

Lao Peoples Democratic Republic

Peace - Independence - Democracy - Unity - Prosperity

Technical Booklet 3

Forest and Land Use Zoning

**System 1
Participatory Village
Development and
Sustainable Land Use**

Lao-Swedish Forestry Programme, June 2001

Foreword

The Government of Sweden has provided technical assistance to the Government of Lao PDR in the Natural Resources Sector since 1977. Until the mid 1980s the assistance focused on support to the Department of Forestry and two State Forest Enterprises. From 1985 assistance was expanded to include support for the establishment of a Forestry Training Organization including the Forestry Technician School at Mouang Mai. In the late 1980's the Lao Swedish Co-operation was further expanded to cover shifting cultivation stabilisation and nature conservation. During the first half of the 1990's the co-operation gradually changed to institution building/strengthening of the Department of Forestry at the centre and in selected provinces.

The co-operation is based on the premise that national ownership of bilateral programmes will contribute significantly to sustainability after the programmes have been completed.

In more recent years the programme has addressed sustainable land use aspects in the village development context with the view that community participation in partnership with government services will enhance the potential for sustainable management of forest and agricultural resources.

The Phase IV of the Lao Swedish Forestry Programme (1996- 2001) has concentrated on three aspects of institutional building; competence development, model development and research management. The development efforts have covered a process of formulating, improving and disseminating models (methods and procedures) in four main areas including Participatory Village Development and Sustainable Land Use, Participatory National Bio-diversity Conservation Area Management, Natural Resources Management, and Institution Building. Monitoring and gender mainstreaming have been incorporated as cross-cutting efforts in the model development work. The development activities have been performed in partnership with national, provincial and district administrations and with village communities in response to Lao policies.

The LSFP has supported the strategy and policy development of the Government of Lao PDR and contributed to the emerging consensus on rural development that is taking place within the accepted Socio-economic Priorities of the Government of Lao PDR under which broad development policies have long been operative.

This document is one in a series of resulting documents, which have been produced in both Lao and English languages to assist and provide knowledge and ideas to personnel responsible for policy, planning, and implementation of agriculture and forestry development programmes. It contains lessons and experiences learnt during the programme.

I encourage the personnel of departments and agencies to study and assess the content of the documents and apply the relevant parts depending on local conditions.

I wish to commend the Swedish International Development Cooperation Agency (Sida) for it's continued support during four phases of technical assistance to the Ministry of Agriculture and Forestry, and the LSFP personnel and advisors, who have made a major contribution to this development and documentation.

20 March, 2001

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Participatory Village Development and Sustainable Land Use System



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About this Document

1. Intended Audience of this Technical Booklet

- Heads of Provincial Forestry and Agricultural Sections.
- Heads of District Agriculture and Forestry Offices.
- District Land Use Planning and Land Allocation Officers.
- Regional Forestry and Agricultural Training Centres (RTC).

2. Explanation of “Manuals/Guides/Technical Booklets”

Manuals/Guides and Technical Booklets are documents that provide practical information on procedures and methods for implementing activities at field level. They have been developed based on experiences at the local levels under the model/method development programme during Phase 4 of the LSFP. Documents have been produced in both the English and Lao languages for each of the four systems in the model/method development programme.



3. Purpose of this Document

- To explain the procedures, methods and practices for participatory forest and land use zoning as tested and practiced in target areas of the Lao Swedish Forestry Programme (LSFP).
- To provide guidance for provincial, district and RTC personnel involved in forest and land use zoning at the village level.

4. Information Provided in this Document

- A definition, the importance and the objectives of village forest and land use zoning.
- Description of forest and forest land categories and the implications for land use zoning.
- Village forest and land use zoning criteria, steps, procedures and methods.
- A decision process for undertaking forest and land use zoning based on forest condition and zoning criteria.

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Introduction and Definition

This document deals with village level forest and land use zoning. It does not cover forest and land use zoning in National Bio-Diversity Conservation Areas (NBCAs).

Forest and agricultural land use zoning means the identification and mapping of different forest and agricultural land uses within the village management area. The activity is done after the village boundary has been agreed and mapped.

Land use zoning is different from forest classification. Forest classification describes the type and composition of the forest or vegetation in a particular area. Forest and land use zoning identifies the uses and management practices that are appropriate in different forest and land areas.

Forest land classification is based on a set of technical criteria to separate or delineate forests of different types. Land use zoning aims to determine appropriate village management practices and uses for forest and land of different types.

Steps in Forest-Land Use Zoning

The steps in village forest and land use zoning are:

Step	Explanation
1	Define the village boundary with the target village and neighbouring villages.
2	Draw a village boundary map and enter features such as streams, roads and tracks.
3	Hold discussions with villagers to identify forest uses and the locations and approximate boundaries of different forest and land uses.
4	Conduct a ground survey and observations of forest types and the extent of the different types using the information from villagers.
5	Consider the existing condition and uses of forest areas in the villages adjacent to the target village boundary (to achieve continuity of zoning between villages).
6	Consider existing village forest and land use rules (oral or written).
7	Consider the 13 forest and land use zoning criteria (outlined in chapter 3).
8	Sketch provisional boundaries of the various forest and land use zones on the village boundary/land use map.
9	Conduct a village meeting to verify, and/or adjust, the land use zones and zone boundaries.
10	Verify the land use zones with the community and draw the agreed zones on to the village land use map.
11	Draw a boundary and zoning map on a village sign-board and erect in a convenient location in the village.

Equipment and Instruments Required

The following equipment, instruments and materials are needed for forest and land use zoning:

- Topographic maps; scale 1:50,000 (preferably) or 1:100,000.
- Village boundary map or sketch map of village area.
- Aerial photographs (if available); scale 1:5,000 to 1:30,000.
- Compasses (for field survey).
- GPS (if available).
- Map drawing materials.

Forest and Land Use Zoning

The Importance of Zoning

Forest and agricultural land use zoning is an important activity in the land use planning and land allocation (LUP/LA) procedure. Land use zoning is important for the following reasons:

- It enables villagers to clearly see the boundaries of each land use type within the village management area.
- Villagers can be encouraged to limit agricultural activity to the agricultural zones that have been delineated.
- Delineating the agricultural zone or zones determines the areas in which agricultural land parcels can be allocated to families and individuals.
- The land use map and management rules can be used to discuss small watershed management activities with neighbouring villages.

Objectives of Land Use Zoning

- To improve the management of natural resources within village management areas.
- To facilitate the preparation of village Forest and Agricultural Land Management Agreements.
- To provide villages with the rights to effectively manage and use the forest and agricultural land resources within village management areas.
- To give villages a clear understanding of forest and agricultural land use zones in neighbouring villages.
- To contribute to the protection and management of the minor watershed area in which the village is located.

Forest Categories and Land Use Zoning

Categories in the Forest Law

Five categories of forest land are described in the Forestry Law:

➤ **Conservation Forest:**

Conservation forest is forest and forest land classified for the purpose of protecting and conserving animal species, plant species, nature and various things which have historical, cultural, tourism, environmental, educational and scientific research value.

➤ **Protection Forest:**

Protection forest is the forest and forest land classified to protect watershed areas and to guard against soil erosion. It included areas of forest land of significance for national security and is delineated to protect against natural disaster and to protect the environment.

➤ **Production Forest:**

Production forest is forest and forest land classified for the purpose of satisfying the requirements of national economic and social development and of people's livelihoods for timber and other forest products on a sustainable basis (without having significant negative environmental impacts).

➤ **Regeneration Forest:**

Regeneration forest is forest and forest land previously cultivated as swidden classified for the purpose of regeneration with the aim of achieving a condition approaching that of natural forest.

➤ **Degraded Forest:**

Degraded forest is forest and forest land that has been heavily damaged. It may or may not support trees. It can be allocated for the purpose of tree planting and agriculture and livestock production. It may be used for other purposes in accordance with National Economic Plans.

Criteria for Forest-Land Use Zoning

Several criteria for village forest and land use zoning should be considered:

- Attributes of the five main categories described in the Forestry Law.
- Condition of forests along the boundaries of neighbouring villages.
- Condition of the existing forest in the village area.
- Presence or absence of bio-diversity values.
- Minimum sustainable areas required for a particular forest or land use.
- Degree of slope of the land.
- Extent of fallow land and farming land.
- Farming systems practised.
- Protection needs of irrigation water sources.
- Village requirements for domestic wood.
- Village requirements for non-timber forest products (NTFPs).
- Total land area available in the village.
- Population of the village.

These criteria have to be considered logically and collectively when zoning is done. Consideration of only one or two criteria is likely to result in inappropriate zoning.

A Land Use Zoning Decision Process Diagram, which embodies the above criteria, assists staff to follow a step by step procedure when undertaking land use zoning.

Village Land Use Zones

The descriptions of the five categories in the Forestry Law refer to:

1. Forest and forest land **uses**, eg, production forest.
2. Forest management **objectives or purposes**, eg, conservation, protection and regeneration.
3. Forest **conditions**: eg, degraded.

These five categories do not always exist in each village nor do these categories adequately describe all the forest and land uses at village level. Therefore:

- These five category names do not always have to be used to describe the different land use zones in each village management area.
- Other names or terms can be used depending on the land use characteristics in a village.

The forest areas or zones used in village zoning are indicated in the table below.

Table 1: Village Forest and Land Use Zones

Forest/Land Use Zone	Explanation	Purpose/Use
Conservation Forest Zone	<ul style="list-style-type: none"> ▪ Areas where plant and animal bio-diversity exists in sufficient quantity or variation to warrant delineation as "conservation". ▪ In village areas "bio-diversity forest" does not exist very often because the areas of undisturbed forest are quite small. ▪ Spirit or sacred (Saksit) forest areas, including Cemetery ("Pa sa"), "Huang harm", "Maehasak", and "Pa Kham". 	<ul style="list-style-type: none"> ▪ Fauna and flora conservation. ▪ Sacred or spiritual forest conservation. ▪ Species seed collection. ▪ Eco-tourism. ▪ Village recreation. ▪ Scientific research.
Protection Forest Zone	<ul style="list-style-type: none"> ▪ Forested areas used to protect fragile land forms. ▪ Stream buffer forest areas. 	<ul style="list-style-type: none"> ▪ Watershed and stream protection. ▪ Steep sloping land protection. ▪ Soil erosion reduction. ▪ Regeneration of partially degraded forests. ▪ NTFP collection. ▪ Tree seed collection.
Village Use Forest Zone	<ul style="list-style-type: none"> ▪ This is one form of "production forest". ▪ Unless special provisions are made, villagers are not permitted to engage in commercial timber production. 	<ul style="list-style-type: none"> ▪ NTFP collection. ▪ Village housing and roof thatching. ▪ Fuel wood. ▪ Fencing. ▪ Other domestic purposes. ▪ Tree seed collection.
Village Production Forest Zone	<ul style="list-style-type: none"> ▪ This is one form of "production forest" in good quality natural forests. ▪ Wood production areas, such as Joint Forest Management areas, which have been specifically set aside by the <i>GOL</i> for timber harvesting. ▪ Wood harvesting is done sustainably following a management plan. 	<ul style="list-style-type: none"> ▪ Sustainable commercial wood production in natural forests. ▪ Forest protection. ▪ NTFP collection. ▪ Tree seed collection.
Regeneration Forest Zone	<ul style="list-style-type: none"> ▪ Secondary forestry areas that villages wish to rehabilitate to productive natural forest. ▪ This category is actually a form of "protection forest" and would 	<ul style="list-style-type: none"> ▪ Upgrading secondary forest to a higher status, ie protection. ▪ Increasing NTFP populations.

	normally be included in the "Protection Forest Zone".	<ul style="list-style-type: none"> ▪ Tree seed collection.
Agricultural Zone or Agro-Forestry Zone	<ul style="list-style-type: none"> ▪ Areas of degraded forest land which can not (or will not) be returned to forest. ▪ These zones include fallow land previously used for shifting cultivation. ▪ The forest fallow condition is usually called "pa laow orn", however older regenerating forest may be included if sustainable rotation farming is being practiced as this will help maintain annual crop yields. 	<ul style="list-style-type: none"> ▪ Paddy fields. ▪ Upland farming areas. ▪ Areas for fruit tree planting. ▪ Areas for economic tree planting. ▪ Areas for livestock grazing. ▪ Areas for agro-forestry. ▪ Agricultural land held in reserve for future allocation (spare land). ▪ Land for other agricultural purposes such as fish ponds and small animal production.
Village land	<ul style="list-style-type: none"> ▪ The area set aside for village settlement. 	<ul style="list-style-type: none"> ▪ Housing. ▪ Temple. ▪ School. ▪ Health Center. ▪ Shops. ▪ Rice mills etc.
Other Land and Water Bodies	<ul style="list-style-type: none"> ▪ Other land areas such as bald or barren land, rock areas, gravel pits, streams, natural ponds, lakes or dams. 	<ul style="list-style-type: none"> ▪ Recreation. ▪ Irrigation.

Land Use Zoning Decision Process

Dense or Undisturbed Forest

Less Dense or Disturbed Forest

- Abundance of protected animal &/or plant species
- Area is large enough to sustain these species
- Has eco-tourism potential
- Sacred or spiritual forest area

YES

Village
Conservation
Forest Zone

- Few or no protected animal &/or plant spp.
- Steep slopes/fragile soils
- Needed to protect watersheds & control erosion
- Water catchment for irrigation
- Protects river or stream banks

YES

Village
Protection
Forest Zone

- Has marketable quantities of commercial wood spp
- Gazetted as a State Production Forest
- Has an inventory &/or a production plan

YES

Village
Production
Forest Zone

- Supports a variety of timber spp needed for housing and fuel
- Important source of NTFPs

YES

Village
Use
Forest Zone

- Moderately Disturbed
- Has potential to revert naturally to a higher forest category
 - Not required for agriculture
 - Will be set aside in future for a particular purpose, eg, protection



Village
Regeneration
Forest Zone

- Moderately Disturbed
- Will not be set aside in future for a particular purpose



Village
Protection
Forest Zone

- Moderately Disturbed
- Has spp for housing & domestic use



Village
Use
Forest Zone

- Degraded Forest Land
- Previously used for agriculture
 - Part of a fallow cultivation system
 - Required for crop production
 - Low regeneration potential
 - Suitable for agro-forestry, grazing, and commercial trees



Agricultural
Zone

- Degraded Forest Land
- Grassland
 - Used for housing (roofing)
 - Not required for large animals



Village
Use
Forest Zone

Procedures and Methods for Village Land Use Zoning

Zoning Step	Activities Required
<p>1. Define the village boundary with the target village and neighbouring villages.</p>	<ul style="list-style-type: none"> • Use the normal procedures for village boundary delineation. • Ensure that representatives of the neighbouring villages participate. • Resolve inter-village boundary disputes before proceeding with zoning.
<p>2. Draw village boundary map and enter features such as streams, roads and tracks.</p>	<ul style="list-style-type: none"> • Draw a boundary map (base map) at scale 1:10,000 using normal procedures. • Enter contour lines on the village boundary map. • Enter topographic features which will help define forest and land use areas, including large and small streams, roads, walking tracks, mountain peaks and other prominent features.
<p>3. Hold discussions with villagers to identify forest uses and the locations and approximate boundaries of different forest and land uses.</p>	<ul style="list-style-type: none"> • Convene a meeting of the village LUP/LA committee members and other knowledgeable villagers. • Request villagers to bring any land use agreements or rules and village land use maps which exist in the village. • Use the village boundary map, aerial photographs, topographic map and existing village rules to discuss the present forest management and use practices in the village. • Agree on approximate locations of the various use zones as understood by the villagers. • Sketch in pencil the approximate zone boundaries on the village base map.
<p>4. Conduct a ground survey and</p>	<ul style="list-style-type: none"> • Arrange with the LUP/LA committee and /or other knowledgeable villagers to

<p>observations of forest types and the extent of the different types.</p>	<p>do reconnaissance walks within the village management area.</p> <ul style="list-style-type: none"> • Take the village base map, topographic map and aerial photographs and GPS on these walks. If available use the GPS to record land use zoning reference points. • Walk along or observe the line of the village boundary and the type and condition of the forest along the boundary; identify the boundary line and verify forest types and locations and on topographic map and aerial photographs. Take notes on observations made. • Walk to vantage points to make observations of the land form, forest types, condition of forests etc in various parts of the village area; identify and verify forest type and locations on topographic map and aerial photographs. Take notes on observations made. • Observations should be made from enough vantage points to ensure a good knowledge of the land form, forest areas and land uses in the village.
<p>5. Consider the existing condition and uses of forest areas in the villages adjacent to the target village boundary.</p>	<ul style="list-style-type: none"> • Convene another meeting with the village LUP/LA committee after the ground survey. • Discuss the type, condition and use of forests along the village boundary. • Discuss the type, condition and use of forests in the areas of other villages adjacent to the village boundary. • Compare the types and condition of forests and land uses between the target village and adjacent villages and agree on appropriate land use zones for forest and land along the village boundary.
<p>6. Make decisions on forest and land use zones.</p>	<ul style="list-style-type: none"> • Use the reconnaissance survey information, information from villagers, observations, aerial photographs and the 13 land use zoning criteria to discuss forest and land zoning within the village management area. • Refer to the Land Use Zoning Decision Process Chart to consider and decide: <ul style="list-style-type: none"> ▪ what types of zones should be delineated; ▪ sustainable areas required for the Village Use Zones and the

	<p>Agricultural/Agro-forestry Zones; and</p> <ul style="list-style-type: none"> ▪ the boundaries of each of the zones agreed on.
7. Sketch the provisional boundaries of the various forest and land use zones on the village boundary/land use map.	<ul style="list-style-type: none"> • Use the aerial photographs, the contour base map and the zoning decisions to locate the forest and land use zone boundaries on the village base map • Use the standard colour codes to identify the forest and land use zones
8. Conduct a village meeting to verify, and/or adjust, the land use zones and zone boundaries on the provisional land use map.	<ul style="list-style-type: none"> • Convene a general meeting and invite all men and women in the village to attend. • Bring to the meeting the provisional Village Boundary and Land Use Zoning Map. • Explain the process which the LUP/LA staff and the village LUP/LA Committee undertook to complete land use zoning. • Explain the geographic features on the map. • Explain the forest and agricultural land use zones and boundaries on the map. • Explain the purpose of forest and land use zoning, and the rights, roles and responsibilities which the LUP/LA and villagers have in managing and using the land use zones. • Encourage discussion and clarify questions from villagers; ensure the villagers understand the map and the zones. • Make changes to the zones and zone boundaries based on discussions if necessary. • Verify that the LUP/LA Committee, Village Committee and villagers accept the land use zones.
9. Complete the final detailed mapping on the village land use map.	<ul style="list-style-type: none"> • Make final adjustments to the land use map arising from the village meeting. • Calculate the areas (hectares) of each of the zones. • Enter the land use zoning data on to the Village Forest and Agricultural Land Use Summary Record Sheet.
10. Draw a boundary and zoning map on a village sign-board and erect it in a	<ul style="list-style-type: none"> • Enlarge the 1:10,000 scale land use map to a 1:5,000 scale map. • Use this map as a template to draw the land use zone map onto a village sign-

<p>convenient location in the village.</p>	<p>board.</p> <ul style="list-style-type: none">• Prepare a village land use map signboard using durable wood.• Paint the land use map on the signboard using the standard colour code for each of the zones.• Paint a map legend and a data summary onto the land use zone signboard.• Construct a permanent shelter for the signboard.
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Appendix 1: Village Forest and Agricultural Land Use Zoning Summary

Village: Na Muang **Zone:** Nam Ham. **District:** Xam Neua **Province:** Hua Phan
Date: 14/03/01 **Officer Recording:** Mr Phetsay

Zone	Area (ha)	% of Total	Comment
Forest Zones			
1. Conservation Zone (<i>Kaet Sangeuan</i>)	10.88	1.83	
• Bio-diversity forest (<i>sat pa le mai peeset</i>)			
• Sacred, cemetery or spirit forest (<i>saksit, pa sa le mahaesak</i>)			
• Village Area or "Surround forest" (<i>huang harm</i>)			
2. Protection Zone (<i>Kaet ponggarn</i>)	313.84	52.67	
3. Regeneration Zone (<i>Kaet foun foo</i>)			
4. Plantation Zone/s (<i>Kaet pa book</i>)			
5. Village Use Zone (<i>Kaet somsay</i>)	88.39	14.83	
• Fuel and wood forest (<i>mai saang le fuen</i>)	80.59		
• Grassland (thatch) (<i>ya ka</i>)	7.80		
• Other (<i>un un</i>)			
Sub-Total Forest Zones: 413.11 ha			
Agricultural Zones			
1. Paddy land (<i>na</i>)	22.70	3.81	
2. Upland (<i>peurn tee book fang nern soong</i>)	148.32	24.89	
3. Livestock grazing (<i>kang liang sat le toong ya</i>)			
4. Other (<i>un un</i>)			
Sub-Total Agricultural Zones: 171.02 ha			
Other Areas			
1. Roads and tracks (<i>sen tang le tang yang</i>)	11.70	1.96	
2. Streams (<i>mae nam le houay</i>)			
3. Village area (<i>neua tee khong ban</i>)			
4. Other (<i>un un</i>)			
Sub-Total Other Areas: 11.70 ha			

Total Village Area: 595.83 ha

Glossary of Terms and Acronyms

DAFO	District Agriculture and Forestry Office
DoF	Department of Forestry
GOL	Government of Lao PDR
GPS	Geographic Positioning System
LSFP	Lao Swedish Forestry Programme
LUP	Land Use Planning
LUP/LA	Land Use Planning and Land Allocation
NBCA	National Bio-diversity Conservation Area
PAFO	Provincial Agriculture and Forestry Office
RTC	Regional Training Centre
NTFP	Non-timber Forest Products