

Social Perspectives on Food Security under Sustainable Land-Use Systems: Two Case Studies from Northern Laos

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Introduction

The policy of the government of the Lao People's Democratic Republic is to eliminate the cultivation of upland rice by means of 'slash-and-burn' cultivation and to replace it with more ecologically stable systems based on sustainable land use at the village and household level. The objective of this policy is to alleviate poverty and to introduce more sustainable management of agricultural resources. In order to achieve these objectives, the government has initiated a program of relocation to upland 'focal areas' from which marketing, distribution and other services can be supplied, these being essential preconditions of effective agricultural development in such regions. The Lao-Swedish Upland Agriculture and Forestry Research Program (LSUAFRP) has been tasked to support this policy.

This paper is based on diagnostic field research carried out by the Socioeconomic Research Component (SER) of the LSUAFRP based at the National Agriculture and Forestry Research Institute (NAFRI) in cooperation with the Farming Systems (FSR), Land Management (LM) and Forestry Research (FR) components. Research during the first phase of the program has been focused on nine villages in two districts of northern Laos: Phonsay District in Luang Phabang and Namo District in Oudomsay.

The SER has carried out extensive research and analysis on the impact of this development program on food security at a community and household level. The research has examined household strategies for addressing food security issues, and has highlighted the main problems encountered in the pursuit of food security. As a result of the diagnostic, the research team has identified sixty possible interventions to improve the performance of the program and alleviate food insecurity, of which approximately 16 have already been initiated within the first year of the program.

Objectives and methodology

Phonsay and Namo Districts are the poorest districts in Luang Prabang and Oudomsay Provinces, and two of ten priority poorest districts in the whole country. The initial survey and diagnostic exercise was started and carried out as a multidisciplinary team effort of socioeconomic staff at the National Agriculture and Forestry Research Institute (NAFRI) and field staff from these two districts. This village-level diagnostic survey aimed to develop a broad overview and understanding of the livelihood systems, problems, coping mechanisms and opportunities in the research villages. The full diagnostic reports based on all the data collected in the two districts did not emerge until long after the on-farm research activities had been initiated. This is in keeping with the Socioeconomic Research (SER) and Farming Systems Research (FSR) methodology, which attempts to conduct a practical analysis of the data in real-time as the exercise progresses, in order to ensure that opportunities for direct influence on the research planning process are not co-opted by the passage of time.

The objectives of this study were

- To conduct a broadly focused participatory problem diagnosis of the research areas in two districts, in order to understand farmers' problems, livelihood goals, and how their perspectives on food security had changed as a result of the new land-use systems
- To begin on-the-job training for the Socioeconomic research section staff, provincial and district staff on general systems diagnosis

Our methodology was as follows: after reviewing the main outcomes of the group interviews midway through the diagnostic field work, we also tried to regroup along disciplinary lines to follow-up with another round of field visits and interviews. This allowed us to obtain a more in-depth understanding of the exact nature of the problems detected during the group interviews and the cause-effect sequences involved in generating these problems. We also attempted to understand what the villagers were doing to try to address these problems and causes and went on to explore a range of

alternative solutions, including ideas originating from both the farmers' and the researchers' side. The four disciplinary groups were:

- Cropping systems
- Livestock
- Forestry
- Socioeconomics.

Population of the research villages

The basic residential unit is the household, which consists of either a single nuclear family or a stem family (a type of extended family comprised of two nuclear families of adjacent generations with one son/husband or daughter/wife who is a member of both families). The main ethnic groups are Lao Loum, Khmu and Hmong. Settlement is in nucleated villages with outlying agricultural fields and other lands. All the villages are located along dirt roads maintained by the district.

In Phonsay district, there were four case-study villages

- *Huayman*. A Khmu and Hmong village with a population of 365, comprising 66 nuclear families in 51 households
- *Nambo*. A Hmong, Khmu and Lao Loum village with 393 people, comprising 72 families in 55 households
- *Thapho*. A Lao Loum village of 844 people, comprising 153 families in 118 households
- *Huaymaha*. A Khmu and Hmong village of 647 people, comprising 118 families in 92 households

In Namou district, there were five case-study villages

- *Namo Nua*. A Tai Dam village of 439 people comprising 82 households and nuclear families
- *Mixay*. A Hmong village of 110 people comprising 20 nuclear families in 14 households
- *Pousang*. A Pousang village of 268 people, comprising 33 families living in 25 households
- *Pangdou*. A Khmu and Hmong village of 218 people comprising 38 families living in 31 households
- *Pangthong*. A Hmong village of 218 people comprising 63 families living in 49 households

Currently, under a government programme of village relocation and village merging in accordance with the focal area strategy, the population of the villages is increasing. Villages are being amalgamated into larger villages, with the idea of making it easier to provide basic services (water, medical care, schools, etc.). So far, not many of the expected benefits have been realized, but population pressures have been increasing in the relocation villages.

Not all the population pressure is due to relocation. Spontaneous migration also plays a part. Having a house near the road is something that appeals to many highland people. Furthermore, villages like Nambo in Phonsay have markets every ten days, and these are proving to be a magnet for all ethnic groups.

Land Use

Several different types of land are recognized by the villagers, some held and managed by households directly and other types held in common by the village as a whole. Among the most important types of land for farming by individual households are: paddy land (*na*), upland rice fields (*hai khao*), upland corn fields (*hai sali*), and various types of gardens (*suan*), including but not limited to river gardens and home gardens. Other important categories of land used in common with other villagers (and even other

villages) are: grazing land for livestock, streams and riverine environments for fish and other aquatic resources, and forest land providing fuel, timber for subsistence use and Non-Timber Forest Products (NTFPs). NTFPs are used for both subsistence and for cash-generation needed for meeting basic needs, including food security during rice-deficit months.

In addition to the locally important categories, there are various categories of land recognized in official maps and statistics. Unfortunately much of the official classification system has a forestry bias and is not suitable for land-use planning at the local level because it does not differentiate the various types of land that are needed by the rural population in order to secure a livelihood. For example, land which is important for food security in rice-production is often classified as 'unstocked forest' or 'potential forest'. This classification system does not provide categories which support local responsibility for conservation of land and other natural resources. This is problematic because it has been found, virtually everywhere, that there is no effective conservation of resources without the support and participation of the local population. For this to happen, their legitimate needs for land have to be recognized and accorded a place within the official classification system.

Artificially increased population pressure

In general there are rather significant land shortages in the research villages of Phonsay and Namo. All the research villages are located along the road, often in narrow valleys surrounded by steeply rising hillsides. Consequently, flat land is relatively rare. Existing agricultural land scarcity in different villages has been compounded by the effects of the government's relocation programme, and also by spontaneous migration. There is simply not enough land available within the existing boundaries of the relocation villages to allocate sufficient land for livelihood to the relocated families. A rough estimate would place the amount of available land for these families at around 50% of the basic livelihood requirement. As one villager put it, "Each year the people must borrow or rent land."

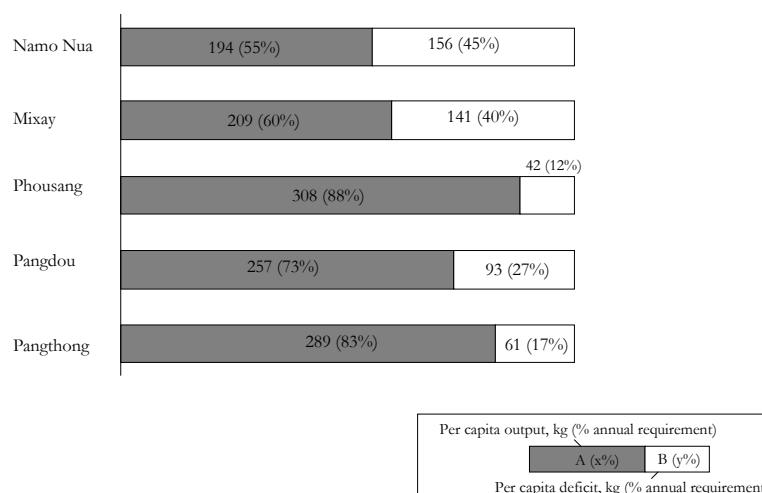
In addition to the hardships experienced by the relocated families, the dramatic increase in population density in the resettlement villages is having an impact on the

existing residents, and also on the natural resource base, which has come under intense pressure from a virtual doubling of population density. One factor is the lost production caused by separation of the relocated people from the productive capital of their well-established holdings in the uplands. For example, from the group interviews in Huaymaha, the newly relocated Hmong villagers reported that they formerly raised cattle, buffalo, goats and chickens in the old village but that there was no land for raising animals in the new village. This account does not even begin to enumerate the extensive fruit orchards and other holdings that are known to exist in the highlands, not to mention the special climatic potential of the highlands for temperate fruits and vegetables and other high-value specialty crops. It would be interesting to make an inventory of production foregone in the highlands as a result of relocation to the lowlands.

Food Security Problems in Namo District

The objective of all household livelihood systems in the research areas is to eat rice every day. Consequently, one of the most important indicators of the performance of these systems, and of poverty in general, is the number of months in which a household does not have enough rice to eat. This interpretation is supported by the rural people's own poverty assessment, as reported in the National Participatory Poverty Analysis (GOL 2001), which identifies rice shortage as the main indicator of poverty.

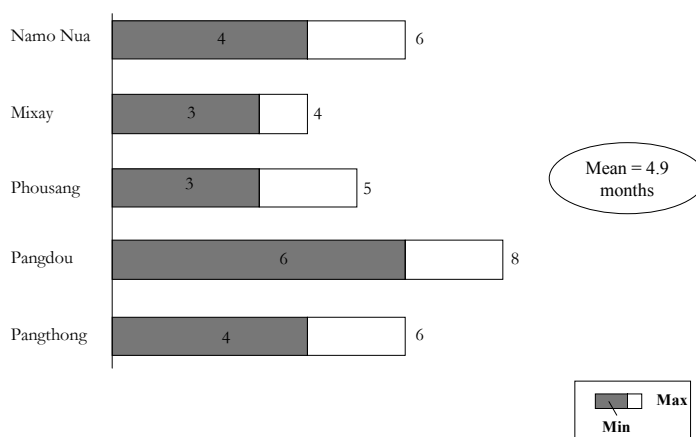
FOOD SECURITY IN NAMO DISTRICT
ANNUAL PER CAPITA RICE PRODUCTION AND RICE DEFICIT



The estimates of food production in the chart above are based on the reported areas of padi and rice hai, an assumed standard yield of 2.5 tons/ha from padi, 1.5 tons/ha from hai, and an assumed consumption standard of 350 kg/person/year. These are indicative figures, averaged out for the village as a whole, and do not reflect differences with may exist between individual households. The information in the chart below shows the number of months in which the household cannot meet its rice consumption needs from its own production.

What these data tell us is that normally all villages experience a minimum of 3 to 4 months of rice insufficiency in a year, extending to a maximum of 5 or 6 months in some years. In Pangthong the villagers reported that they once experienced 11 months of rice shortage during one particular year when they were not able to burn their fields and therefore could not plant or harvest any upland rice at all.

FOOD SECURITY IN NAMO DISTRICT
 AVERAGE MONTHS PER YEAR WITHOUT SUFFICIENT RICE



Pangdou reports the longest period of rice insufficiency (6-8 months). There are a lot of newcomers in Pangdou but it is not very clear at this time why these figures should be quite as high as they are (they are actually more in line with the level of rice shortage in Phonsay than in Namo). The average in the research villages is in line with the results of the National Participatory Poverty Assessment, which reports an average of 4.8 months of rice insufficiency in Oudomsay. The average in the Namo research villages is 4.9 months. The villagers' own assessment is also broadly consistent with an estimation of annual rice deficit based on the combined total of padi and rice hai in each village.

If we compare the two charts above there appears to be an inconsistency in regard to Phousang and Phangthong and, to a lesser extent, Pangdou, which seem to have a lower calculated rice deficit than would be expected on the basis of the reported number of months of rice scarcity. People's reporting of rice deficit months in rural Laos is a standard criterion of poverty assessment and is generally thought to be fairly reliable (people know how many months they lack rice to eat); whereas, people's reporting of land areas is generally thought to be less reliable. So it could be that the calculated rice production capacity is an overestimate, but this would not explain why it should be overestimated in Phousang, Pangdou and Pangthong but not in Namo Nua and Mixay. It is more likely that the discrepancy is due to inequality of land holdings. Phousang, Pangdou and Pangthong are all resettlement villages and these villages

reported that the newcomers experience land shortage. Since people with inadequate land cannot produce an adequate amount of rice, having a significant number of people with inadequate land would tend to extend the upper range of the number of months of rice shortage. At this stage we lack the detailed household level data that would be required to confirm this interpretation with any certainty, but it would seem to be a reasonable hypothesis for further diagnostic work.

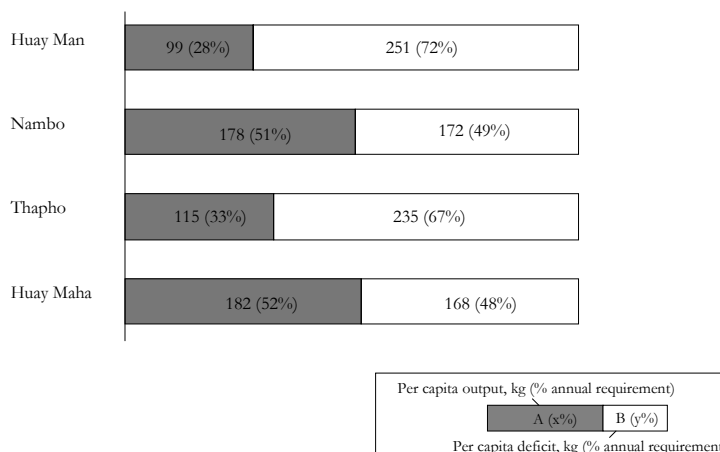
In any case, it is already clear that there is a serious food security problem in the research villages of Namo. In thinking about solutions it is important to recognize that the villagers already have strategies for coping with this problem. Their main strategy for dealing with annual rice shortages is to collect Non-Timber Forest Products, or sell cash crops or small livestock to get money to purchase rice. It is also likely that a certain amount of substitution of less valued staple foods (e.g. root crops) takes place, but in Laos this is considered a less preferable solution. The norm is to try to maintain rice consumption by doing something to earn money to buy rice. Although cash crop production is increasing, the collection and sale of NTFPs still appears to be the main coping strategy. However, all villages reported increasing difficulties in following this strategy, since NTFPs are becoming scarce. The people of Pangdou explained this very clearly when they commented that “It is difficult to earn money because things to sell have decreased.”

Localized increase in the density of population, whether it is due to relocation or spontaneous migration, has a doubly negative effect on food security: first by reducing the amount of land available for household use by moving new families onto a fixed land base, and secondly by increasing population pressure on local NTFP resources, causing over-harvesting and degradation of the resource base. Villagers in all four locations are attempting to cope with this situation by increasing cash crop production, but without adequate extension and financial support this is proving difficult.

Food Security in Phonsay District

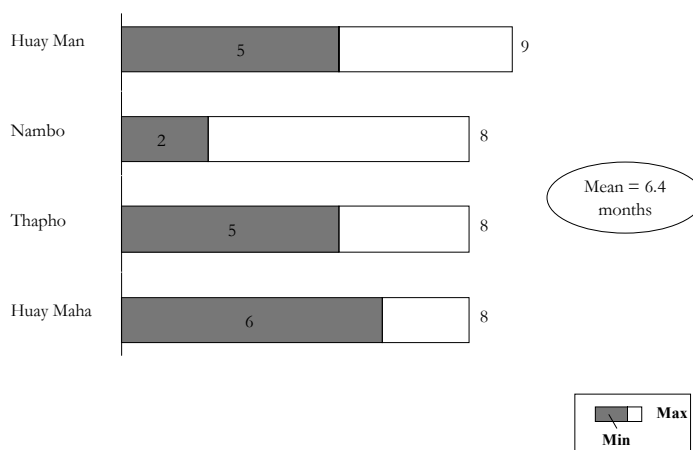
As in Namo, the objective of all households in the research villages of Phonsay is to eat rice every day. The information in the chart below shows rice production in Phonsay district, using the same set of assumptions used for Namo district.

FOOD SECURITY IN PHONSAY DISTRICT
ANNUAL PER CAPITA RICE PRODUCTION AND RICE REQUIREMENT



As with Namo, we attempted to estimate the number of months in which the household cannot meet its rice consumption needs from its own production, according to what the villagers reported in the group interviews (see chart below). It is important to note that men and women were interviewed separately and that the information reported was consistent between these groups. According to this data, the villagers in Phonsay experience an average of 6.4 months of rice insufficiency (based on their own rice production) in a year. In difficult years when the rice harvested is less than normal, the villagers may experience up to 8 and 9 months of rice shortage. The worse cases are in Huaymaha, Huayman and Thapho with shortages in the range of 6-8 months, 5-9 months, and 5-8 months, respectively. The best case is Nambo with an average of 4 and a range of 2 to 8 months.

FOOD SECURITY IN PHONSAY DISTRICT
 AVERAGE MONTHS PER YEAR WITHOUT SUFFICIENT RICE



Comparing the two charts we can see that Huay Man, which has the longest period of shortage (9 months), also has the highest estimated rice deficit (72%). Nambo and Huay Man are about equal in maximum duration of shortage (8 months) and calculated rice deficit (about 50%). Thapho shows the same period of rice shortage as the others (8 months) but a somewhat higher than expected rice deficit (67%). The reasons for this are unknown at this time. Perhaps it is due to nothing more than a discrepancy in the reporting of rice-producing land areas. A more interesting anomaly is the wide range of rice shortage months in Nambo. As the villages are not far apart this cannot be explained by the climatic variable of “good” and “bad” years. It is more likely that this is a reflection of differences between households within the village, some having a much longer period of shortage than others.

Huay Man has both the longest periods of shortage and the largest calculated annual rice deficit. From both sets of data it is clear that the food security situation for rice in Huay Man is critical. According to the group interviewed in Huay Man, some 45% of households have no upland rice, and the limited amount of padi land in the village (only 2.5 ha, which is owned by only six of the fifty-one households) cannot produce enough rice for the whole year even for those few families who have padi. Obviously, the main constraint on food security in rice in Huayman is shortage of land. Thapho’s rice shortage is 5-8 months and the calculated rice deficiency, based on the rice growing

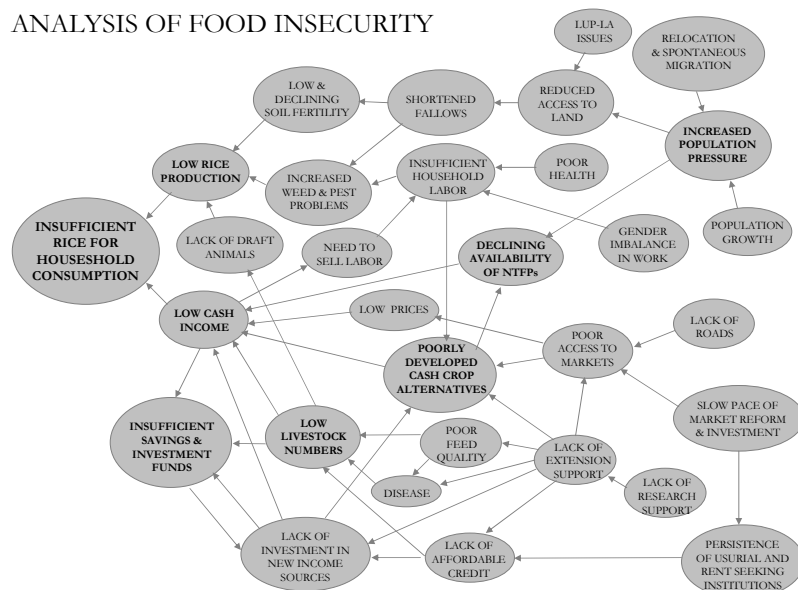
potential of the land, is 67%. The latter figure seems above average, but what is clear is that newcomers have insufficient land and that they cope with this by 'borrowing' land from neighbors and relatives. Like everyone else, Thapho residents report the usual problems with the short fallow upland rice: low yields due to short fallows, declining fertility and increasing weed infestation. To compensate for the shortfall in rice production they collect NTFPs and sell cash crops and livestock. They also repeat the ominous warning received from the other villages: fish and other natural resources are becoming scarce.

In Ban Huay Maha the group interview respondents reported a rice shortage of 6-8 months and an estimated rice deficit based on land capability of 48%. The picture given here, of more-or-less average levels of rice shortage (comparable to the other villages), is probably a temporary one, since the interviews do not yet reflect the impact of an additional 190 families scheduled to be relocated into Huay Maha. The other interview data support a picture of severe food insecurity in rice for the new Lao Soung families who have already relocated to Huay Maha. As in the other relocation villages, land scarcity is the main cause of food insecurity and the villagers cope with the situation by borrowing land from neighbors and relatives and by foraging for NTFPs to sell in order to buy rice.

Analysis of food security problems

As part of our research, we completed an analysis of the complex interconnected factors causing food insecurity (see below). Based on this analysis, it is possible to make the following recommendations.

ANALYSIS OF FOOD INSECURITY



Recommendations for policy makers

- Conduct policy dialogue to increase access to land, increase pace of market reforms and decrease the prevalence of usurious and rent-seeking institutions
- Provide extension support in order to improve cash crop alternatives
- Provide research support for the extension and development of cash crop alternatives

Recommendations for researchers, extension agents and planners

- Continue policy research on land access, market reform and credit institutions
- Conduct research on marketing to improve access to markets
- Conduct farming systems research and evaluation, and extension support, to provide missing extension support and improve rice production

- Help to develop the capacity of credit institutions in order to decrease the prevalence of usurious institutions and increase the quantity of affordable credit

Analysis of household needs

Groups held in Luang Prabang in 2003 yielded this analysis of basic village needs, and their production-subsystems:

Higher priority needs are

- *Food.* This is acquired from crops, livestock, fish and purchased food.
- *Cash.* Acquired from sale of cash crops, livestock, NTFPs and the outputs of cottage industry activities
- *Savings.* The production subsystems are livestock, trees, banking services and farming inputs such as seed
- *Animal feed.* These are acquired from grasses, forage, crop residues and feed crops

Lower priority needs are

- *Energy.* Acquired from firewood, fallow plants and crop residues
- *Shelter.* Acquired from timber, NTFPs and purchased wood
- *Medicine.* The main production subsystem is medicinal crops
- *Trade.* The production sub-systems are materials for cottage industries, such as timber and NTFPs

Possible Household Strategies for Food Security

This research has shown that there are three main strategies for the household to get rice to consume. These strategies are:

1. try to grow all of its own rice in padi or hai
2. generate income to buy rice
3. substitute other foods to eat, by collecting wild foods, growing other crops and getting money to buy food

Strategy one is often used, but also often fails. Strategy two is employed by cash crop farmers, shop keepers and those with other full-time jobs. Strategy three is less popular as rice remains the favoured food crop. These strategies will be investigated further in the household diagnostic research.

Future Research Indications

This report represents a general overview of the village survey data. Many other kinds of analysis are possible; this research provides a broad overview and general understanding of the livelihood systems, problems, coping mechanisms and opportunities at the village-level. It also meets the basic information requirement before in-depth diagnostic research and in-depth household livelihood research.

Indications for future research are:

- Continuation of existing research-and-development lines
- In-depth diagnostic research to understand the nature and severity of food security problems (purposive sampling)
- In-depth household livelihood studies to understand how households are coping with food insecurity (nutritional adaptations) and other problems (wealth-stratified sampling)

- Area-based studies at district level to understand the processes behind increased population pressure on resources (spontaneous migration, relocation, land use planning issues)
- Policy studies to understand how policy makers might better assist the Districts to achieve national goals in rural development, poverty alleviation and sustainable use of natural resources

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