<ul style="list-style-type: none"> • help to find cash crop markets and improve production • explain the GoL, Provincial and District policies and directions • use appropriate/simple technology so that farmers can absorb it easily • provide technical support • build up local capacity especially at District and village • develop a management plan

To have a better understanding on the new method and technique in using within the watershed and particularly on sloping agricultural land, the two followed figures can be showed as the traditional way and the proposed way of land use for the future.

Figure 5.5 Comparison of Two Different Watershed Management Systems



Quelle: Lobo, C.: Ahmednagar District: A brief Overview, 1994, unverfentlich (zur Einsicht bei Justitia et Pax, Bonn)

Figure 5.6 Comparison between Two Systems of Land Use

