

CHAPTER VI

CONCLUSION OF THE STUDY ABOUT LAND-USE CHANGE AND IMPACT OF POPULATION GROWTH AND LAND ALLOCATION SCHEME

6.1 Agricultural Land

Increase land pressure in the highlands of Laos (particularly in Huay Khang village) results in a stressed farming system. Farmers develop adaptive strategies by changing and diversifying their land use, and by modifying their cultivation practices. Many of these adaptations have both positive and negative effects on a sustainability of farming systems. The impacts of land-use changes on sustainability will depend much on the local circumstances and on the point of view one takes. In general, it is felt that the present situation is a transitional one. The rapid transformation is accompanied by a fast diversification of household strategies. Some households who have fields close to the road, having good soils and access to irrigation water are in a good position to make a successful transformation towards sustainable farming systems. Other households which are lacking these necessary resources are facing declining productivity and are forced to look for other opportunities, such as off-farm activities or migration to another places.

How can highland farming be improved? First, it is important to note that many indigerous innovations are already at work, although sometimes on small scale. Examples are mulch lines, salt spraying and incorporation of ashes via tillage. These unconventional methods deserve more attention, as they prove to be useful and are already adapted to the local conditions. Further improvements via farmers themselves, possibly combined with outsider knowledge could make these measures more optimal.

If local solutions are not available, a good understanding of the problem is necessary. Exact identification of a problem is fifty percent of the solution. For

example: understanding farmers' incentives to implement or to ignore soil conservation makes the selection of alternative measures quite easy. Diagnostic on-farm surveys combined with informal discussions and participatory rural appraisal (PRA) exercises are ideal tools for the identification of agricultural problems.

Testing of alternative solutions can be successfully done by the interaction between on-farm experimenting and on-station testing. In Huay Khang village, the re-allocation of land should be considered again by using the criteria below:

- 1) The average area of an upland plot should be at least 1.0 hectare.
- 2) An average of 4 plots per family (or 4.0 hectares) rotated annually would be required to maintain a productive upland rotation; some families would require less than 4 plots, others would require more, depending on their labor force.

6.2 Forest Land and Forest Changes

A greater responsibility together with corresponding authority to village communities in the management of their respective territories as well as their natural resources therein as communal resources should be delegated. A challenge to be addressed is how to enhance the technical and organizational capacity of the village community so that the community acts as a viable unit of collective action to deal with the problems of managing communally held natural resources in an environmentally sustainable and socially equitable manner.

As we know, the Hardin's "tragedy of the commons" occurs because: (a) anyone is free to use the commons, i.e., access to the commons is not controlled; (b) there are no rules and regulations governing the use of the commons, i.e., no one is restricted on how many animals to graze, where to graze, and when to graze; and (c) no one has incentives to invest in the care and maintenance of the commons.

The mere presence of common ownership does not solve these characteristic problems of the commons. Those problems require collective action by the community involved in the use of communal resources. Whether such collective action actually occurs, and whether it is effective, depends on many factors affecting the activities of the community to act collectively and the incentives of individual community members to behave in a rational manner.

Three collective-action problems--(a) access control; (b) regulation of use; and (c) resource maintenance--are characteristics of community-based resource management systems. If village communities succeed in establishing and enforcing rules and practices conducive to such collective action, they may be less subject to the "tragedy of the commons." In fact, a large number of successful commons have been found around the world including Lao PDR. The finding derived from studies of these successful community forest management practices provide us insights relevant to the design of community-based resources management systems.

(a) Access Control

The village community must attempt to control entry by outsiders into the communally held natural resources. In undertaking access control, however, technical problems must be resolved. In general, the technical problems in access control depend on: (a) whether the physical boundaries of the communal resource in question are defined; (b) whether the persons who are eligible to use the communal resource in question are defined; and (c) to what extent the communal resource in question is essential for livelihood among the local people. First, if physical boundaries are vague and easily permeable, both the technology for physically demarcating boundaries and the cost of monitoring them will be problematic. Second, if it is difficult to identify outsiders, recognizing who should be controlled will be a difficult task. Third, if the resource in question is very essential for livelihood (i.e., owing to its income-yielding function), outsiders may attempt to gain access in more persistent manner. These factors vary with the size or extent of the resource in question. The larger the resource, the more difficult access control becomes.

The ability to exclude outsiders may be related positively to solidarity of the community. Lack of solidarity among communal resource users may result in less collective interest in access control. The solidarity of the community, however, does not automatically result in successful access control. Individual community members still have incentives to free-ride in the provision of access control as long as it is undertaken collectively. Contributing to or paying for access control, therefore, requires collective action capable of limiting the option of free-riding.

(b) Use Regulation

Successful exclusion of outsiders and non-payers (free-riders) does not guarantee that the “tragedy of the commons” will be avoided, because the communal resource users will still have incentives to maximize their individual interests. They will try to obtain as many resource units as possible once they have gained access to the resource. Without limits on actual use, they may fully deplete the commons and “tragedy” will ensue.

Access control and use regulation are complementary means of maintaining limits in use. While access control refers to who is allowed to use the resource in question, use regulation refers to when, how and what to use.

Use regulation can be classified into three types. The first type is regulation of timing in use. Timing is important to resource renewability. For example, collection of a particular kind of non-timber forest products must be regulated in its critical growth season. The second type is regulation of use quantities, often critical to resource renewability. Use beyond a sustainable yield limit can fatally damage the resource. The third type is regulation of means to use the resource in question.

(c) Resource Maintenance

Appropriate access control and regulation of use are necessary condition of resource maintenance if maintenance is to be productive. If a group of farmers invest their labor and time in maintenance activities of a communal grazing area, but nothing is done to prevent individual member’s animals (or outsider’s animals) from consuming much of the increase in grass, maintenance of the grazing area by this group would have no productivity. But with use-limits in place, group efforts to maintain the grazing area can increase its productivity for all group members.

The maintenance of a communal resource consists of a series of maintenance activities though time. The benefits of maintenance are generally subtle and time-delayed. If one activity in the series is missing, the effect on the condition of the communal resource is not immediately or easily noticeable. Even two or three maintenance activities may not make a noticeable difference if they are missing. Each maintenance activity by itself has a negligible effect. The omission of maintenance is often difficult for users to detect until maintenance has been deferred too long. The

accumulation of a number of maintenance omissions will create a serious problem at some point. Maintenance activities, therefore, should be scheduled ahead before the communal resource loses its productive capacity.

In addition, sanctions are widely adopted for the infringement of communal resource rights and the breaking or ignoring of locally-formulated rules governing the use and maintenance of communal resources. Four principal types of sanction are used: i) social sanctions including ridicule, shaming, and banishment; ii) economic sanctions including monetary and in-kind fines; iii) physical punishment; and iv) supernatural sanctions.

6.3 Recommendation and Conclusion

The work so far confirms that the theories used some time may be suitable for some period. From the research, the in-migration created population pressure in this village and consequently led to deforestation. The market oriented mechanism of the Lao government by introducing the new cash crop varieties into this village also increases the needs for additional land for agricultural purpose leading to land management without a proper technique on which can conserve land and water and possible continuation of forest degradation. Policies and strategies of the government in land management and allocation seem not suitable for all situations by some reasons such as the introduced sustainable agriculture is not so convinced to the villagers because of lack of good market system and the villagers are still using their own traditional techniques.

Another issue is the ongoing transformation in the villages, related to the government policies such as the land-forest allocation process. New technology, new crops and markets will support the sustainable development versus more land for shifting cultivation. Because there are a number of initiatives coming up in the village—rice bank formation, loan for members who cultivate on sloping land by using new technology technique through saving group establishment, family planning, etc. — as well as other activities such as migration out and in. All in all, it appears that the land-forest allocation activities have generated a very dynamic process where

villagers start to discuss and decide on land use planning and other future activities and also how to address the market economy.

The land use change is a complex process and is caused by a number of factors. The population pressure is one of those. To better understand the process of land use change and be able to predict future change, further study should be carried out by taking more variables into consideration such as the accessibility, the government policy etc.

Moreover, the procedure of Land-Forest Allocation activities should be deferred while attention is focused on conservation and livelihood activities in the village forest and agricultural zones based on assessments of problems, opportunities and threats. Developing the capacity of villagers to manage and use the resources as defined in village agreements should be an important aim of the procedure.