

มหาวิทยาลัยเชียงใหม่
Chiang Mai University

APPENDICES

Appendix 1: Participatory Rural Appraisal (PRA) Approach

Until recently, planning for rural development was often based on formal surveys which often took too long and concerned too many resources. Fixed questionnaires were used, focussing on statistical significance. Normally, the approach was “top-down” and few local people were involved.

Government officers and other planners made most of the decisions. The results of this approach were not encouraging.

Having had this experience, the extension planners and researchers began to interact more intensively with local people in the planning process. The rapid rural appraisal (RRA) methodology was gradually developed during the 1970 and 1980 it was initially based on experiences from the farming System Research carried out by various international agricultural Research Centers.

Participatory Rural Appraisal (PRA) approach is a further development of RRA principles with more emphasis on active involvement of the local people in the decision making and planning.

The participatory approach is based on the principle that the local people have a lot of knowledge about their own problems and potentials, and that development activities will be effective only if they are fully involved.

In the planning process, information from the local people can be obtained in many ways e.g. through individual or group interviews or through public meeting. But it is not enough to treat the community only as a source of information that specialists can use in planning their activities.

Interaction, discussion, and consultation with full participation of the people must take place, to reach the ultimate goal, where people plan their own activities themselves, combining local knowledge and expert knowledge to reach a consensus of the whole community.

SOME IMPORTANT FEATURES OF PRA

1. **Non statistical:** More emphasis on descriptive data (qualitative data) rather than on numerical (quantitative data) fit for statistical analysis.

2. **Relatively quick:** Different from the formal surveys which go on for years.
3. **Interaction:** Active participation by local people and extension workers in all decisions and activities.
4. **A learning process for all involved:** Sharing knowledge helps to bridge knowledge-gaps.
5. **Multi-disciplinary:** Rural development touches on many disciplines and agro-forestry uses knowledge from agriculture, forestry and social sciences. An approach based on a single discipline will not succeed.
6. **Highlights both problems in land use and unexplored potentials and opportunities:** Over emphasis on problems, which always creates expectations for outside solutions, will weaken the capacity of people and overlook the local potentials and resources hidden within the community which can be tapped to solve problems locally.
7. **Builds self confidence and trust:** The process of consultation, listening to the people, involving them patiently, and showing genuine love and respect builds mutual trust and self confidence, which will lead to more commitment to the development work.

Appendix 2: TEN BASIC STEPS FOR SETTING UP THE SLOPING AGRICULTURAL LAND TECHNIQUE (SALT) SYSTEM

The basic steps for setting up SALT system are:

Step-1: Making an A-Frame

The A-frame is a simple device for laying out contour lines across the slope. It is made by nailing together three wooden poles in the shape of the capital letter A, with a base of about 90cm. A carpenter's level is then mounted on the crossbar.

As a cheaper alternative, one can use wooden or bamboo poles of around 1.5 inches in diameter. Two of these poles should be 2.1m long and the third one 1.2m long. The two longer poles are nailed or tied at one end, about 10cm from the end. These will form the legs of the A-frame. Notches are made at the points of contact so that the poles do not slip.

The legs are spread and braced with the shorter pole to make the Figure- "A". The crossbar is tied or nailed, about 10cm from each end, to the centre of the legs. The crossbar supports the legs of the frame and serves as a guide in checking ground level positions.

One end of the string is tied to the point where the two legs of the A-frame are joined. The other end of the string is tied to a rock or any other heavy object. A point to be noted here is that the rock should be heavy enough to stay still against the wind and, second, the rock should hang about 20cm below the crossbar.

Calibration of the A-frame is done on level ground. While holding the A-frame in an upright position, three spots are marked, two on the ground where the legs of the A-frame touch it and one on the crossbar where the weighted string passes it. Then the A-frame is turned around so as to reverse the placement of the legs on the earlier spots and the marking on the crossbar repeated. If the two marks on the crossbar coincide, this is the central point. If, however, the marks on the crossbar differ, another mark is made at the mid-point between the two.

The calibration accuracy of the A-frame is verified by moving one leg of the frame around until the string passes the level point on the crossbar. The spot on the

ground is marked and the placement of the A-frame legs changed again. For correct calibration, the string should pass through the same marked central point.

Step-2: Locating Contour Lines

Contour lines are lines across a hill slope at the same elevation or height and are used in the establishment of SALT hedgerows. Understanding the concept of contour lines is important because effective erosion control through SALT depends much upon the correct establishment of contour lines and, if incorrectly designed, it could, in fact, aggravate soil erosion or be of little use.

The reason behind establishing contour lines is to maintain equal vertical distance between hedgerow lines. For effective erosion control, experience has shown that the vertical distance between contour lines should be maintained between 0.75m (slope gradient below 15%) and 1m (slope gradient above 15%). The horizontal distance between the two contour lines does, however, vary with the degree of steepness. For example, as the contour lines travel across a hillside, they will be at a closer distance on the steeper parts of the hill and vice versa.

For making contours, it is desirable to study the land first and to visualize where the contour lines will run and what the area will look like when terraced, particularly the height and width of terraces. Other helpful tips include always looking behind at the line of stakes and assessing whether the lines are running parallel; getting a feel of the main direction of the slope because the contour lines will have to run perpendicular to this direction; and not following the exact contour lines from peg to peg but looking ahead and smoothing out the line by taking a line of "BEST FIT" between the stakes. Following the peg to peg method may in all probability create a zigzag line.

Before marking the contour lines, it is desirable to clear vegetation and other obstructions from the strip of land through which the contour lines are likely to pass. Contouring should be started from the highest point going downwards.

In the application of SALT-2, i.e., the agri-livestock system, contour lines are marked over the land selected for forage production in such a way so as to form one meter wide raised beds. Two furrows, both a half meter wide, are made on each contour, and NFT hedgerow forage plants thickly planted on them.

The contour lines are marked commonly by using the A-frame. A stake is driven at a point on the area boundary and one leg of the A-frame placed just beside and above it. Then the other leg is swung around until the mid-point of the crossbar, or the carpenter's level, shows that both legs are touching the ground on the same level. Then a stake is driven beside the A-frame's rear leg.

To mark the whole contour line, the A-frame is moved around by placing one of its legs on the last spot marked on the ground and then finding the contour and marking it with the stake. The process is repeated until one reaches the other end of the field. An important point is to keep rotating the A-frame, so that the person operating the A-frame faces it's A and B sides on every alternative contour marking process.

The same process of contour marking is repeated until one reaches the bottom of the hill.

Contouring work is generally started in the middle of the sloping field, downwards to the bottom of the field, and then from the middle upwards to the top. This helps to minimize cumulative errors. This is a matter of farmers' preference and no hard and fast rules exist.

The vertical spacing of 1m to 1.5m between contour lines is measured using various methods. Farmers have been using shoulder height and arms, in most cases. A more success method is to measure the vertical distance on contour lines by looking over a "T-stick" of appropriate height, back at the previous contour line.

The actual distance between the contour lines however, varies with the slope of the hill. The practice so far has been to limit the distance of the contour lines to two to five meters, even the distance arrived at by using the standard techniques differs from this. This could happen very often on gentle or steep slopes. The logic behind this is that, if the contour hedgerows are too far apart, the benefits of mulching and nitrogen fixation may not evenly distributed throughout the contour strip.

Although marking contours with the A-frame is a slow process, this is the only method that does not require any purchased inputs and is thus within the reach of farmers. It has been found to be consistently accurate on very steep and heterogeneous slopes also.

Several other alternative methods are also known and used for marking contour lines. Among them, the hose-level is the most accurate low-cost method and is preferred for making contour lines on gentle slopes.

It is possible with the hose-level to measure to a precision level of better than 0.1 percent. Another advantage is that the two positions can be marked at any distance from each other up to the maximum length of the hose.

Step-3: Preparation and establishment of Contour Lines

The simplest soil erosion control structure is a contour hedgerow, usually of nitrogen-fixing trees/shrubs. This living wall of plants slows down the passage of rainwater and traps soil to slowly form natural terraces. The contour lines are prepared by cultivating or ploughing one and a half to one meter-wide strips along the contour lines. The stakes pegs serve as guides during the preparation of the contour lines for planting.

Step-4: Planting Nitrogen-fixing Plants and Trees/Shrubs

For establishing a double hedgerow of plants, two furrows, one to a half meter apart are dug. Plantation is carried out on these furrows by either sowing seeds of appropriate species or by planting cuttings of some species instead of seeds. When seeds are planted, the usual practice followed is to sow two or three seeds per hill at a distance of one-fourth of an inch between the hills. The seeds of some species need to be soaked for varying time periods before sowing, and the depth at which the seeds should be planted also varies depending on the species.

The farmland marked for planting forage crops should be established six to eight months before goats or other livestock are brought in. Hedgerow species that are palatable, high in protein, fast coppicing, an high-yielding forage crops are recommended for planting. A suggested composition of forage crops is 50 per cent *Desmodium rensonii*, 25 per cent *Flemingia congesta*, 20 per cent *Gliricidia sepium*, and 5 per cent grasses like napier. The hedgerows can be pruned regularly between 0.5-1.0 meter above the ground for animal forage. The missing hills of the hedgerows maintained for forage should be located and related regularly. Weeds can also be planted according to need.

When fully grown, the hedgerows bank the soil and serve as sources of fertilizer. The ability of nitrogen-fixing tree/shrub species to grow on poor soils and in areas with long dry spells makes them good plants for restoring forest cover on watershed slopes and on other lands that have been denuded of trees. Through natural leaf drop, they enrich and fertilize the soil. In addition, they compete vigorously with the coarse grasses that are common on degraded lands that have been deforested or depleted by excessive cultivation.

Ipil-Ipil (*Leucaena leucocephala*) is the best example of nitrogen-fixing trees for hedgerows on a SALT farm. Other plant species tried successfully are – *Flemingia congesta*, *Acacia villosa*, *Gliricidia sepium*, *Leucaena diversifolia*, and *Desmodium spp.* Such as *D. gyroides*, *D. distortum*, and *D. discolor*.

To maintain diversity, it is always recommended that different species be planted in the two adjoining hedgerows. Using a combination of species in the hedgerows is desirable in order to minimize the risks of attacks from pests. Where time is of no importance, the trees can be left to grow until they are four to five meters high which, by then, should form a shade that will kill the grasses and eliminate the need for cutting them.

Step-5: Cultivating Alternate Strips

The land space between the thick rows of nitrogen-fixing trees/shrubs, where the crops are planted, is called a strip or “alley”. The system of alley cropping is an attempt to integrate traditional forest management practices and natural nutrient cycling processes into a more intensive, productive, and sustainable farming system. Fast-growing legumes are planted in hedgerows along the alleys. Contour farming is similar to alley cropping but is practiced on sloping lands and is designed to reduce soil erosion and water runoff.

If it is necessary to cultivate the land before the nitrogen-fixing hedgerow plants are fully grown, then it is recommended that crops should be planted on alternate strips of 2, 4, 6, 8, and so on. In alternate strip cultivation, the uncultivated strips would collect the soil that erodes from the higher cultivated strips. Once hedgerows are fully grown, every strip can be cultivated.

Step-6: Planting Permanent Crops

Perennial horticultural crops may be planted at the same time that the hedgerows are planted. These species of permanent crops vary according to the agro-ecological zone and farming system in question. For example, at MBRLC in the Philippines, coffee, cacao, banana, and citrus have been grown successfully. In areas that are not cultivated, the spots for planting can be cleared. Under SALT, planting permanent crops on every third strip is recommended. Tall crops are planted at the bottom of the hill, while the short ones are planted at the top to avoid shading.

To avoid further soil disturbances, $\frac{3}{4}$ of the agricultural area in SALT-2 is placed under long-term perennial crops and $\frac{1}{4}$ under short-term annual crops.

As permanent plants of forestry tree species under SALT-3 system, MBRLC has experimented with the following tree species- *Samanea saman*, *Acacia auriculaeformis*, *Pterocarpus indicus*, *Sesbania sesban*, *S. formosa*, *Calliandra calothyrsus*, and *Leucaena direfolia*. All species are planted in pure stands.

Agro-climatically, wherever possible, bamboos are recommended for planting in the space between the upper and lower sections of the farm. The trees can be harvested between 5-10 or 11-15 or 16-20 years of age, depending on the species and the needs. Short-term trees yield poles and fuel-wood, medium-term trees provide materials for furniture, construction and leaf meal, and long term species provide valuable quality timber in the form of saw logs.

Farmers may also want to raise sheep or poultry in this small forest. Ring weedings carried out and other efforts are also made to improve the tree stands.

In the SALT-4 model developed at MBRLC food crops occupy 20 per cent of the total farm size and are planted on the lower portion of the farm, while fruit trees are planted on the upper portion of the farm. The fruit trees occupy about 60 per cent of the whole farm area.

This is however, quite flexible and, over the years, several interesting modifications have been made in the SALT-4 system. For example, whole farmlands of the farmers are planted with plantation crops or fruit crops and double hedgerows are developed in between on the contours to allow natural formation of terracing and to maintain soil fertility. Several instances have been recorded in which farmers made modifications according to their convenience. Some preferred to plant the entire area

with fruit trees and planted crops in between, while others proportioned their land according to their landholding and access to markets for selling fruits.

Step-7: Planting the Short-term Crops

Short-term and medium-term, income generating crops are planted between strips of permanent crops as a source of food and cash income, while waiting for the permanent crops to bear fruit.

While in SALT-2, food and cash crops are grown on the upper half portion of the farm so that the soil loosened due to cultivation is caught at the lower half portion by the forage crops. In the SALT-3 model, annual food or cash crops may be grown between the trees for some years.

Step-8: Trimming the Hedgerows

One year after planting, the hedgerows are coppiced at a height of 1 to 1.5m from the ground, every 30 to 45 days. The cut leaves and twigs are piled at the base of the crops to serve as organic fertilizers for the crops. In this way, the need for more inorganic fertilizers is reduced to a minimal level. There is, however, a word of caution that the time period for coppicing, i.e., 30 to 45 days, has been found suitable for the warmer tropical conditions prevailing in the Philippines. This may not be the same under all agro-climatic conditions, for the growth rate of hedgerows would differ and this is what determines the periods of trimming in a particular location. For example, under cold climatic conditions, trimming may be appropriate only once or twice a year but it could be around three times a year in wet temperate Himalayan environments and more frequent in the mid-hills.

Step-9: Management of the SALT System

The annual crops are always rotated to maintain productivity, fertility, and good soil formation. A good way of doing this is to plant grains, tubers, and other crops in strips where legumes were planted previously and vice versa. Other crop management practices can be followed as per requirement.

In SALT-2, it is recommended that the goat pen should be constructed in the middle of the farm, between the boundary of the forage garden and the agricultural

area, in order to save time and labor in hauling manure out to farm and carrying forage to the goats.

A floor space of 20 to 25 sq.ft. per goat is recommended. For convenient removal of manure, the floor is raised about four feet above the ground, with floor slots nailed about ½ inch apart. Essential divisions and fixtures in the goat house are the kid's separation pen, milking stanchion, milk-room, feeding trough, grass rack, and water and salt trough.

Goats, or other animals of choice, should be brought in only after six to eight months, when the forage garden is well established. The recommended breeds for best results in captive feeding are the purebred, the crossbred, or the upgrades of *Nubian*, *Alpine*, and *La Mancha*. In case these breeds are not available, one may start with any other biggest, available goat. A good stocking pattern is one buck and 12 does good stocking pattern is one buck and 12 does per ½ hectare of a well-developed agro-forestry/forage farm.

Dairy goats need concentrates (high energy feeds) aside from the forage (high fibre feed). Goats should be given forage composed of at least 10 per cent of their body weight along with plenty of water and some salt.

Farmers will have products for marketing, i.e., (I) milk which will have to be sold daily; (ii) the kids of the goats which can be marketed after 10 to 12 months when they weigh between 35 to 55 kg.

SALT-3 requires the following additional processes – setting up an agro-forestry nursery, managing the seedlings, finding contour lines on the upper half portion of the farm, and establishing the tree components. In SALT-3, developing ½ hectare of the three plantation area on the upper portion of the farm is recommended. The tree crops are compartmentalized. To meet the three-fold objective of soil rehabilitation, firewood production, and growing timber, the land use is maximized by following the strategy of creating small wood lots of high density.

The products from this farmer forest can be harvested at appropriate times, processed, and then marketed. In the forestry component, forage from pruning and fuel-wood and round-woods from thinning can be obtained right from the second year onwards.

SALT-4 requires the following additional steps: setting up a nursery area on the farm, locating and preparing the contour lines for planting hedgerows in the orchard, and planting food crops on the lower portion of the farm.

Step-10: Building Green Terraces

Apart from ensuring better crop production, the intended role of SALT is to contain soil erosion. This is done by the double hedgerows of nitrogen-fixing plants. As the farmers go on farming, year after year, they keep gathering and piling up straw, stalks, twigs, branches, leaves, rocks, and stones in the space between the two hedgerows.

As the years go by, soil, mud, and other materials piled up at the base of the hedgerows facilitate the building of permanent, naturally green terraces which are stronger and more viable than mechanically built terraces. Among the cultural practices that farmers need to follow in SALT-farming are weeding, pruning of hedgerows at 30-45 days' intervals), planting hedgerow strips, and controlling pests and diseases. In addition, to facilitate natural terrace building, it is desirable to keep on adding stones and branches at the center of the hedgerows..

Remarks:

Detailed sketch maps of each portion of land transferred is included on the back of this document.

The Temporary Transfer of Land Use Right document is produced in 3 copies:

- 1 copy is retained by the person granted the land use right.
- 1 copy is retained by the village head.
- 1 copy is retained by the District Agriculture and Forestry Office.

The Temporary Transfer of Land Use Right document is effective for a period of 3 years from the day it is signed.

Signed and Acknowledged
by the Village Chief

Transferee

Dated,
District Forest and
Agricultural Land
Allocation Committee

Lao People's Democratic Republic

Peace Independence Democracy Unity Prosperity

Luang-Prabang Province

Xieng Ngeun District

Agriculture and Forestry Office

No. _____XNg.DAFO

LAND USE CONTRACT (Form)

(translated)

- Based on the policy guidelines of the Party and the State on the allocation of land for production, management and sustainable use by families.
- Based on the work directives in the allocation of village, district and provincial land and forest to families for management and sustainable use.
- Pursuant to the proposal for the right to manage and use land by Mr....., domiciled at Unit....., No....., of.....Village,District,Province, whose family includes....members and labor units.

The District Agriculture and Forestry Office representing the State has surveyed and measured the production areas of the proposer on the date of The said land has an area of hectares, meeting the standards and conditions for production the details of which are included in the Temporary Transfer of Land Use Form No DAFO, dated

Both parties have agreed to enter this Contract on the Management and Use of Land as follows:

The Xieng Ngeun District Agriculture and Forestry Office, hereinafter called the State. The farming family hereinafter called the person receiving the right to manage and use land. Both parties have agreed to manage and use the land as follows:

Article 1: The State acknowledges the proposer's right to manage and use the said land in accordance with the laws and regulations on the management and use of forest and agricultural land.

- Article 2: The State (District) shall monitor the use of each piece of land every year, and the person receiving the right to use the land shall use the land in accordance with the following land use management conditions described in Articles 3 and 4.
- Article 3: The person receiving the right for the contracted management and use of land shall every year undertake production in at least one piece of land.
- Article 4: The land managing and using party shall clear the land only within the allocated and measured areas.
- Article 5: If the land managing and using party fails to perform as provided for in Articles 3 and 4, the District Agriculture and Forestry Office shall fine the party as follows:
 - 1st offense: a fine of 5,000 Kip.
 - 2nd offense: a fine of 10,000 Kip.
 - 3rd offense: a fine of 15,000 Kip and the forfeiture of the temporary land management and use right.
- Article 6: In addition to the above conditions in Articles 3 and 4, the District recommends that the person receiving the right to use and manage the land should apply sustainable land use options appropriate to slope zones as follows:
 - 0 - 12% Paddy, terraced paddy, pasture (for livestock), fish ponds, short and long term fruit trees, commercial value trees, tree crops and field crops with conservation measures and practices.
 - 13 - 36% Terraced paddy, short and long term fruit trees, commercial value trees, tree crops, and field crops with conservation measures and practices.
 - 37 - 45% Commercial value trees, tree crops and field crops if necessary with conservation measures and practices.
 - > 45% Conservation of natural forest.
- Article 7: This contract is effective from the day it is signed until further modification.

At Date, 1999

Xieng Ngeun District Agriculture and Forestry
Office (Representing the State)

Receiver of the right to use land
Family of Mr.

Signed and Stamped:

Signature:

Acknowledged and certified by the Village Head

Signed and Stamped:

Lao People's Democratic Republic**Peace Independence Democracy Unity Prosperity**

Luang-Prabang Province

Xieng Ngeun District

Huay Khang Village

**REGULATIONS ON THE MANAGEMENT AND USE OF FORESTS AND
AGRICULTURAL LAND AT BAN HUAY KHANG**

(translated)

In view of the aim to properly manage and use forest and agricultural land in compliance with the provisions on the management and use of forest and agricultural land at the district, provincial and central levels and for the purpose of preserving the forests and the people's living conditions, it is necessary in Ban Huay Khang to form a forest and agricultural land use planning and management committee to assist sustainable forest land use and land management.

1. The Committee is Composed of the Following Members:

- Mr. Amphay, Deputy Village Head: Chairman
- Mr. Houmphanh, Village Forest Volunteer: Deputy Chairman
- Mr. Phaeng, Village Front Organization: Deputy Chairman
- Mr. Lin, Village Policeman: Member
- Mr. Hak, Village Soldier: Member
- Mrs. Ounheuane, Village Women Union: Member

2. Roles and Responsibilities of the Committee

- Disseminate regulations and principles on the management and use of forest and agricultural land to farmers in the village.
- Study, consult and solve villagers concerns on the use of forest and agricultural land within the boundaries of the village.

- Jointly with farmers establish sustainable participatory forest and agricultural land management and use regulations.
- Direct and control the implementation of village regulations and decrees and regulations from higher authorities regarding forest and agricultural land.

3. Location of Ban Huay Khang

Ban Huay Khang is located in the southwest portion of Xieng Ngeun District, 9 km from Xieng Ngeun town and is bordered by 4 villages:

- Ban Huay Khot to the north,
- Ban Pholsavang to the south,
- Ban Keow Nha to the east, and
- Ban Huay Phaeng to the west

4. Particulars of Forest Categories and Agricultural Land.

- Conservation (cemetery) forest: 3.00 ha,
- Protection forest: 207.05 ha,
- Village utilization forest: 115.75 ha,
- Allocated agricultural land: 272.00 ha
- Paddy land: 10.15 ha,
- Plantation: 63.05 ha,

5. Management and Use of Agricultural Land.

5.1 Land Details and Specific Provisions

5.1.1 Agricultural land refers to the production land which has been surveyed, measured and allocated to families for management and use in agricultural and industrial tree production such as: rice paddy field development, upland field crop cultivation, fruit tree orchards (both short term and long term), fish ponds, livestock and other commercial crop cultivation.

5.1.2 The Village agricultural land is located mainly at the foot of the mountains, and in the valleys bordering the banks of the Nam Khan

river and its tributaries (including only the land and river flats less than 100 meters distant from the river banks).* See details on the village forest land category map.

* Note: In fact, the land delineated as village agricultural production land was all that land below the 600 meter contour line, some of which is quite steep and more than 100 meters from the stream banks.

5.1.3 The total village production land area is approximately 345.20 ha out of 690.50 ha of the total village land area, comprising:

- Existing rice paddy fields: 10.15 ha,
- Upland fields: 272.00 ha,
- Plantations: 63.05 ha.

5.1.4 The reserve agricultural land which has not been allocated to families is to be preserved to provide land specifically for new families and those wishing to cultivate crops for income generation.

5.1.5 With regard to the use of agricultural land allocated, all persons managing and using land shall abide by the regulations on the management and use of land as agreed on 24/06/998 as follows:

- a. It is strictly forbidden to clear or develop further areas outside the measured fields allocated to each family.
- b. It is strictly forbidden to cultivate other upland fields and orchards outside the measured and allocated areas for each family.
- c. Each family shall ensure during annual field burning, that fires are controlled strictly so that they do not spread to adjoining fields and the forests.
- d. Before slashing the fields each year, each family shall report to the village PLUMP committee 15 days in advance to facilitate control and monitoring.

5.2 Recommendations on the Use of Agricultural Land

With the aim of ensuring the sustainable and efficient use of allocated land to secure the future living conditions of the families, to preserve the environment,

protect the various types of forest within the boundaries of the village from encroachment by slash and burn practices by the villagers, (and other villages), appropriate land use methods and conservation measures are required. The following land use options based on slope zones are therefore recommended:

- 0-12% slope: Irrigated rice fields, terraced irrigated rice fields, upland rainfed field crops, fruit trees, commercial tree crops, livestock, fish ponds with conservation measures and practices.
- 12-25% slope: Upland rainfed field crops, livestock, fruit trees, commercial tree crops with conservation measures and practices.
- 25-36% slope: Upland rainfed field crops, fruit trees and commercial tree crops with conservation measures and practices.
- 36-45% slope: Upland rainfed field crops (only if necessary), fruit trees and commercial tree crops with conservation measures and practices.
- >45% slope: Preserved as protected forests

6. Management and Use of Forest Areas

Forests and forest lands constitute live natural resources and include crops, various tree species growing naturally, the existence of which is necessary for the preservation of the environment, water sources, soils, animals and forest and for the livelihood of the ethnic people. For the progressive and effective preservation, the following restrictions shall be respected:

- a. It is forbidden to fell all tree species within the village protected forests.
- b. It is strictly forbidden to fell trees, collect forest products and hunt animals under any circumstances, within the village conservation forest area (reserve forest).
- c. It is forbidden to fell prohibited and protected tree species as provided for by the Government in any type of forest without approval from the District Agriculture and Forest Office.
- d. The villagers are authorized to enter the village utilization forest areas (production forest) to collect forest products, however any negative impact on the forest condition will be avoided.
- e. Each family desiring to fell trees for the construction of dwellings, the school, and other purposes will require prior approval from the PLUM committee, and

the Village Head shall request prior approval from the District Agriculture and Forest Office.

- f. It is forbidden to hunt prohibited animal and aquatic species during their reproductive seasons.

7. Sanctions Against Transgressors of the Above and Other Restrictions.

In the case above and other restrictions are transgressed for which these regulations do not provide any sanction, the matter will be handed over to the Forest and Agricultural Land Management and Use Committee in coordination with the Village Head for examination, consideration, proceedings and punishment of the offender in accordance with the gravity of the offence. If necessary, and if no solution or agreement can be reached, the matter shall be submitted to the District Office for examination and decision.

Any offence committed within the village shall be subject to these regulations, or if not provided for herein, shall be reported by the Committee and the Village Head to the appropriate and relevant organization for information and opinion.

Huay Khang, 24/06/96

Acknowledged by the
District Land and Forest
Allocation Directing
Committee

Ban Huay Khang Village
Head

Village Forest and
Agricultural Land
Management and Use
Committee

Appendix 4 SOCIO-ECONOMIC DATA OF HUAY KHANG VILLAGE

Country: Lao PDR

Province: Luang-Prabang

District: Xieng Ngeun

Village: Huay Khang

Date in village: November 08-13, 1999

Second visit: December 13, 1999

Third visit: January 6, 2000

Participants

Staff/Villagers	Office/Village
Mr. Touy Phommachanh	Luang-Prabang Provincial Forestry Office
Mr. Phonekeo Phonphaly	Luang-Prabang Provincial Forestry Office
Mr. Nikorn	Northern Agriculture and Forestry Extension Training Center
Mr. Thongsang	Xieng Ngeun District Agriculture and Forestry Office
Mr. Amphay	Huay Khang Village
Mr. Houmphanh	Huay Khang Village

Village Data

1. Demography

Families	32
Households	36
Population	196
Males	103
%	52.60
Females	93
%	47.40
Labor	75
%	38.26
No. female's heads of households	0
%	0

2. Ethnicity

Main ethnic group	Khamu
Religion	Anamism
Households	32
%	88.90
2 nd ethnic group	Lao Loum
Religion	Buddhism
Households	4
%	11.10

3. Household Status

Medium wealthy	10
%	27.80
Poor	20
%	55.50
Very poor	6
%	16.70

4. Village Organization

Village chief: Mr. Amphay
Village elders: Mr. Phaeng
Women's union chief: Mrs. Ounheuang
Youth group leader: Mr. Hak
Village policeman: Mr. Lin
Forestry extension volunteer: Mr. Houmphanh
Veterinary volunteer: (No)
Agriculture Extension volunteer: (No)

Sources of Income**A. Farming Activities**

1. What is the total area of paddy field (ha)	10.15
How many HH have and cultivate paddy fields?	4
Percentage of HH	11.10
What is the total yield paddy, unhusked? (tons/year)	22.3
What is the yield (rice) per ha ?	
Maximum (t/ha)	2.5
Average (t/ha)	2.2
Minimum (t/ha)	2.0
How much rice does a household produce?	
Maximum (t/year)	25.4
Average (t/year)	23.3
Minimum (t/year)	20.3
Amount of seeds used totally for the village (kg)	507.5
Amount of seeds used for 1 ha (kg)	50
Yield unhusked rice per kg seeds	44
How many HH produce for the market?	1
% of HH	2.80
Estimate amount sold, kg husked rice	1,000
Estimate number of hectare used for market production	1.00
2. What is the total area used for shifting cultivation (ha) in 1999	134.50
How many HH practice shifting cultivation?	35
Percentage of HH	97.20
What is the total production? (metric ton)	121.05

What is the yield per hectare?	Maximum (t/year)	1.2
	Average (t/year)	.8
	Minimum (t/year)	.6
How much rice does a household produce?	Maximum (t/year)	161.4
	Average (t/year)	107.6
	Minimum (t/year)	80.7
Responsible	1) women 2) men	Men
Main labor	1) women 2) men	Women
Amount of seeds used totally for the village (t)		8.07
Amount of seeds used for 1 ha (kg)		60
Yield unhusked rice per kg seeds (kg)		13.30
How many HH produce for the market		0
% of HH		0
Estimate amount sold, kg husked rice		0
Estimate number of hectare used for market production		0
3. How many HH cultivate vegetable garden?		33
Percentage of HH		91.60
How many HH produce for the market		0
% of total HH		0
If selling, how much does a household earn?	Max (kip/yr)	0
	Average (kip/yr)	0
	Minimum (kip/yr)	0
Responsible	1) women 2) men	Women
Main labor	1) women 2) men	Women
4. How many households raise animals?		36
4.1. How many households raise buffaloes, cattle?		11
How many cattle and buffaloes are they raised?		27
How many HH selling in the market		0
% of HH		0
If for market, how much does a HH earn?	Maximum (kip/yr)	0
	Average (kip/yr)	0
	Minimum (kip/yr)	0
Responsible	1) women 2) men	Men
Main labor	1) women 2) men	Men
4.2. Pigs, No of HH		4
How many pigs are they raised?		12
How many HH selling in the market		0
% of HH		0
If for market, how much does a HH earn?	Maximum (kip/yr)	0
	Average (kip/yr)	0
	Minimum (kip/yr)	0
Responsible	1) women 2) men	Women
Main labor	1) women 2) men	Women

4.3. Goat, No of HH			2
How many goats are they raised?			14
How many HH selling in the market			0
% of HH			0
If for market, how much does a HH earn?	Maximum (kip/yr)		0
	Average (kip/yr)		0
	Minimum (kip/yr)		0
Responsible	1) women 2) men		Men
Main labor	1) women 2) men		Men
4.4. Fish raising, No of HH			6
Number of fish ponds			8
How many HH selling in the market			6
% of HH			16.60
If for market, how much does a HH earn?	Maximum (kip/yr)		Na
	Average (kip/yr)		Na
	Minimum (kip/yr)		Na
Responsible	1) women 2) men		Men
Main labor	1) women 2) men		Men
4.5. Poultry raising, No of HH			25
How many poultry are they raised?			480
How many HH selling in the market			Some time
% of HH			Na
If for market, how much does a HH earn?	Maximum (kip/yr)		Na
	Average (kip/yr)		Na
	Minimum (kip/yr)		Na
Responsible	1) women 2) men		All
Main labor	1) women 2) men		All

B. Non-Farming Activities

5. How many households generate income from service/trade?			2
% of HH			5.50
How much does each HH earn?	Maximum (kip/yr)		Na
	Average (kip/yr)		Na
	Minimum (kip/yr)		Na
Responsible	1) women 2) men		Men
Main labor	1) women 2) men		Men
6. How many HH generate income from other work?			24
% of HH			66.60
How much does each HH earn?	Maximum (kip/yr)		Na
	Average (kip/yr)		Na
	Minimum (kip/yr)		Na

7. How many households collect/generate income from forest products and NTFPs?

	Timber/poles	Firewood	NTFPs
Total no of HH	36	36	36
No of HH for market	0	0	34
Max income (kip/yr)	0	0	1,470,000
Average income (kip/yr)	0	0	73,530
Minimum income (kip/yr)	0	0	9,000
No of HH for subsistence	36	36	36

8. Hunting

Type of animals, extent of change over time etc.

Depends on animals allowed by Forestry Law, particularly small size animals and birds.

Gender –1) women 2) men

1. Paddy	Production	men and women
	Marketing	Women
2. Shifting cultivation	Production	men and women
	Marketing	Women
3. Vegetable garden	Production	Women
	Marketing	Women
4. Animal husbandry	Production	Women
	Marketing	Men
5. Fisheries	Production	Men
	Marketing	Men
6. Service and trade	Production	men and women
	Marketing	men and women
7. Handicraft	Production	men and women
	Marketing	men and women
8. Home industry	Production	No
	Marketing	No
9. Forest produce	Production	men and women
	Marketing	men and women
10. Employment	Women	No
	Men	Yes

Land Availability

1. What is the total area of paddy fields belong to this villagers? (ha)		3.25
How much does a household posses?	Maximum (ha)	1.00
	Average (ha)	.54
	Minimum (ha)	.12
How many HH have paddy fields?		4
% of HH		11.10
How many HH have female names in land tenure?		0
What is the percentage of female names?		0
2. What is the total area of individual forest land used for shifting cultivation? (ha)		66.33
How many HH have individual shifting cultivation land?		33
% of HH		91.60
How much does a household posses?	Maximum (ha)	4.76
	Average (ha)	2.01
	Minimum (ha)	.21
How many HH have female names in land tenure?		0
What is the percentage of female names?		0
3. What is the total area of individual forest land used for teak p'antation? (ha)		8.71
How many HH have teak plantation?		7
% of HH		19.45
How much does a household posses?	Maximum (ha)	2.45
	Average (ha)	1.25
	Minimum (ha)	.78
How many HH have female names in land tenure?		0
What is the percentage of female names?		0
4. What is the total area of individual forest land used for porsa plantation? (ha)		2.43
How many HH have porsa plantation?		4
% of HH		11.10
How much does a household posses?	Maximum (ha)	.84
	Average (ha)	.60
	Minimum (ha)	.28
How many HH have female names in land tenure?		0
What is the percentage of female names?		0

5. What is the total area of individual forest land used for banana plantation? (ha)	4.31
How many HH have individual shifting cultivation land?	3
% of HH	8.30
How much does a household possess?	
Maximum (ha)	3.00
Average (ha)	1.43
Minimum (ha)	.59
How many HH have female names in land tenure?	0
What is the percentage of female names?	0

6. What is the total area of land allocated to the village? (ha)	690.50
Cemetery (Conservation forest)	3.00
Protected forest	207.05
Utilization forest	115.75
Upland agricultural land	272.00
Home-garden	3.75
Fruit tree plantation (banana)	4.31
Forest tree plantation (teak)	52.56
NTFP's plantation (porsa)	2.43
Paddy field	10.15
Settlement and other areas	19.50

7. Land conflicts – past, present

- Mostly are insufficient land ownership for long term rotation as needed.
- Border of the upland field is not clear enough.
- Burn the weeds in one upland field but fire continue to burn the other fields nearby.

Specific gender issues

- There is neither special activity nor group formation to generate cash income in the form of co-operative.

Other issues

Education

- There has only one primary school in the village. All of the 5 teachers live in the surrounding villages.
- Only 9 schoolers attend the secondary school in the Xieng Ngeun town.

- More than 50% of the children are not attend to school, because some said that they are not enough money to pay for the school fees or their families are still need labors.

Communication

- Most of households have radios, but only one has Television and video player.
- There have government buses and private pick up cars drive many times per day passed this village. And the ticket price is around 500-1,000 kip to go to Luang_prabang city.
- Only 4 bicycles and 1 motorbike belong to the people in the village

Village Development Plan

- Group of hand weaving for women formation, but it still is in the stage of planning.
- 3 families were selected for joining with the Lao-Swedish Forestry Project (LSFP) as the experimental fields for sustainable sloping land agriculture testing.
- Saving and loan group formation with support fund by LSFP for 500,000 kip as grant.
- There is no clearly village development plan.

CURRICULUM VITAE

Name and Surname : Sianouvong SAVATHVONG
Date of Birth : 13th March 1962 **Sex :** Male **Marital Status :** Married

General Education :

Year	Duration	Subject	Qualification	Place
1968-74	6 years	Elementary school	Certificate	Luang-Prabang (Lao PDR)
1974-77	3 years	Junior-high school	Diploma	Luang-Prabang (Lao PDR)
1977-80	3 years	Senior-high school	Baccalaureate	Luang-Prabang (Lao PDR)

Professional Qualification :

Year	Duration	Subject	Qualification	Place
1980-83	3 years	Forestry	Diploma	Forestry School (Lao PDR)
1987-90	3 years	Forestry	Equivalent to Bachelor	Forestry College (Lao PDR)

Work Experiences :

Year	Position	Working Area
1983-86	Field manager	Fruit and Forest Tree Propagation and Planting in Nam Dong Watershed Management Project
1987	Head, Technical & Land Use Planning	Land Use Planning in Luang-Prabang Watershed Management Project
1990-94	Head, Technical Cooperation & Planning	Luang-Prabang Provincial Forestry Section
1995-present	Chief of Section	Luang-Prabang Provincial Forestry Section