

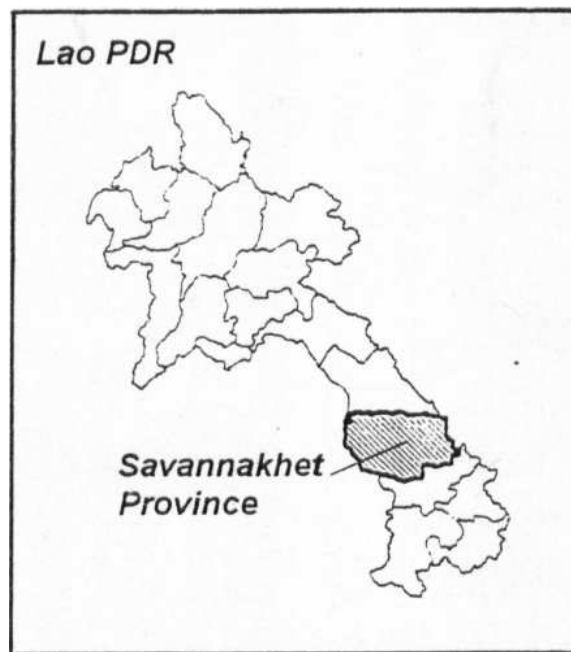
***Lao-Swedish Forestry Programme***

PRONAM Working Team

**Development and Test**  
Of a  
**Provincial Natural Resources management  
(PRONAM) System**

With Savannakhet Province as a Case

*Project Document*



**First Draft**

**March 2000**

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## Abbreviations

<b>FCMP</b>	Forest Cover Monitoring Project
<b>FIPC</b>	Forest Inventory and Planning Centre
<b>FOMACOP</b>	Forest Management and Conservation Project
<b>FRC</b>	Forest Research Centre
<b>IRAP</b>	Integrated Rural Accessibility Planning
<b>JFM</b>	Joint Forest Management
<b>LAC</b>	Lao Agricultural Census
<b>LECS</b>	Lao Expenditure and Consumption Survey
<b>LFA</b>	Logical Framework Analysis
<b>LSFP</b>	Lao-Swedish Forestry Programme
<b>LUP/LA</b>	Land Use Planning and Land Allocation
<b>MAF</b>	Ministry of Agriculture and Forestry
<b>MRC</b>	Mecong River Commission
<b>NAFRI</b>	National Agricultural and Forestry Institute
<b>NR</b>	Natural Resources
<b>NRM</b>	Natural Resources Management
<b>NTFP</b>	Non-Timber Forest Products
<b>PAFO</b>	Provincial Agriculture and Forestry Office
<b>PRONAM</b>	Provincial Natural Resources Management
<b>PPAC</b>	PRONAM Provincial Advisory Committee
<b>PSC</b>	Pronam Steering Committee
<b>PPWG</b>	PRONAM Provincial Working Group
<b>PWT</b>	Pronam Working Team
<b>RECOFT</b>	Regional Community Forestry Training Centre
<b>STENO</b>	Science, Technology and Environment Organization
<b>UXO</b>	Unexploded Ordnance

## 1 Background

Relative to its population, Lao PDR is a big country with rich natural resources (land, forest and water). 83 % (1997) of the population live in rural areas. These people are heavily dependent on the natural resources (NR) in their village territory for their subsistence. The average villager spends about 4 hours a day using and managing the nearby NR and get 60% of the household's income from them (LECS 2 1997/1998).

Economic and social development is generally based on the use of, or affecting, the NR. However, the decisions on economic and social development and on NR are often taken by different people and organizations. There is a need for a "mechanism" to coordinate and integrate NR management and economic and social development in order to achieve *sustainable* development

The Government is the owner of all NR in Lao PDR. This means that principally all users of the NR need to have, in one way or the other, a permit (tenure right) from the Government. There are sometimes overlapping claims on the NR, and conflicts of interest regarding the use of e.g. the forest resources. Typical for Lao PDR is that the Government is at a high degree directly involved in harvesting/exploitation of the NR, such as forest and hydro power resources, which give important contributions to the country's export earnings. There is a history of centralized "top-down" planning and control of the NR. However, there is now a trend towards decentralization and integration of NR management. This is reflected in the Government's strategic vision for the agricultural sector as it was presented at a Donor Round Table Conference in November 1999, including the following policy statements:

- Streamline and prioritize a planning approach geared towards the dual objective of poverty alleviation and sustainable resource use and management.
- Fully decentralized "bottom-up" participatory planning within LAO PDR's government system.
- Shift to an area-based and decentralized development centered on integrated watersheds/river basins
- Sustainable community-based natural resource management.
- Full support for trade liberalization and economic integration with minimal controls on exports/imports in concert with tangible trade liberalization measures by regional trading partners.

The Lao-Swedish Forestry Programme (LSFP), that will come to an end in September 2000, has focused on development of decentralized models/methods for planning and management, such as participatory land use planning/land allocation, participatory extension, joint forest management (JFM) and national protected area management.

In January 2000, a new LSFP activity called Provincial Natural Resources Management (PRONAM) started with Savannakhet Province as a case. The initiative came from the Province which felt the need for a "tool" to help improving its NR planning and management (the provinces have been criticized in the Prime Minister's Decree No. 11,13M0 1999 for improper forest management). The PRONAM development is a joint undertaking by the National Agriculture and Forestry Research Institute (NAFRI) and Savannakhet Province. A Working Team consisting of a representative of NAFRI (Mr. Khamkeo Pavasiri) and a Provincial Natural Resources Management Adviser (Mr. Rolf Gilliusson) has been appointed as core resource and started working. They cooperate with relevant staff from Savannakhet Province and NAFRI as well as with other stakeholders of PRONAM.

The Team soon realized that the development and test of a PRONAM System could not be completed by the end of September 2000, when LSFP will close, but will take 2-3 years. It was therefore decided that the Team first should work out a Project Document with Work Plan and Budget covering the whole estimated project period up to year 2002. By help of this Document, the Lao Government hopes to find a donor, which will be willing to give technical and financial

assistance to the whole Project. A First Draft Project Document is presented below. The Document is still under discussion and has not yet been approved by NAFRI and Savannakhet Province.

## **2 Objectives**

The Project should have the following objectives.

*Overall Objective:*

Support sustainable NR management and economic/social development in Lao PDR.

*Project Objective:*

Develop a replicable provincial system for sustainable NR planning/management and socio-economic development (PRONAM) with Savannakhet Province as a case.

### **3 Outputs/Result**

The Project will give the following outputs/results by the end of 2002.

1. Provincial NRM planning methodology developed and being used in the Province.
2. Improved provincial staff capacity for NRM planning in Department of Planning and relevant sector departments ("stakeholder departments").
3. Monitoring and evaluation (M&E) system developed and being used in support of PRONAM.
4. Comprehensive NR data base and maps developed and used by provincial stakeholder departments.
5. Provincial NRM policy guidelines formulated and adopted for use in the regular planning process.
6. Prioritized list of NRM problems and issues identified and described.
7. Set of priority projects/activities identified and proposed for funding.
8. Improved staff capacity at NAFRI to work with NRM and possible replication of PRONAM in other provinces.

See further a Logical Framework Analysis (LFA) of PRONAM in **Annex 1**, and activities in **Chapter 8**



## 4 Project Organization

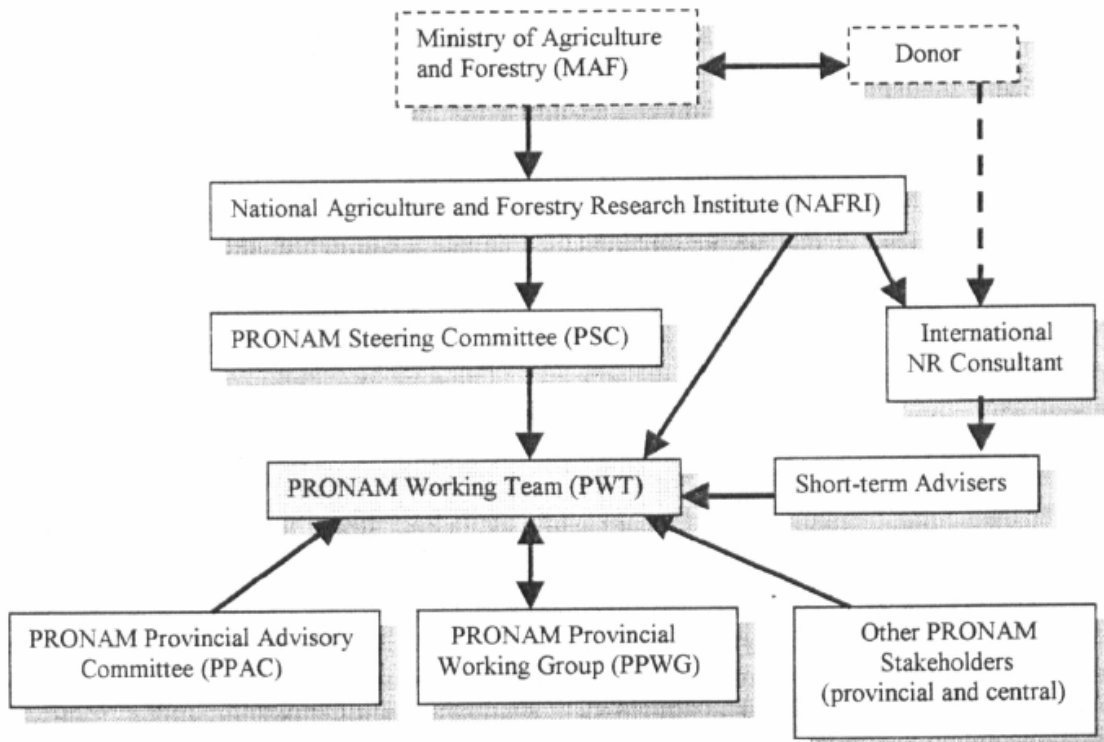
The Project should be placed under NAFRI but work together with Savannakhet Province, particularly the Governor's Office and Department of Planning. NAFRI has intentions, capacity and mandate to work on integrated natural resources management, and will be able to contribute to the PRONAM development and assist the Province. Later NAFRI will have an important role when the PRONAM system will be replicated in other provinces.

The Project should be led by a PRONAM Steering Committee (PSC) with representatives of NAFRI and Savannakhet Province. PSC should follow the work, help solving problems and make decisions related to the project work.

Under PSC, there should be a PRONAM Working Team (PWT) to carry out the main tasks of the Project. PWT should consist of a full-time Project Manager from NAFRI and a Natural Resources Management Adviser on part-time. PWT should get support from relevant experts at NAFRI and international short-term advisers (on agriculture, water/hydrology, socio-economy and data bases/GIS). PWT should work about 50/50 at NAFRI in Vientiane and in Savannakhet Province. When at NAFRI, PWT will have office facilities in the Research Management Division, and when in Savannakhet in the Department of Planning.

At Savannakhet Province level, there should be a PRONAM Provincial Advisory Committee (PPAC) with representatives of the Governor's Office and the different NR sector departments. PPAC should express the needs of the Province regarding PRONAM and give advice to PWT. There should also be a PRONAM Provincial Working Group (PPWG) with representatives of the related NR departments to assist PWT on e.g. data collection in the Province. PWT should also cooperate with other stakeholders of PRONAM at provincial and national levels. See **Figure 1** and list of stakeholders below.

Figure 1 PRONAM Project Structure



The stakeholders of PRONAM are:

*NR Users:*

- villagers (men and women)
- village groups/organizations
- enterprises (with harvesting/user rights)
- projects (directly involved in using NR)

*Government:*

- central government (MAF, Ministry of Industry, STENO etc.)

*Government:*

- central government (MAF, Ministry of Industry, STENO etc.)
- NAFRI (NR research, NRM development)
- provincial government (Governor's Office, Planning Department, NR Departments)
- districts

*Development Agents:*

- international donors
- international donor projects - NGOs
- consultants

*Other Private:*

- private enterprises (indirect NR users)
- other individuals (business men, environmentalists, tourists)

## 5 General about Natural Resources Management (NRM)

Natural resources (NR) could be grouped into the following five categories:

1. Land/soil/minerals
2. Water
3. Forest/vegetation/flora
4. Animals/wildlife/fauna
5. Climate/sun

The NR are linked together and interact, forming ecosystems and life-support systems vital for the life on earth. The most important, and most threatened life support systems are the agricultural, forest and freshwater systems. The tropical flora and fauna have biodiversity of invaluable potential for mankind, which require effective protected area systems.

The human (people) is also a natural resource and form part of the ecosystems and life-support systems. It can be seen as a "super animal" that has put itself on top of the NR and use them to its benefit for accelerating social and economic development. Human activities often result in over-exploitation of the NR and destruction of ecosystems, which leads to decreasing and unsustainable NR production - often irreversible processes - and loss of biodiversity. E.g. deforestation will lead to increased soil erosion, flooding, loss of biodiversity, dryer local climate etc.

NR could also be grouped into two other categories:

- Non-renewable, and
- Renewable

The non-renewable NR all belong to Category 1 above. They are rocks, minerals, coal, oil and gas. These NR are exploited by the human from limited natural deposits. The exploitation is therefore not sustainable, but if the deposits are big and the exploitation is properly planned and controlled, it may be environmentally acceptable and meet the needs of the present and many future generations.

All the other categories are renewable, i.e. they could be continuously harvested/used without destroying or decreasing the NR base. However, they are renewable only if the 4\_ ecosystems or life-support systems they form part of are protected, managed and kept healthy. The long-term harvesting of forest/vegetation should generally be based on sustained yield/carrying capacity, i.e. not exceed the sustainable net growth rate of these NR.

Water is renewed through recycling by help of the climatic systems and the watersheds. Protection/management of the watershed areas is crucial for the maintenance of the freshwater systems.

A general conclusion is that the NR have to be harvested/used/managed in a very coordinated, integrated and balanced way in order not to destroy or decrease the vital functions and long-term productivity of the ecosystems. It could be seen as collecting the "interest" from the NR without decreasing the "capital" of it.

International experiences on sustainable NR management have shown that there has to be clear management responsibility for the NR at ground level. Without such responsibility, the situation easily develops into open access to the NR, which sooner or later lead to destruction/degeneration of the ecosystems. A good approach is to involve the users of the NR (whether individuals, groups or associations/enterprises) and provide them with rights, responsibilities and competence for sustainable management of the resources, while the Government should focus on issuing appropriate policies, strategies and guidelines, and monitoring/controlling the use.

Sustainable NR management means to achieve economic, social and environmental sustainability within a specific geographical area/unit. In industrial countries, where the main population is not directly dependent on the NR, and there is good infrastructure with easy cross transportation of NR products, the NR sustainability unit could be applied at high level: province or whole nation. However, in a country like Lao PDR, where most people live in villages and are dependent on the nearby MR for their daily survival, the NR sustainability unit generally has to be at low level, probably as low as village level.

The harvesting of the NR should generally be based on management plans for the specific NR areas (management units) based on agreed (preferably international) sustainable management principles. A quota system that is not based on management plans is a too rough method to achieve sustainable management in e.g. forestry.

The management plan should give clear answers to a series of questions aiming at sustainable management, such as in the case of a specific natural forests area:

- *Who* is responsible for the area and the management of it?
- *How* to sustainably manage (protect, harvest, regenerate, develop and monitor) the area in the long/medium term?
- *Who* will benefit or suffer from the management? Is there any negative environmental impact of the management?
- *Who* should do what in the management? How to share the benefits?
- *Where* to harvest in the short/medium term (by defining felling cycle and annual coupe areas)?
- *Which trees* should be harvested in the next year's coupe area (defined by annual pre-logging survey and tree marking)?
- *How* to monitor and evaluate the management?

The management plan will look different for the different NR systems. In agriculture, the main NR used are land, soil, water and sun, and the management unit is generally the farm. The crop is an output of the agricultural system and could be seen as an indicator of the productivity and health of the NR.

## 6 NR Situation in Savannakhet Province

### 6.1 *General Characteristics*

Savannakhet is one of the 17 provinces that, together with the Prefecture of Vientiane and the Special Zone of Xaisomboun, form Lao PDR. Savannakhet Province, which was established in 1895, is one of seven Central Provinces (in NFI it is part of the Southern Region). It has an area of 21,774 km<sup>2</sup>, which makes it the largest province in the country.

The main part (75 %) of the Province is lowland at an altitude of 150-250 m a.s.l., while a smaller part (25 %) in the East is relatively mountainous with the highest peak at 1,362 m a.s.l.

The population is 675,582 (provincial data), which is also the highest provincial population in the country, with a density of 31 people per km<sup>2</sup> and a population growth rate of 3.0 % (Census 1995). The main ethnic groups are Lao Lum (62 % of the villages) and Lao Theung (38 % of the villages). The Province has 15 districts and 1,533 villages. See further **Table 1** below and a map of districts in **Annex 3**.

Savannakhet Province is an important corridor between Thailand and Vietnam due to national road No. 9 (East-West), which now will be upgraded and a bridge built over Mekong just North of Savannakhet town. Also road No. 13 (North-South) is of growing importance especially now when the last phase of reconstruction has started. See further the road map in **Annex 4**.

There are 24 rainfall measurement stations in the Province, the oldest one (Savannakhet) from 1967. The annual average long-term rainfall in Savannakhet town is 1,446 mm, of which 86 % is falling in the monsoon period from May to September.

**Table 1 General Characteristics of Savannakhet Province**

District name	Number of villages	Land area (Sq Km)	Population	Population density	Average number of houses per village	Average number of people per house
Khanthabuly	94	521.40	93,927	180.11	164.4	6.0
Outhoumphone	106	942.60	65,253	69.2	94.5	6.6
Atsaphangthong	61	697.80	31,665	45.4	78.2	6.6
Phine	115	2,699.40	40,541	15.0	51.9	7.0
Sepone	161	3,254.70	36,152	11.1	39.8	5.6
Neng	77	1,928.30	16,843	8.7	35.4	6.2
Thapangthong	76	2,930.80	23,671	8.1	44.3	7.5
Songkhone	142	1,372.90	71,319	51.9	81.3	6.2
Champone	169	840.60	85,364	101.6	86.6	5.9
Xonnabuly	104	1,527.10	38,036	24.9	54.0	7.0
Xaibuly	89	1,109.90	45,025	40.6	80.4	6.3
Vilabuly	100	1,141.40	24,007	21.0	39.1	6.0
Atsaphone	98	1,496.50	41,419	27.7	66.9	6.3
Xaiphouthong	63	512.00	38,059	74.3	96.8	6.3
Phalanxai	78	798.60	24,301	30.4	48.8	6.3
SAVANNAKHET	1533	21,774.00	675,582	31.0	70.5	6.3

(Source: TRAP 2000)

The Province forms part of the following four sub-watersheds (within the Mekong watershed):

**Table 2 Sub-Watersheds of Savannakhet Province**

Code	Name of River	Area, km <sup>2</sup>	%
230	Xe Bang Fai	1,742	8
235	Xe Bang Hieng	16,984	78
237	Huai Som Pak	2,395	11
255	Xe Bang Nouan	653	
Total		21,774	100

(Source: FIPC Watershed Conservation Unit)

For Xe Bang Hieng sub-watershed, which covers 78 % of the total Province, there are water level data available from the upper (Sepone) and the lower (Lahanam) parts of the watershed since 1987. This data will be important watershed indicators. See map in **Figure 2** below.

The main part of the Province has watershed categories 4 and 5 (flat to gently sloping land), which is suitable for a wide range of land use. However, in the West, particularly in the upper watershed of Xe Bang Hieng (Sepone District), there are *critical areas* (steep slopes without forest cover) which should get high priority for rehabilitation efforts.

## 6.2 Land Use and Soil

The land use in the Province based on the Nationwide Reconnaissance Survey result from 1989 is shown in **Table 3** below.

Forest cover and land use have also been estimated by help of LANDSAT images (scale 1:250,000) in 1992/1993 and 1996/1997 through the Forest Cover Monitoring Project (GTZ supported). However, the Lao Government has not yet approved the results of these estimations and the figures have not yet been released.

Soil information has been produced by the Soil Survey and Land Classification Center (under NAFRI) since 1991. Each province has been provided with the following large-scale (1:250,000 – 500,000) maps:

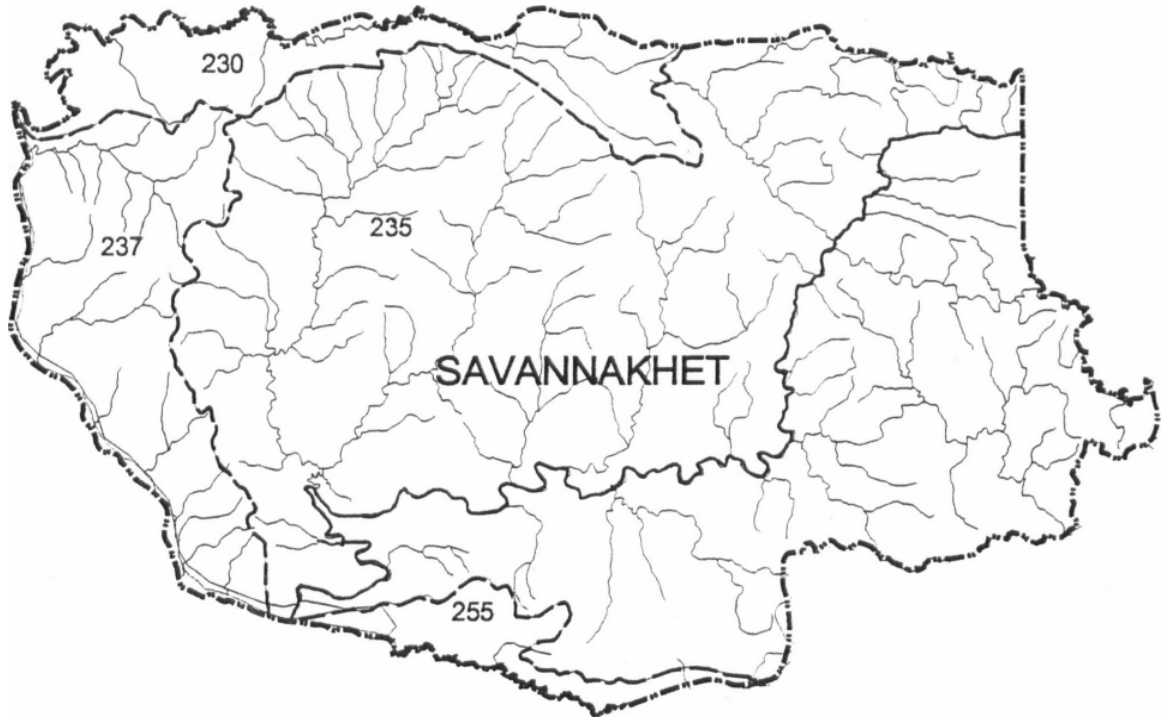
- Soil map (from Nationwide Soil Survey)
- Erosion physiological map
- Current land use map
- Land suitability map
- Proposed land use map

There are plans to produce an agro-ecological map at scale 1:100,000.

The soil in Savannakhet Province is generally poor – maybe the poorest province in terms of soil fertility. Typical soils are alisols and luvisols which are poor soil types. The big area of Dry Dipterocarp forest (28 % of total province) is generally located on these dry, sandy soils, often with hard pan. Still there are agricultural activities in certain situations also on these soils.

The on-going land use planning and land allocation (LUP/A) process at village level including identification/mapping of village borders, followed by a forest and agriculture management agreement with the villagers, is an important step to improve the land tenure situation and establish more clear rights and responsibilities for the NR at ground level.

**Figure 2 Rivers and Sub-Watersheds**



(Source: FIPC's Watershed Conservation Unit)



**Table 3 Land Use in Savannakhet Province (1989)**

Land Use Group	Area, ha	%of Total Area
Current forest	1,207,900	55
Potential forest	517,200	24
Other wooded areas	192,000	9
Permanent agriculture land	199,300	9
Other non-forest land	60,100	3
Total	2,176,500	100

### 6.3 Forestry

As could be seen in **Table 3** above, the forest area in the Province was 1,208,000 ha in 1989 or 55 % of the total land area. According to the National Forest Inventory (NFI) in 1992, only 797,000 ha (66 %) of this is accessible. The main part of the inaccessible forest is included in the Protected Area System (see **Chapter 6.4**) below.

**Table 4 Accessible Forest Area in Savannakhet Province (1992)**

Type of Forest	Area, ha	Volume, m3/ha
Natural High Forest	211,000	87.4
Dry Dipterocarp Forest	586,000	55.9
Total	797,000	64.2

In addition, there is 3,500 ha of forest plantation (mainly Eucalyptus and Acacia) established since 1994, of which 737 ha by the ADB Plantation Project. The ADB farmers' plantation wood is planned to be sold as pulpwood to Thailand and Vietnam.

In Decree No. 11/PM0 (August 1999), provinces are criticized for illicit logging practices, and new regulations are given, such as:

- Logging is allowed only in areas where (1) forest will be converted to another land use (clearing for dam, road etc.), and (2) in production forest where forest inventories have been done.
- Logging must be linked to tree planting. Every m3 cut should be replaced by planting of 20 trees. There will be a "plantation tax" of US\$ 1-3 for every logged m3 to be used by the provinces for tree planting.
- There will be tax exemption for those who plant trees.
- Wood sales will be carried out directly by the Government. The Ministry of Commerce and Tourism (MCT) will negotiate and sign contracts with wood buyers.

- The Central Government will allocate logging quota for domestic use to the provinces. Regarding quota for export, it will depend on the negotiations (volumes/prices) between MCT and the buyers.
- The Timber Sale Committees in the provinces shall be terminated, as well as the checkpoints between provinces

A recent (February 2000) Lao PDR Production Forest Policy Review (supported by World Bank/Finnish Government/Swedish Government) has given critical comments on the above forestry strategy.

There is actually no *direct* link between logging in natural forest and tree planting. Sustainable harvesting of the natural forest should be based on proper selective cutting and natural regeneration, while tree planting should be carried on bare land. These are two different forest management systems and ecosystems. However, an "administrative" link could certainly be created by putting a special "plantation tax" on the logged volumes from the natural forest. The logging quota in 1999/2000 for the Province is 40,000 m<sup>3</sup>, of which 10,000 m<sup>3</sup> for domestic use (through 18 sawmill companies) and 30,000 m<sup>3</sup> for export (through 8 sawmill companies). Included in the 10,000 m<sup>3</sup> for domestic use is 7,500 m<sup>3</sup> from the LSFP-JFM project in Dong Kapho and the FOMACOP project in Dong Sithouane, which logging is based on sustainable management plans. See further below. PWT is waiting for more data from Forest Division regarding the actual logging in 1999/2000 (volumes, location etc.), and the long-term trend on logging and wood export.

The sawmill companies have their own survey teams travelling around the Province and identify possible/suitable logging areas. Based on the quota each company gets from the Province they also carry out preliminary marking of the trees to be felled. PAFO issues Logging Permits to the companies according to the procedure described in **Annex 5**.

The commercial logging focuses on the natural high forest. As could be seen in **Table 4** above, the accessible natural high forest has an average stocking of only 87 m<sup>3</sup>/ha. Well managed such forest should have 150+ m<sup>3</sup>/ha. This means that the current accessible natural high forest in the Province is already degraded. A great part of it should not be logged for the time being but be protected and rehabilitated. It is very urgent to bring these remaining 211,000 ha under proper management plans (some 40,000 ha of it is included in the LSFP-JFM and FOMACOP forest management plans).

In addition to timber, there is a lot of important non-timber forest products (NTFP) in the natural forests which are collected by villagers. There are interesting NTFP studies from Dong Kapho. The Forest Research Center (FRC) has a data base on NTFP.

Savannakhet is the host province of two unique pilot projects on sustainable forest management: (1) the LSFP – Joint Forest Management (JFM) project in Dong Kapho (started 1993), and (2) the World Bank/Finland – Forest Management and Conservation Project (FOMACOP) in Dong Sithouane (started 1995). The projects are very innovative and spearheading participatory natural forest management in the region. They both have solid forest management plans in the bottom, based on economic and environmental sustainability. The social sustainability dimension has been added by involving surrounding villages, at different degrees, to participate in the forest management and benefit sharing.

The LSFP-JFM project is located in Dong Kapho, which is a State Production Forest (net high production forest area about 6,000 ha) with surrounding 15 villages having their borders inside the forest. The forest has been divided into three Management Areas (MA), each one with a sustainable forest management plan. One MA has been contracted to one big village (Ban Nathong) which is implementing the management plan by protecting the forest, harvesting and selling logs and NTFP, and carrying out enrichment planting. The Provincial Government is doing pre-logging survey and tree-marking, controlling/monitoring the village's work, and give extension support. This is called "JFM-Model 1". The villagers receive all revenues from the harvesting and pay royalties, other taxes and fees to the Central and Local Government. In the first five years (1994/1995 – 1998/1999), the villagers got an average net revenue of 29 % (15% in 1998/1999)

of the gross income from the sales of logs. This has been used by the villagers for common village development (building access road, dam, water pump system, dispensary building, expanding paddy land, credits to villagers et.). The development in the village is remarkable – and the forest is well protected and managed. It is a good example of a poor village that has been empowered and given access to NR and started self-development by help of a sustainable Village Development Fund, based on income from sustainable forest management.

In the other two MA, the nearby villages have been contracted to protect the MA and provide labours for felling the trees and carrying out enrichment planting according to the forest management plan. The Government is doing pre-logging survey and tree-marking, selling and transporting of logs, and supervising/monitoring the villages' work. This is called "JFM-Model 2". The villagers are paid for their labour days and are given a "protection fee" for their protection work. In the first five years, the villages got an average "protection fee" equivalent to 5 % of the gross income from the log sales. These villagers have expressed an interest to get the more favourable Model 1 contracts.

Interesting is that the village in Model 1 has got 27% higher average log sales revenue than the Government in Model 2. One reason might be that the village has used a more effective bidding system. As shown in **Table 5** below, Model 1 has therefore had a higher total revenue per logged m3 than Model 2.

**Table 5 Comparison of Revenues in JFM Model 1 and 2, kip/m3**

Model	Government's Revenue	Villagers' Net Revenue	Total Revenue
Model 1	96,00	53,600	149,600
Model 2	119,800	6,700	126,500

(Source: LSFP-JFM project data 1994/95-1998/99)

LSFP has also carried out LUP/LA in the villages surrounding Dong Kapho and started developing a Village Forest Management model (by help of RECOFTC) including the villages' forest areas outside the state production forest.

The JFM project will soon have a final evaluation.

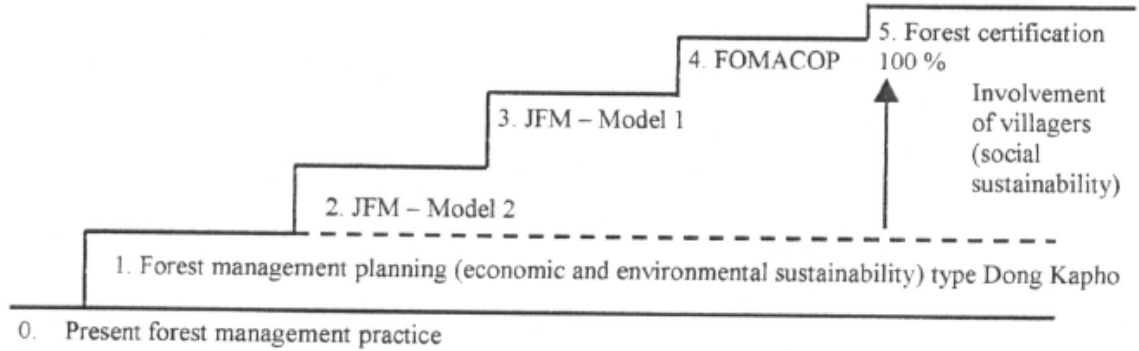
FOMACOP has gone further than LSFP-JFM and divided the former Dong Sithouane State Production Forest into Village Forest areas. About 30,000 ha of the high production forest has been divided between 31 villages following the village borders in the forest. The villages have got 50 year user contracts. The contracts are given to Village Forest Associations (VFA) including 1-3 villages each. The project has trained the villagers to carry out all activities of the forest management plan including pre-logging survey and tree-marking. In the first year of logging (1998/1999), the villages got an average net revenue of 12% of the gross income from the log sales. Most VFA sub-contracted the logging to a state logging enterprise this first year.

Both the FOMACOP model and the LSFP-JFM Model I (maybe also Model 2) could be internationally certified as sustainable forest management systems. This will open up a much bigger international market for the timber with higher prices. However, the Government has not yet expressed any interest in forest certification, and FOMACOP and LSFP-JFM are this year (1999/2000) allowed to sell the logs only on the domestic market.

Based on the above pilot projects, the road is open for Lao PDR to take big steps towards internationally recognized sustainable natural forest management. See **Figure 3** below. The Government has not yet decided what steps to take, and if and how the LSFP-JFM and FOMACOP pilot projects should continue. A flexible strategy would be to decide on the steps forest by forest depending on the local situation (the particular forest and village situation). In some cases, it may be possible to go directly to 4 or 5, while in others it is better to start slowly

(step 1 or 2). Compared with the present forest management practices, already JFM-Model 2 is an important step forwards as it is based on proper forest management planning.

**Figure 3 Steps towards Sustainable Natural Forest Management**



### 6.4 Protected Areas

There are protected areas in the Province as shown in **Table 6** below.

The total protected area is 23 % of the total area of the Province, which is very much with comparison at an international level.

LSFP is giving management support to Phou Xang He and Xe Bang Nuan, and FOMACOP to Dong Phou Vieng. The three NBCAs are at different stages of management planning. The projects are trying to develop participatory protected area management models.

**Table 6 Protected Areas in Savannakhet Province**

Type of Protected Area	Area,ha
<b>1. National Biodiversity Conservation Areas (NBCA)</b>	
Phou Xang He	118,000
Dong Phou Vieng	197,000
Xe Bang Nuan (part of)	40,000
Sub-total	355,000
<b>2. Provincial Conservation Forest Areas</b>	
14 forest areas	150,220
<b>3. District Conservation Forest Areas</b>	
2 forest areas	240
<b>Total</b>	<b>505,460</b>

(Source: LSFP and provincial Forest Division)

## 6.5 Agriculture

Agriculture is the most important sector in the Province. There is extensive agricultural data available for the Province and the districts from the Lao Agricultural Census (LAC) 1998/99 and provincial Agriculture Division statistics 1998/99.

Rice is the dominant crop. See **Table 7** below.

The total rice production and the irrigated area are increasing, while the upland cultivation area/production is decreasing. According to Shifting Cultivation Stabilization Project, the total area under shifting cultivation was 4,170 ha in 1998/99, mainly in Phine, Sepone, Nong and Vilabouly districts. That project will support farmers in these districts to terminate shifting cultivation by the end of 2003.

Agriculture Division has estimated the rate of self-sufficiency on rice per district in year 2000. The Province as a whole has a surplus of 173,000 ton (42 % of total production). However, the following four districts are deficit areas:

Khanthabuly (Savannakhet gross urban area)

Phine

Sepone

Nong

**Table 7 Rice: Cultivated Area and Production 1989-1990**

Year	Cultivated Areas, ha				Production, ton/year			
	Rainfed	Irrigated	Upland	Total	Rainfed	Irrigated	Upland	Total
1989	82,801	-	-	82,801	233,638	6,300	9,656	249,594
1990	82,969	1,850	6,925	91,744	218,476	3,761	8,204	230,441
1991	80,407	1,255	6,874	88,536	176,010	2,852	11,432	190,294
1992	84,341	2,235	7,760	94,336	247,544	7,350	13,826	268,720
1993	82,466	2,183	7,381	92,030	166,350	6,284	8,362	180,996
1994	91,911	3,030	6,484	101,425	264,539	4,541	11,180	280,260
1995	93,037	3,400	5,800	102,237	267,972	7,280	8,908	284,160
1996	87,076	3,488	5,484	96,048	179,259	8,860	5,924	194,043
1997	101,313	4,500	4,784	110,597	291,592	17,350	8,150	317,092
1998	90,365	10,260	4,311	104,936	265,277	46,267	3,988	315,532
1999	107,266	18,755	3,060	129,081	356,258	85,978	6,255	448,491
%	83	15	2	100	80	19	1	100

(Source: Provincial Agriculture Division)

There are 111,752 households in the Province, of which 92,934 (83%) have land holdings. The average land holding is 1.61 ha (LAC 1998/99).

The 92,934 land holdings used fertilizers and pesticides as follows in 1998/99 (LAC):

Did not use fertilizer	26%
Used organic fertilizer only	23%
Used mineral fertilizer only	11%
Used both organic and mineral fertilizers	40%
Did not use pesticide	89%
Used pesticides	11%

## **6.6 Livestock and Fishery**

The livestock situation in 1999 and the changes since 1981 are shown in **Table 7** below. The grazing land area in the Province was 2,068 ha in 1998/99 (LAC).

Cattle and goat (as well as chicken) have increased very much, while buffalo and pig are roughly the same.

The fish production in the Province was estimated at about 8,000 ton in 1998/99. A break down per source of fish is given in **Table 8** below.

The number of fish ponds increased from 6,087 in 1996 to 8,229 in 1999. The average fish pond in 1998 had an area of 600 m<sup>2</sup> and produced 67 kg of fish.

**Table 8 Livestock Changes 1981 - 1999**

Type of Animal	Numbers			
	1981	1999	Change +/-	%
Buffalo	247,300	263,066	+ 15,766	+ 6
Cattle	199,714	359,069	+ 159,355	+80
Pig	190,300	199,690	+ 9,390	+ 5
Goat	1,073	36,336	+ 35,263	+3286
<b>Total</b>	<b>638,387</b>	<b>858.161</b>	<b>+ 219,774</b>	<b>+34</b>

(Source: Provincial Livestock and Fishery Division)

**Table 9 Fish Production Estimates (1998/99)**

Water System	Quantity, ton	%
Mekong river	3,247	36
Other rivers	2,401	27
Lakes	1,007	11
Fish pounds	497	6
Rice fields	1,788	20
<b>Total</b>	<b>8,938</b>	<b>100</b>

(Source: Provincial Livestock and Fishery Division)

## 6.7 Irrigation

Every year there are 10,000 - 20,000 ha of areas flooded in the lower watershed of Xe Bang Hien. A lot of efforts are made to capture this high water in the rain season and use it for irrigation in the dry season. The total area of irrigated land was 26,428 ha in 1998/99 (LAC). 29 % of the land holdings have irrigation system.

There are two major lakes, Nong Luong in Songkhone District and Nong Soui in Champone District. The latter is being enlarged by help of dams. There are no plans for hydropower development in the Province.

## 6.8 Mining

Mining issues are handled by the Ministry of Industry and Handicraft. There are the following mining activities in the Province:

### *Gypsum Mining in Champone District*

Since 1980, there is an exploitation of gypsum, at present 130,000 ton/year. The main part is exported to Vietnam. The mining area is about 1 km<sup>2</sup> (100 ha).

### *Planned Copper and Gold Mining in Vilahouly District*

This project, which will start operating in 2001, will exploit four areas north of Phou Xang He, of which three for gold and one for copper. The net volumes to be exploited are 100 ton of gold (5 gr per gross ton) and 1 million ton of copper (5.6 % of gross to volume). The minerals will be refined in Nonkadeng village near Nam Kok river. An Australian company will be contracted to undertake the project.

### *Granite Exploitation in Sepone District*

An area of 10 ha near road No.9 is used for granite exploitation since 1998. So far up to 500 m<sup>3</sup> has been exploited. The activities are operated by the state enterprise DAFI.

### *Other Activities*

A sandstone quarry in Phine District near Dong Kapho South will be used for supplying material to the reconstruction of road No. 9.

There are sand and gravel exploitations along Mekong river (under Department of Communication.).

A survey of oil/gas has been carried out by a British company, but with no positive results.

## 6.9 Socio-Economy

PRONAM will combine NR management and socio-economic development. Therefore, the Project also have to collect socio-economic data and involve the villages in the planning/management process.

There is already a lot of socio-economic data available in the Province, collected by IRAP project in 1995-1997 and the Province's annual data collection from all villages. IRAP's data generally focuses on the villagers' accessibility to basic needs and services. The IRAP project will come to an end this year (2000). They leave an important socio-economic data base, which can be used by the PRONAM project.

IRAP has carried out a *ranking* of the 15 districts regarding the overall accessibility situation. See the result in **Table 9** below. They used 11 criteria as shown in **Annex 8**. Rank 1 has the least accessibility, rank 15 the highest accessibility.



**Table 10 Ranking of Districts on Overall Accessibility**

District	Rank	Access Score
None	1	2.26
Thapangthong		1.65
Vilabouly	3	1.50
Phalanxai	4	1.28
Sepone	5	1.02
Xonnabouly	6	0.97
Phine	7	0.86
Atsaphangthong	8	0.66
Atsaphone	9	0.63
Xaibouly	10	0.44
Xaiphouthong	11	0.42
Outhoumphone	12	0.28
Sonekhone	13	0.27
Champone	14	0.23
Khanthahouly	15	0.14

The 1,533 villages have the following road access (IRAP):

Villages with all-year-round access	35%
Villages with dry season access only	51%
Villages without road access	14%

51 % of the villages have improved water source (IRAP). Regarding school situation there are (IRAP):

Villages with primary school	70 %
Villages with complete primary school	25%
Villages with secondary school	9%

Regarding rice self-sufficiency (IRAP):

Villages every year self-sufficient	19%
Villages some years self-sufficient	36%
Villages never self-sufficient	45%

Savannakhet is the province with the highest number of victims of unexploded ordnance (UXO) in the country. The Province has had 2,681 victims since 1973. This is the highest provincial figure for the country, making up one quarter of the accidents in Lao PDR. As a result of UXO accidents, there are 635 amputees in the Province. Five of Savannakhet's districts are included in the 10 most affected districts in the country: Xepon, the hardest hit district in the country with 745 victims, followed by Atsaphangthong, Nong, Phine and Vilabouly. These five districts make up over 83 % of the accidents in the Province (HANDICAP International).

## 7 Scope of PRONAM System

### 7.1 General

It seems that there is not lack of NR and socio-economic data in the Province but rather lack of methodology and capacity to analyse and use all existing information.

The PRONAM system will be a framework, or set of methods, for coordinated, integrated activities/steps that will help the Province to manage its NR and improve the socio-economic situation, particularly in the villages.

The "home" location of the PRONAM system should be at an inter-sectoral level, close to the Governor's Office from where the provincial NR policy guidelines are issued. It is suggested that there should be a PRONAM Unit in the Department of Planning. In the Governor's Office, the Vice Governor responsible for NR will be in charge of PRONAM. See **Figure 4** below.

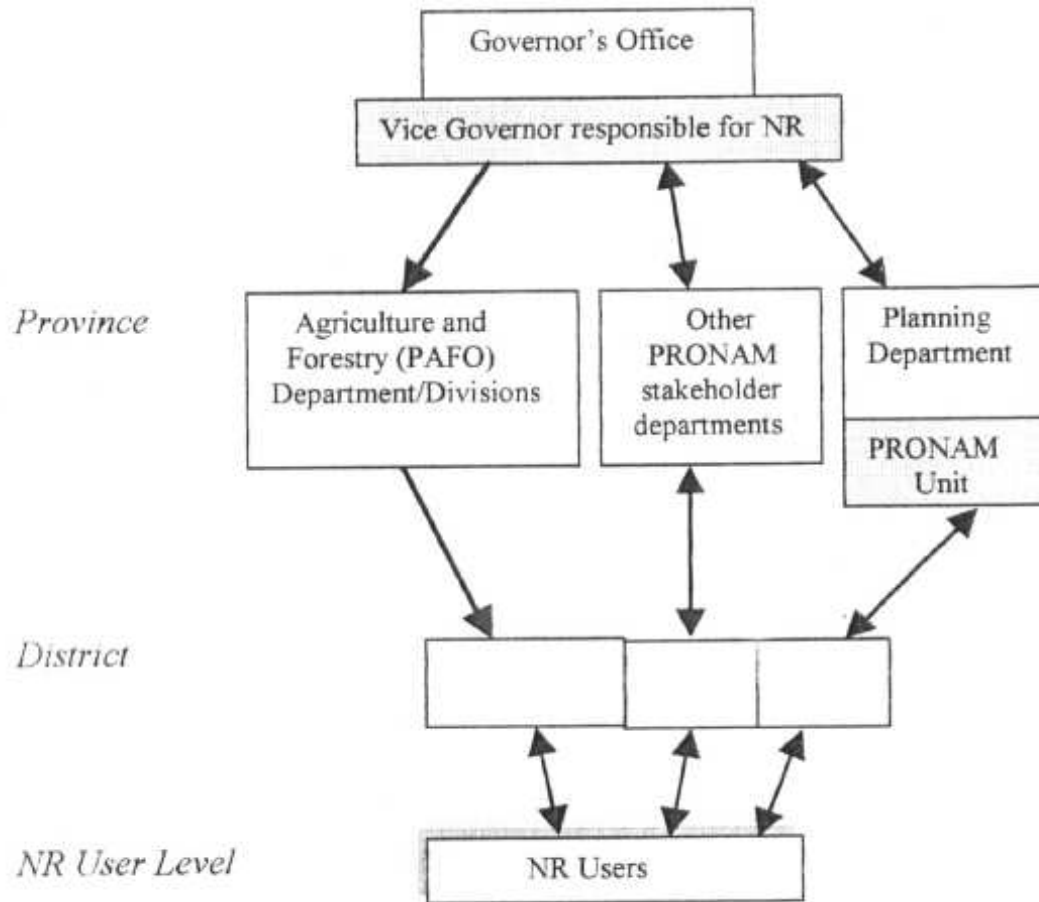
The main actors in PRONAM are (1) the *provincial government*, being the owner and controller of the NR on behalf of the State. and (2) the *users* of the NR. The users are from the private sector (individuals, villages, private enterprises etc.) as well as the government sector (state enterprises and government projects). It is typical for Lao PDR that the government sector is at a high degree directly involved in the use/exploitation of the country's NR.

Starting from the five categories of NR, the use of the NR per sector/department, and the users have been identified in **Annex 2**. There are at least 8 sector departments/divisions technically/administratively involved at provincial level in the use of the NR. We may call these "PRONAM stakeholder departments". Of these, agriculture (including irrigation, livestock and fishery) and forestry are the biggest followed by energy, infrastructure, mining and tourism. The stakeholder departments should cooperate and use the PRONAM system together, with the Planning Department/PRONAM Unit as a facilitator and secretariat. PRONAM decisions will be taken by the Governor's Office.

On the ground, the villagers are the biggest direct users of the NR. 85 % of the population in Savannakhet Province live in 1,533 villages in the rural area. These people live close to the NR and are heavily dependent on them for their subsistence and socio-economic development. The average villager in the Province spends about 4 hours a day to use the NR (for agriculture, collecting wood and NTFP, fetching water, fishing and hunting), and get 50 % of the family's income from them. Therefore the villagers should play an important role in the sustainable NR management, and the *village* should be an important basic management unit in *PRONAM*.

The PRONAM system activities form a cycle as shown in **Figure 5** below. See further a more detailed figure of the cycle in **Annex 6**.

Figure 4 PRONAM in the Organizational Structure

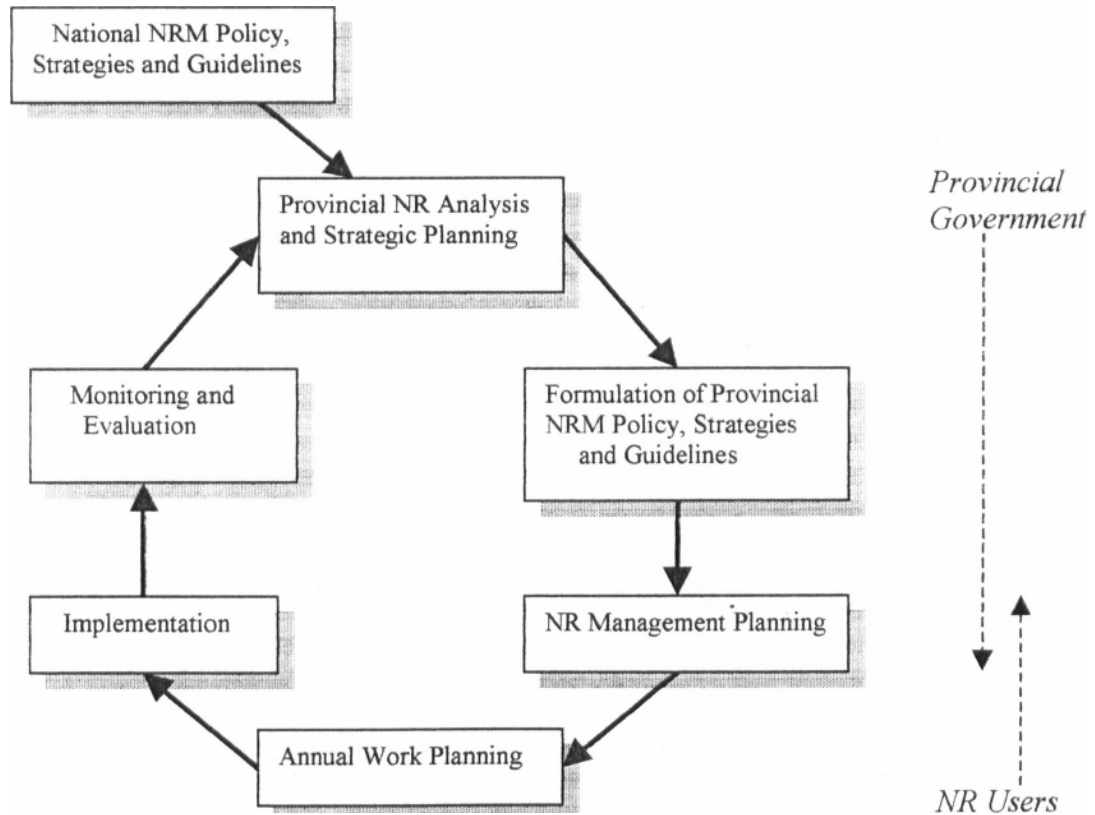


The Provincial Government is acting from above (top-down), but by help of a continuous flow of feed-back information from grassroots level. After analysis of the NR situation, and strategic NR planning exercises, the Provincial Government formulates and issues *provincial NRM policy, strategies and guidelines*. The main target group is the PRONAM stakeholders, the NR users in particular.

The NR users generally act from below (bottom-up). Guided by the provincial NRM policy, strategies and guidelines, they should do *NR management planning and annual work planning*, and finally *implement* the NR activities. In some situations (e.g. in the forestry sector) the Provincial Government may be involved in the NR management planning, either by doing it, or helping the NR users to do it.

The *districts* have an important intermediate position between the Provincial Government and the NR users. They are involved in (1) NR planning (top-down?), (2) implementation of NR projects (acting as NR user), (3) providing extension support to villagers, and (4) monitoring and controlling NR field activities. At district level, the top-down policy/strategy and strategic NR planning will meet the bottom-up operational NR planning and need to be "tuned" together. The PRONAM project should further study and elaborate the district's role in the provincial NR management system.

Figure 5 PRONAM System Activities Cycle



After the implementation (using the NR), there should *monitoring* of the activities and the NR situation, preferably carried out jointly by province/districts/NR users. It should be monitoring against laws and regulations, plans and budgets, and sustainability indicators. Feed-back information from the 'monitoring should go *partly* to the NR user to help improving their planning and implementation, *partly* to the Provincial Government as input to the NR analysis/strategic planning for updating of policy, strategy and guidelines, and *partly* to the central NR policy making unit for updating of the national NR policy and strategies. After this, the PRONAM cycle is closed, and a new cycle starts. The cycle should generally be annual, as the renewable NR follow an annual harvesting/using cycle.

It is important that the national NR policies, strategies and guidelines are general and wide enough to give room for PRONAM to develop more adapted NR policy and strategies for the particular provincial situation. At the same time, the provincial NR policy, strategies and guidelines should give enough room to the NR users to take initiatives and make bottom-up planning considering their very local, diverse situation. If the central NR policies, strategies and guidelines are too detailed and tight, the scope of PRONAM and bottom-up planning will be very limited. This principle should also be reflected in the NR classification systems used. The NR classification at national and provincial levels should be wider and more general, while the classification at village and farm levels should be more detailed and locally adapted. Still the local classification should be possible to accommodate within the wider national classification.

The PRONAM system should be *facilitated* by participation/cooperation, communication/dialogue, transparency and partnership. Particularly important are the inter-sector cooperation and the involvement of the villagers through partnership agreements/contracts.

With reference to **Figure 5** and **Annex 6**, the proposed PRONAM activities are briefly described below.

## ***7.2 Provincial NR Analysis and Strategic Planning***

To be able to formulate appropriate provincial NRM policy, strategies and guidelines, there has to be a preceding working step of careful analysis of the current NR and socio-economic situation, and a set of strategic integrated NR planning exercises. This work is mainly done by the different NR sector departments, but there should be a work procedure at inter-sector level (Department of Planning) to integrate the different NR information and plans, and make an overall NR analysis and integrated strategic planning.

The strategic NR planning exercises should not be geared to produce extensive, detailed (top-down) NRM Master Plans for the province, but rather be used as a dynamic tool to identify critical issues and areas, and give ideas and other inputs to an annual review/revision of the provincial NR policy, strategies and guidelines. PRONAM could be seen as a continuous planning/learning process for gradual improvement of the NR management, and the socio-economic situation

This activity will consist of several sub-activities, such as.

- Data collection.
- Analysis of the current NR situation (mainly the agricultural, forestry and water systems) and trends (over the last 10 years).
- Identification of threats to the NR, and problems in the present NR management.
- Identification of development potentials for the different NR
- Analysis of the socio-economic situation (including gender and poverty) at district and village levels, and its relation to the NR
- Innovative spatial analysis and zonings of NR and socio-economic characteristics.
- Identification of critical issues and critical geographical areas/villages/groups of people etc. for improved NR management and development.
- Make prioritizing (of issues and areas) and conclusions.

Data collection should be done from different sources at central, provincial, district and village levels. NAFRI could give help through Support Systems including nationwide NR inventories, NR data bases and GIS technology (ArcView), and research data input.

There is a lot of NR data available in Savannakhet Province for starting up the PRONAM system. The TRAP project has since 1995 collected a lot of infrastructure and socio-economic data from all villages in the Province. The Province has its own annual data collection from villages including data on population, agriculture, livestock, living conditions, manufacturing/handicraft, education and health. All this information is available in computerized data bases in the Province.

PWT has identified some gaps in the NR and socio-economic information and suggests the following two *Special Studies* to be done at an early stage of the PRONAM project:

### *Study 1: Analysis of Long-Term Changes in the Forest 'Vegetation Cover*

There is no clear picture of the current forest/vegetation cover in the Province and how it has change since the Nationwide Reconnaissance Survey was carried out in 1989. The SPOT images from 1989 are still available. By procuring new images from 2000, it would be possible to get the changes as well as an current forest/vegetation and land use map from 2000, which will

be an important baseline map for PRONAM. It is suggested that FIPC should do the study. They should produce:

- A provincial map (scale 1:100,000) showing the forest/vegetation in 2000.
- A map showing the locations of the major changes in the forest/vegetation in 1989-2000.
- A report with a description/analysis of the changes.

*Study 2: "Living Situation" Classification and Rating of All Villages*

As mentioned above, there is a lot of socio-economic data at village level in the Province. PRONAM should in a participatory process select some 10-20 of them as appropriate living condition indicators. All the 1,533 villages in the Province should then be rated against these indicators and be classified into the following five "Living Situation Categories":

Category 1:	Very good
Category 2:	Good
Category 3:	Medium
Category 4:	Poor
Category 5:	Very poor

By help of this classification and the village locations (see the map in **Annex 7**), it will be possible to do interesting spatial zoning of the "living situation" in the Province, and match these zones against the NR and other zones. Later on, when the village borders will be mapped, they will replace the "dot" location.

Need for other complementary data collection and special studies may be identified later in the course of the PRONAM project.

In the spatial analysis and zoning, a technique with map overlays should be used. See **Figure 6** below. In its simplest form, it could be done by help of transparent maps and an overhead projector.

### **7.3 Strategic NR Projects Activities**

One conclusion in the analysis and strategic planning could be that a specific NR management method etc. should be developed and/or tested in the Province before it is recommended for use at big scale. The earlier mentioned LSFP-IFM and FOMACOP projects (and also the PRONAM project) and other LSFP method development projects are typical such strategic NR projects. Other strategic NR activities are LUP/LA activities (preparing the villages for improved NR management), environmental impact assessments (EIA), feasibility studies (on specific NR interventions), and applied research/special studies.

PWT will review/assess the on-going strategic NR projects/activities in the Province. NAFRI should also follow up these projects/activities as the results and findings may be useful also at a national level.

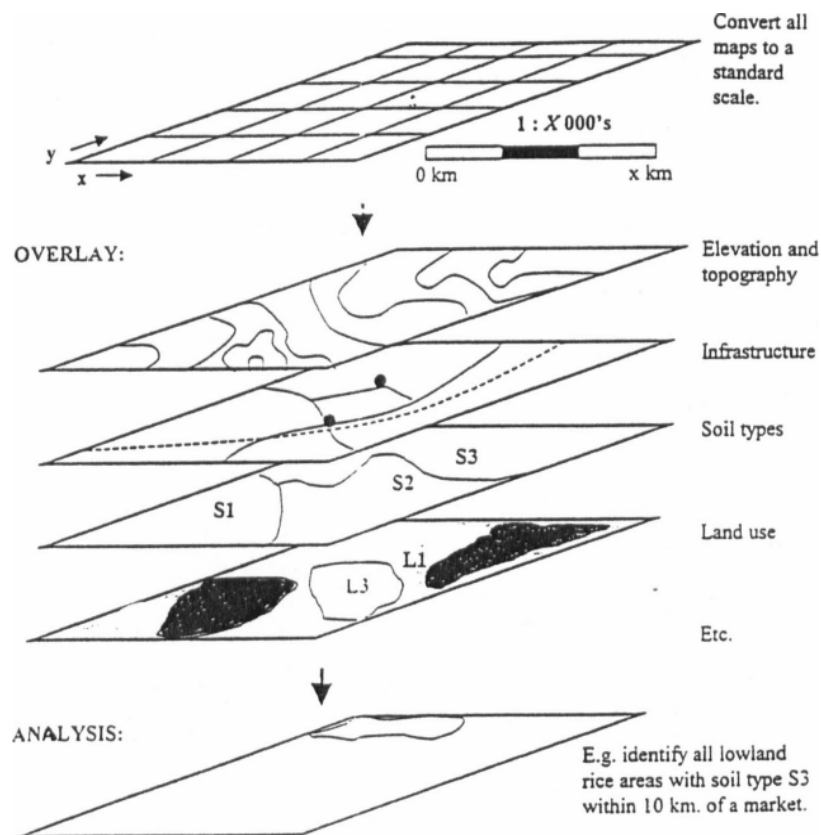
### 7.4 Formulation of Provincial NRM Policy, Strategies and Guidelines

Based on the following inputs, the Province should formulate updated/improved provincial NRM policy, strategies and guidelines:

- National NRM policies, strategies and guidelines.
- NR research findings from NAFRI and others.
- Experiences from strategic NR projects/activities in the Province.
- Conclusions and priorities from the annual analysis and strategic NR planning exercises.
- Monitoring information from the field NR implementation activities.
- The provincial staffs own local knowledge and experiences from NR use and management in the Province.

The NR policy, strategies and guidelines are directed mainly towards the NR users, but also to the other PRONAM stakeholders at provincial and district levels. The NR policy, strategies and guidelines should be reviewed annually, based on fresh monitoring data, and changed or modified, if needed

Figure 6 Spatial Analysis by Map Overlay Techniques



(Source: Iain Craig et al' for a CARERE workshop in 1998)



### ***7.5 Training, Extension and other NW Support Activities***

The NR policy, strategies and guidelines should generally be backed-up by training, extension and other support activities, based on the need/demand from the NR users and staff working with NRM. The PRONAM system should identify and suggest such support activities.

Generally, the Provincial Government's analysis, strategic planning and guidance of the NR use stop here, and the NR users' activities in the PRONAM cycle take over.

### ***7.6 Bottom-up NRM Planning***

Based on the provincial NRM policy, strategies and guidelines, and the NR users' own knowledge about the particular NR, markets etc., the NR users should carry out "bottom-up" planning of the NR management units, including long/medium term management planning and annual work planning. The NR management unit should be farm, village, concession area etc. The management plans (including harvesting rates) should generally be approved by the Government (District/Province).

The PRONAM project should review/assess the different NR users' management systems and give recommendations for improvements. Also the NR users' need for guidelines and support should be identified.

### ***7.7 Monitoring and Evaluation***

After the users' implementation of the NR activities, there should be control and monitoring and evaluation activities, preferably carried out jointly by the Province, Districts and the NR users. The monitoring should include e.g. post-harvesting inspections to see that the harvesting has been carried out according to laws, regulations and agreed practices. The monitoring should be against work plans, budgets and sustainability indicators. Strategic NR projects/activities should be evaluated.

The PRONAM project should develop a monitoring and evaluation system to meet the needs of PRONAM while trying to coordinate/integrate with other existing monitoring systems in the Province, such as the annual village data collection.

## **8 Activities and Work Plan**

In order to produce the outputs/results as defined in the LFA (see **Chapter 3** and **Annex 1**), project activities have been identified and put into a time schedule. See **Table 10** below.

If there are positive indications of the PRONAM work during 2000, it should be possible to start preparations for a second PRONAM province in 2001. However, such preparations are not included in this work plan.

## 9 Inputs and Budget

### 9.1 Inputs

*From NAFRI:*

- A PRONAM Project Manager, other relevant specialists when needed, counterparts to the international short-term advisers, and members of the PRONAM Steering Committee.
- Office room for the PRONAM Working Team at NAFRI.

*From Savannakhet Province:*

- A "PRONAM Officer" at Department of Planning, GIS staff, members of the PRONAM Steering Committee, members of the PRONAM Provincial Advisory Committee, members of the PRONAM Provincial Working Group, contact persons in stakeholder departments and districts.
- Office room for the PRONAM working Team at the Department of Planning.

*From Donor:*

- Technical Assistance through short-term advisers:
  - Natural Resources Management (NRM) Adviser (Chief Adviser)
  - Agriculture Adviser
  - Water/Hydrology Adviser
  - Socio-Economic Adviser
  - Data Base/GIS Adviser

Alternatively, one of the adviser could be long-term adviser.

- Investment:
  - Equipment – see Budget
  - SPOT images
  - Computer software (ArcView)
  - Two 4WD cars (one in Vientiane and one in Savannakhet)
- Operating Costs (for NAFRI and Savannakhet Province)
- Training and Workshop Costs (for NAFRI and Savannakhet Province)

The NRM Adviser should make two work periods/missions per year (6 in total). He should write a *PRONAM Progress Report* after each mission. The other advisers should write Technical Reports. In case of a long-term adviser, he/she should write Quarterly PRONAM Progress Reports.

### 9.2 Budget

See **Table 11** below. The budget covers the period from 1 April 2000 to 31 December 2001. The following currency rates have been used:

1 US\$ = 7,500 Kip

1 US\$ = 8.7 SEK

Table 11 Activities Work Plan

Activity	2000			2001				2002			
	2	3	4	1	2	3	4	1	2	3	4
1.1 Review current policy and legal NRM framework.											
1.2 Arrange planning workshops with PRONAM											
1.3 Review/assess on-going strategic NR projects/activities.											
1.4 Develop and test methods/tools for strategic NR											
1.5 Review/assess existing NR management planning practices and suggest improvements. Workshops covering 1.3 and											
2.1 Develop PRONAM manual and other info materials.											
2.2 Train provincial staff in all stakeholder departments and relevant district staff.											
3.1 Arrange monitoring development workshops with PRONAM stakeholders.											
3.2 Develop and test monitoring & evaluation (M&E) system.											
3.3 Train provincial staff at all levels on the use of the M&E system.											
4.1 Collect data on NR and socio-economy (current situation and trends).											
1.4.2 Carry out Special Studies											
4.3 Procure computers, GIS and other equipment.											
4.4 Develop NR and socio-economic data bases and produce maps.											
5.1 Develop NRM policy, strategies and guidelines.											
5.2 Arrange workshops on NRM policy, strategies and											
6.1 Identify and describe remaining NRM problems and issues in priority order.											
7.1 Identify and propose NRM projects/activities for funding.											
7.2 Make final Project Report with conclusions and recommendations. Concluding											
8.1 Train NAFRI staff in PRONAM (training of trainers).											

Table 12 Budget (in SEK)

Item	Total Project Period	Of which for 1/4/00 - 31/3/01
<b>1. Technical Assistance</b>		
Fees.		
NRM Adviser (Chief Adviser) 40 m/w	1,360,000	646,000
Agriculture Adviser		
Water/Hydrology Adviser 40 m/w	1,200,000	600,000
Socio-Economic Adviser		
Data Base/G1S Adviser		
International travels	240,000	84,000
Per Diem	224,000	109,200
Miscellaneous/unforeseen	50,000	15,000
<b>Sub-total</b>	<b>3.074.000</b>	<b>1,454,200</b>
<b>2. Investment</b>		
<i>NAFRI:</i>		
Printer A4/A3	9,100	9,100
GIS software (Arc View)	18,200	18,200
OH projector with screen	6,700	6,700
Copy machine	17,200	17,200
Air conditioner	4,400	4,400
Telephone	4,400	4,400
Fax machine	1,700	1,700
Office furniture	1,300	1,300
SPOT images	360,000	360,000
Camera	1,300	1,300
4WD car (from LSFP)	-	-
Miscellaneous/unforeseen	5,000	
<i>Savannakhet Province:</i>		
Office furniture	6,100	6,100
1 Computer (desk-top)	17,100	17,100
Printer A3/A4	9,100	9,100
OH projector with screen	6,700	6,700
Copy machine	17,200	17,200
GIS software (Arc View)	18,200	18,200
Telephone	4,400	4,400
4WD car (from LSFP)	-	-
Miscellaneous/unforeseen	4,000	
<b>Sub-total</b>	<b>512,500</b>	<b>503,500</b>
<b>3. Operating Costs</b>		
<i>NAPRI:</i>		
Car maintenance	26,100	8,700
Fuel oil and lubrication (inc FIPC)	28,000	9,300
Car insurance	39,100	13,000
Telephone/electricity	7,000	2,300
Stationary	8,700	2,900
Consumables for FIPC (special study)	40,000	40,000
Documentation, reports, maps	8,700	2,700
Translations	13,000	3,000

Per Diem:		
- NAFRI staff (300 m/d)	41,800	13,900
- FIPC staff (special study, 240 m/d)	33,400	33,400
Miscellaneous/unforeseen	20,000	5,000
<i>Savannakhet Province:</i>		
Car maintenance	26,100	8,700
Fuel, oil and lubrication	25,000	8,300
Car insurance	39,100	13,000
Telephone/electricity	6,300	2,100
Stationary	5,000	1,700
Documentation, reports, maps	7,000	2,000
Per Diem for staff (600 m/d)	36,500	12,200
Miscellaneous/unforeseen	10,000	3,000
<b>Sub-total</b>	<b>420.800</b>	<b>185,200</b>
<b>4. Training and Workshops</b>		
<i>NAFRI:</i>		
Workshops (10x25 = 250 m/d)	21,800	8,700
Training of trainers (5x12 = 60 m/d)	5,300	
Per Diem for trainers (50 m/d)	7,000	
Steering Committee meetings	6,500	4,000
Participation in international workshops*	40,000	15,000
Miscellaneous/unforeseen	8,000	2,000
<i>Savannakhet Province:</i>		
Workshops (15x25 = 375 m/d)	26,100	12,000
Training of provincial staff (150 m/d)	20,000	
Training on M&E (50 m/d)	5,000	
Advisory Committee meetings	8,700	5,000
Miscellaneous/unforeseen	5,000	2,000
<b>Sub-total</b>	<b>153.400</b>	<b>48.700</b>
<b>Total</b>	<b>4,160,700</b>	<b>2,191,600</b>

\*Including participation from Savannakhet Province

### Logical Framework Analysis (LFA) of PRONAM Project

Level/Description	Indicators	Assumptions
<p><b>Development Objective:</b></p> <p>Support sustainable NR management and economic and social development in Lao PDR.</p>		
<p><b>Project Objective:</b></p> <p>Develop a replicable provincial system for sustainable NR planning/management and socio-economic development (PRONAM) with Savannakhet Province as a case.</p>		<ul style="list-style-type: none"> <li>– Donor agrees to fund PRONAM project to completion.</li> <li>– Provincial government support for PRONAM continues.</li> </ul>
<p><b>Outputs/Results:</b></p> <p>1. Provincial NRM planning methodology developed and being used in the Province</p>	<ul style="list-style-type: none"> <li>– PRONAM methodology being used in the regular planning process</li> <li>– NR harvesting increasingly based on sustainable management planning.</li> <li>– NAFRI supports replication of PRONAM to other provinces.</li> </ul>	<ul style="list-style-type: none"> <li>– Government policy continues to support decentralization of planning responsibility to provincial level.</li> </ul>
<p>2. Improved provincial staff capacity for NRM planning in Department of Planning and relevant sector departments ("stakeholder departments").</p>	<ul style="list-style-type: none"> <li>– Provincial staff use PRONAM in their regular work.</li> <li>– NAFRI staff have the capability to replicate PRONAM to other provinces as appropriate,</li> </ul>	<ul style="list-style-type: none"> <li>– Key provincial staff available to participate in PRONAM.</li> <li>– Provincial PRONAM staff remain in current position.</li> </ul>
<p>3. Monitoring and evaluation system developed and being used in support of PRONAM.</p>	<ul style="list-style-type: none"> <li>– Regular progress reports produced by PRONAM.</li> <li>– Sustainability indicators identified, developed and used.</li> </ul>	
<p>4. Comprehensive NR data base and maps developed and used by provincial stakeholder departments.</p>	<ul style="list-style-type: none"> <li>– Increasing demand for PRONAM data from provincial departments.</li> <li>– Provincial departments regularly provide updated info to PRONAM.</li> </ul>	<ul style="list-style-type: none"> <li>– Funding for maintenance of data base continues after PRONAM project.</li> <li>– Provincial departments ready and willing to provide data to PRONAM.</li> </ul>
<p>5. Provincial NRM policy guidelines formulated and adopted for use in regular planning process.</p>	<ul style="list-style-type: none"> <li>– Provincial NRM policy guidelines used by stakeholder departments and NR users.</li> <li>– NRM policy guidelines adopted and used by other provinces/central government.</li> </ul>	

6. Prioritized list of provincial NRM problems and issues identified and described.	<ul style="list-style-type: none"> <li>– Prioritized issues incorporated into stakeholder departments' regular work plans.</li> </ul>	<ul style="list-style-type: none"> <li>– Stakeholder agencies are able to agree on priority NRM issues.</li> </ul>
7. Set of priority projects/activities identified and proposed for funding.	<ul style="list-style-type: none"> <li>– Priority NRM projects receive funding from central government or foreign donors</li> </ul>	<ul style="list-style-type: none"> <li>– Current or greater levels of foreign assistance continue to come to Lao PDR.</li> <li>– Government emphasis on funding for NRM continues.</li> </ul>
8. Improved staff capacity at NAFRI to work with NRM and possible replication of PRONAM in other provinces.	<ul style="list-style-type: none"> <li>– NAFRI is training provincial staff on PRONAM</li> </ul>	<ul style="list-style-type: none"> <li>– NAFRI has mandate to work with NRM at an inter-sectoral level.</li> </ul>

Regarding **activities** and **inputs** see **Chapter 8-9**.



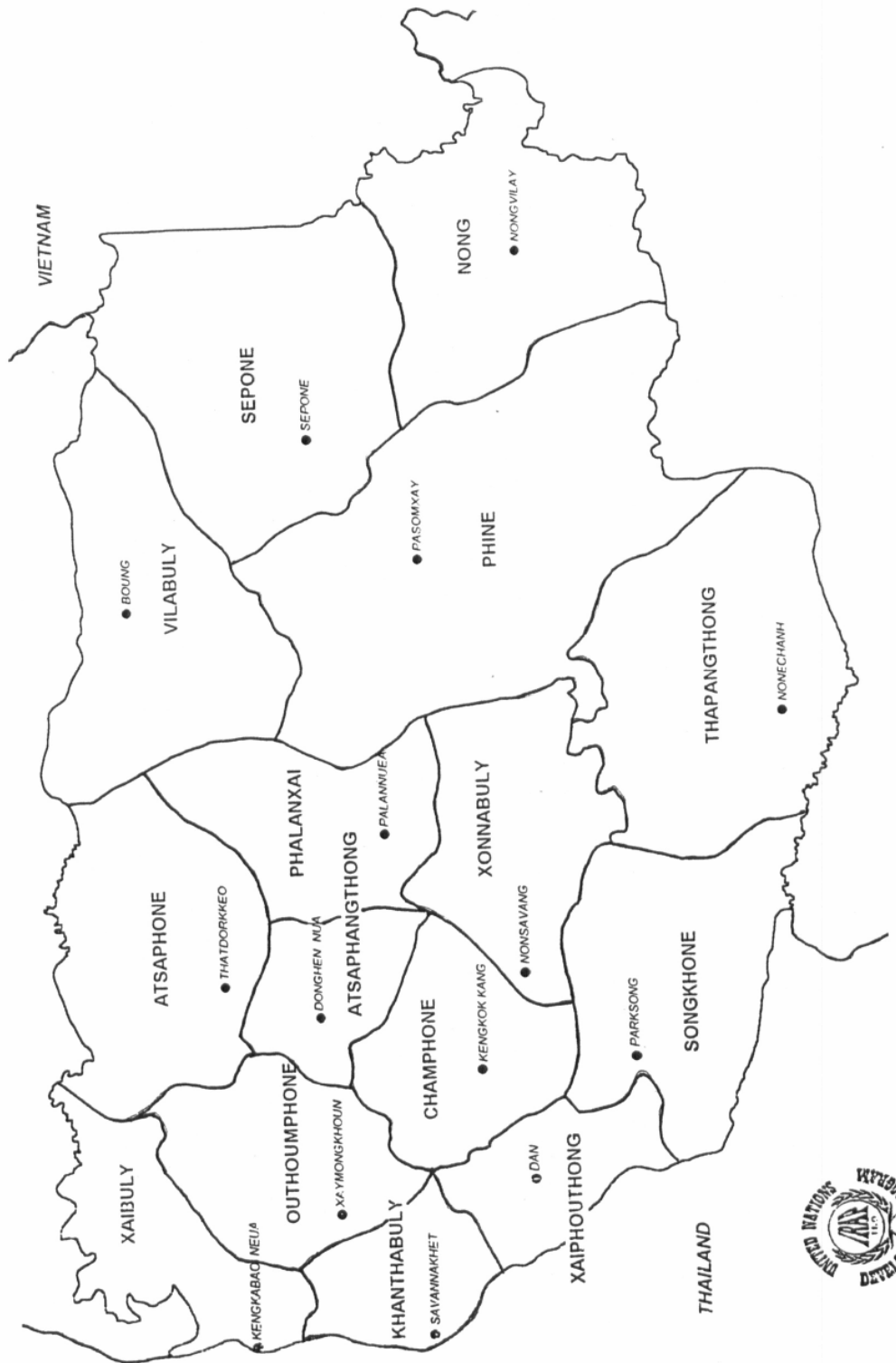
### Use of Natural Resources (NR)

Category	Use (per sector/department)	User
1. Land/soil/minerals	<p><b>Agriculture:</b></p> <ul style="list-style-type: none"> <li>– Food cropping</li> <li>– Cash cropping</li> <li>– Fruit tree plantation</li> <li>– Agroforestry</li> <li>– Rubber plantation</li> </ul> <p><b>Livestock and Fishery:</b></p> <ul style="list-style-type: none"> <li>– Grazing</li> <li>– Fodder production</li> <li>– Fish ponds</li> </ul> <p><b>Forestry:</b></p> <ul style="list-style-type: none"> <li>– Natural forest management</li> <li>– Forest plantation/wood production</li> </ul> <p><b>Energy:</b></p> <ul style="list-style-type: none"> <li>– Coal exploitation</li> <li>– Oil and gas exploitation</li> </ul> <p><b>Mining:</b></p> <ul style="list-style-type: none"> <li>– Rock/gravel exploitation</li> <li>– Mineral exploitation</li> </ul> <p><b>Infrastructure:</b></p> <ul style="list-style-type: none"> <li>– Exploitation for roads, power lines, industrial areas and towns</li> </ul> <p><b>Tourism:</b></p> <ul style="list-style-type: none"> <li>– Ecotourism</li> </ul>	<p>Villagers</p> <p>Villagers</p> <p>Villagers</p> <p>Villagers</p> <p>Villagers/enterprises</p> <p>Villagers/enterprises</p> <p>Villagers/enterprises</p> <p>Villagers</p> <p>Villagers/enterprises/gov.</p> <p>Villagers/enterprises/gov.</p> <p>Government/enterprises</p> <p>Government/enterprises</p> <p>Government/enterprises</p> <p>Government/enterprises</p> <p>Government/enterprises</p> <p>Government/enterprises</p> <p>Public/enterprises/villagers</p>

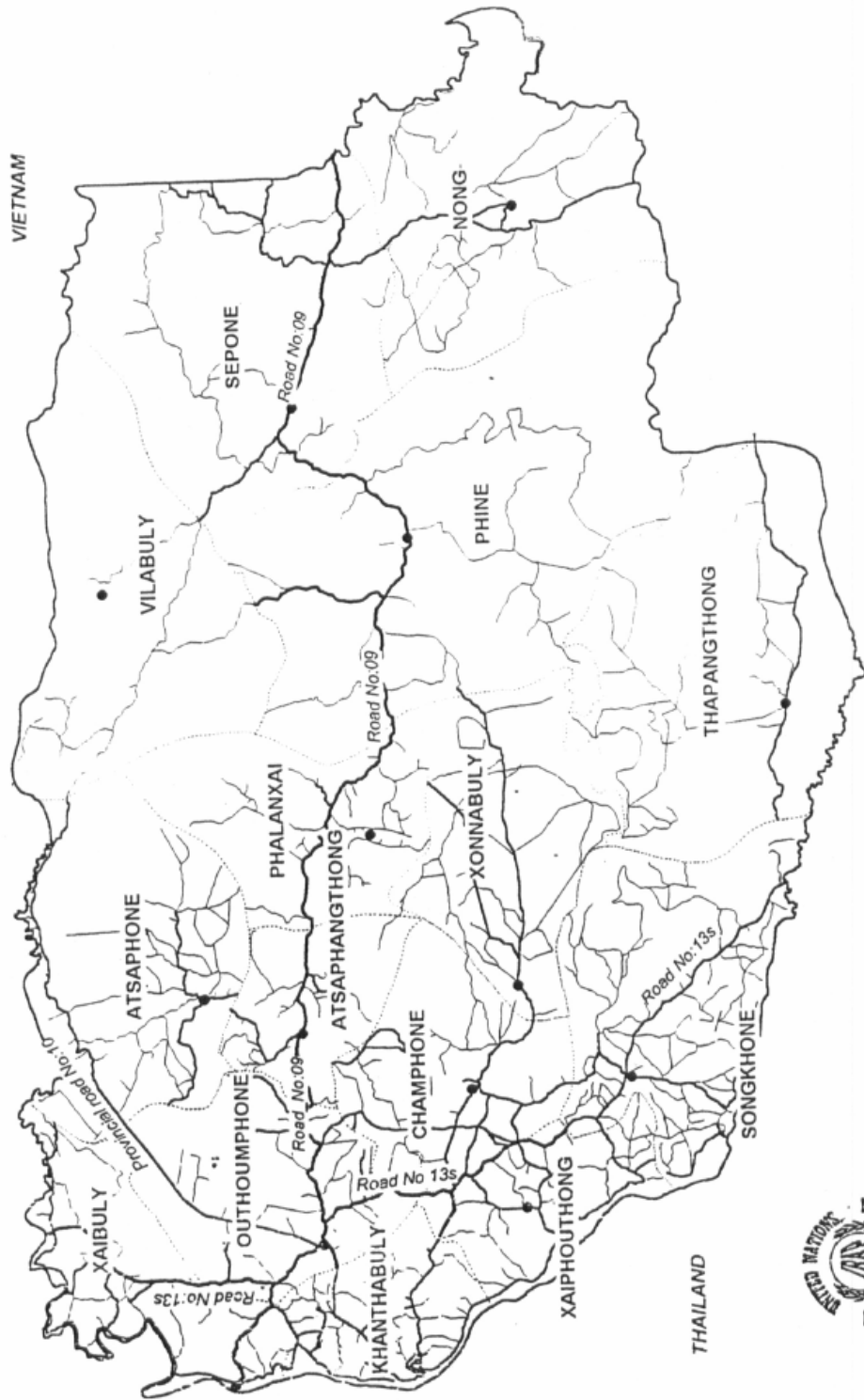
2. Water	<p><b>Agriculture:</b></p> <ul style="list-style-type: none"> <li>– Irrigated cropping</li> <li>– Rainfed cropping</li> </ul> <p><b>Irrigation:</b></p> <ul style="list-style-type: none"> <li>– Collection and distributing water</li> </ul> <p><b>Livestock and Fishery:</b></p> <ul style="list-style-type: none"> <li>– Watering of cattle/buffaloes</li> <li>– Fishing in streams and lakes</li> <li>– Fishing in fish ponds</li> <li>– Other aquaculture</li> </ul> <p><b>Energy:</b></p> <ul style="list-style-type: none"> <li>– Hydropower generation</li> </ul> <p><b>Infrastructure:</b></p> <ul style="list-style-type: none"> <li>– Fresh water production</li> <li>– Industrial water production</li> <li>– Sewage disposal</li> </ul> <p><b>Tourism:</b></p> <ul style="list-style-type: none"> <li>– Ecotourism</li> </ul>	<p>Villagers/enterprises</p> <p>Villagers</p> <p>Government/villagers</p> <p>Villagers</p> <p>Villagers</p> <p>Villagers</p> <p>Villagers/enterprises</p> <p>Villagers/gov./enterprises</p> <p>Government/enterprises</p> <p>Government/enterprises</p> <p>Villagers</p> <p>Public/enterprises/villagers</p>
3. Forest/vegetation/flora	<p><b>Agriculture:</b></p> <ul style="list-style-type: none"> <li>– Agroforestry production</li> <li>– Shifting cultivation</li> </ul> <p><b>Livestock:</b></p> <ul style="list-style-type: none"> <li>– Grazing</li> </ul> <p><b>Forestry:</b></p> <ul style="list-style-type: none"> <li>– Timber production</li> <li>– NTFP production</li> <li>– Biodiversity conservation</li> </ul>	<p>Villagers</p> <p>Villagers</p> <p>Villagers/enterprises</p> <p>Gov./enterprises/villagers</p> <p>Villagers/enterprises</p> <p>Government/villagers</p>

	<ul style="list-style-type: none"> <li>– Watershed protection</li> </ul> <p><b>Energy:</b></p> <ul style="list-style-type: none"> <li>– Fuelwood production</li> <li>– Other bioenergy generation</li> </ul> <p><b>Tourism:</b></p> <ul style="list-style-type: none"> <li>– Ecotourism</li> </ul>	<p>Government/villagers</p> <p>Villagers/enterprises</p> <p>Villagers/enterprises</p> <p>Public/enterprises/villagers</p>
4. Animals/wildlife/fauna	<p><b>Forestry:</b></p> <ul style="list-style-type: none"> <li>– Hunting</li> <li>– NTFP (fauna) production</li> <li>– Wildlife conservation</li> <li>– Biodiversity conservation</li> </ul> <p><b>Tourism:</b></p> <ul style="list-style-type: none"> <li>– Ecotourism</li> </ul>	<p>Villagers</p> <p>Villagers</p> <p>Government/villagers</p> <p>Government/villagers</p> <p>Public/enterprises/villagers</p>
5. Climate/sun	<p><b>Agriculture:</b></p> <ul style="list-style-type: none"> <li>– Using rainwater, solar energy and carbondioxide for crop production</li> </ul> <p><b>Forestry:</b></p> <ul style="list-style-type: none"> <li>– Using rainwater, solar energy and carbondioxide for wood and NTFP production</li> </ul> <p><b>Energy:</b></p> <ul style="list-style-type: none"> <li>– Solar power generation</li> <li>– Wind power generation</li> </ul>	<p>Villagers</p> <p>Villagers/enterprises/gov.</p> <p>Villagers/enterprises/gov.</p>

### Districts of Savannakhet Province



### Road Network of Savannakhet Province



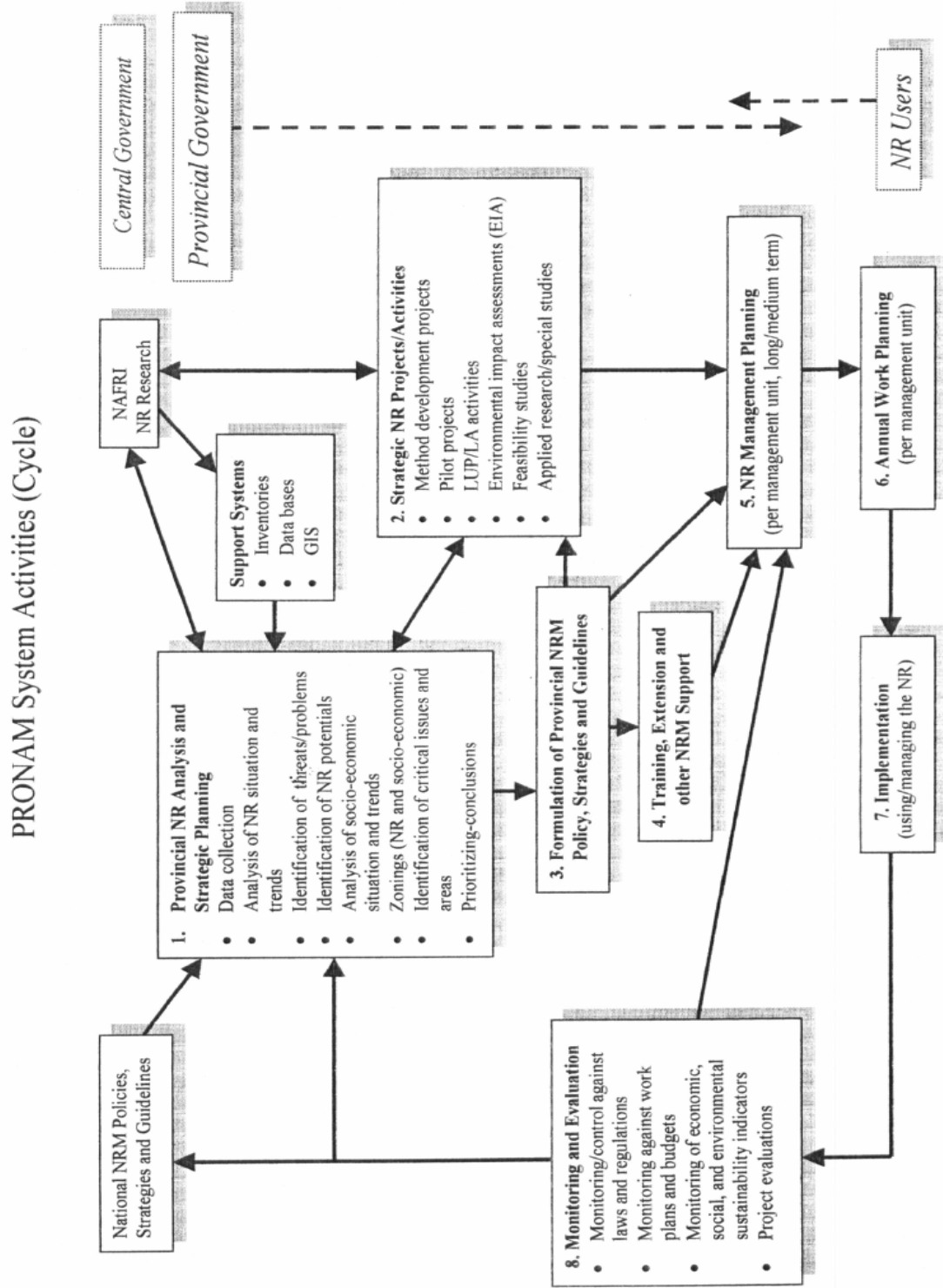
## Logging Quota/Permit Procedure in the Province

The annual logging quota/permit procedure at provincial level includes a series of steps as follows.

1. The sawmill companies have their own Reconnaissance Teams travelling round the Province and identify possible/interesting forest areas for logging. They send requests to the Province for logging quotas and permits indicating areas and volumes.
2. Based on their knowledge about the forest and the forest land use situation, PAFO makes a proposal for annual quota for the Province (for domestic use and export) and sent it to the Central Government.
3. The Central Government makes decisions on the quotas, and sends back the decision to the Province. The proposal from the Province may have been increased or decreased. The Central Government may later increase the export quota depending on the demand/prices from the market.
4. PAFO divides the quotas (for domestic use and export) between the approved sawmill companies. The companies are informed about the quotas.
5. The sawmill companies select and mark the trees for felling. They select the trees they want (within the laws and general regulations). There are no special "strategic" guidelines from the Province for the selection of the trees to be felled
6. The sawmill companies send a request to the provincial Forest Division's Survey Unit to come and survey the forest areas the company wants to log.
7. The Survey Unit visits the area and checks (1) that the area is OK (not a conservation area etc.) and (2) that the marked trees are OK. They approve the selected trees by "stamping" the trees with a special hammer.
8. The Survey Unit then makes a Report on the survey (including tree species, number of trees, volumes etc.) which they send to the Forest Division. After checking, Forest Division forwards the report to PAFO.
9. Based on the Report, PAFO prepares a Logging Permit and sends it to Forest Division's Management Unit.
10. The Management Unit calculates all the taxes, planting fee etc., and how much the company should pay in advance (30 % of total taxes/fees) and sends the information to the Financial Division of the Province.
11. The company goes and pays the advance to the Financial Division and gets a receipt.
12. By showing the receipt to the Management Unit of the Forest Division, the sawmill company will get the Logging Permit.
13. A deadline for the logging is given in the Permit. The Permit is issued only for part of the volume at a time, If making good progress and performance, after control by the Management Unit, a new Permit will be issued for the remaining logging volume.
14. The sawmill company have to sub-contract a state logging company to carry out the logging. Exceptions are the LSFP-JFM and FOMACOP projects where villagers are doing the logging.
15. The Logging Permit contains the following information:

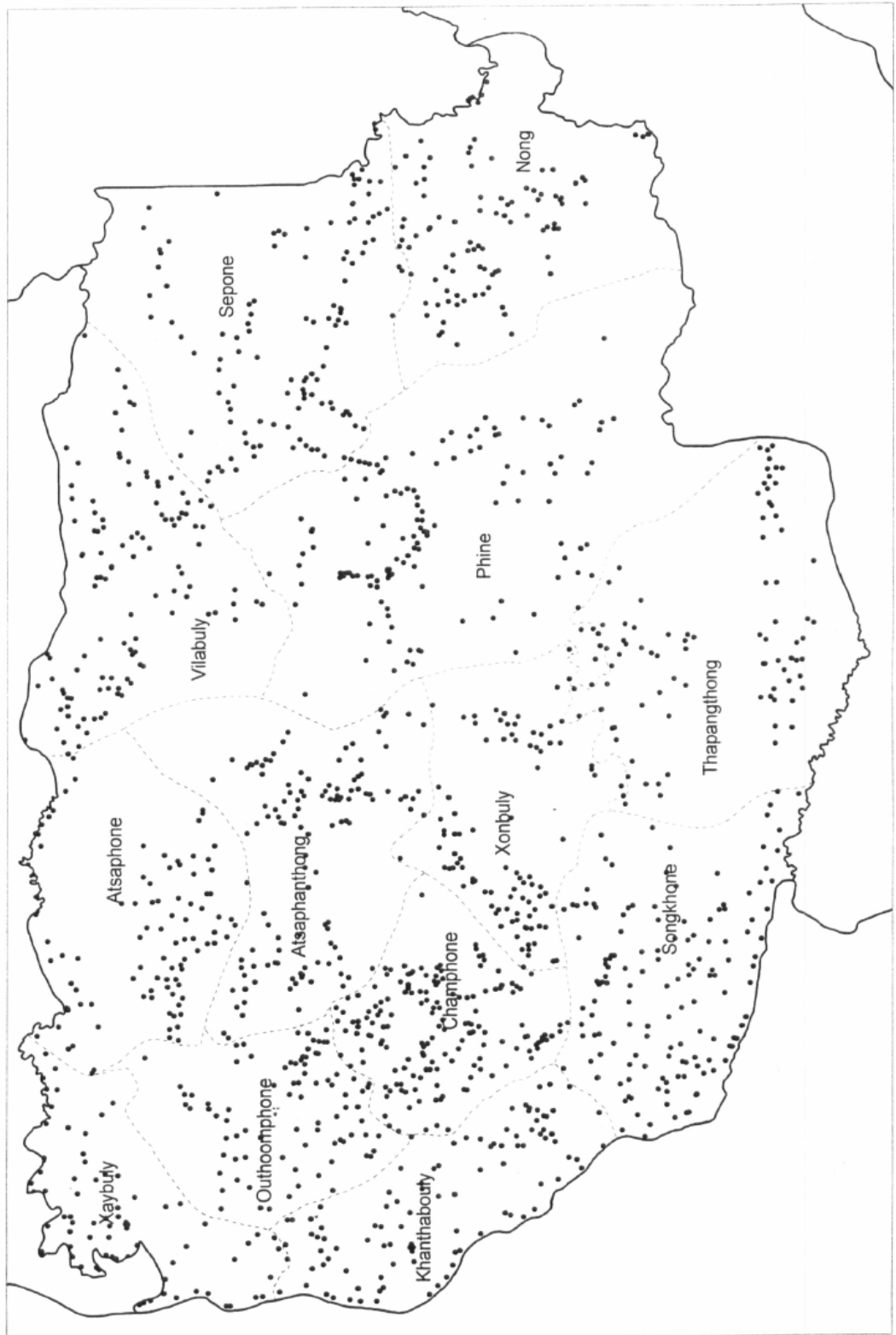
- Name of the sawmill company and the state logging company.
- The total volume of logs that is allowed to be cut, and the volume to be cut in a first step.
- Place (district and village) where the logging should take place.
- Conditions for the logging (including deadline date).

The Permit is signed by the Director of PAFO, the Head of Forestry Division and the Handling Officer.





**Villages in Savannakhet Province**



### Indicators Used in Ranking of Districts (Table 9)

The following characteristics were used to calculate the overall access score of the districts:

<u>Roads</u>	
:	
Percentage of villages with all year round road access	
1	> 45%
2	30% <= 45%
3	15% <= 30%
4	<= 15%
<u>Roads</u>	
:	
Average travel time (round trip) to traditional water source in dry season	
1	0 <= 15 minutes
2	15 <= 20 minutes
3	20 minutes <= 25 minutes
4	> 25 minutes
<u>Water</u>	
<u>supply</u>	
:	
Percentage of villages with an improved water source	
1	>75%
2	50% <= 75%

3	25% <= 50%
4	<=25%
<u>Health</u>  :  Percentage of villages without permanent medical staff	
1	<= 75%
2	75% <= 85%
3	85% <= 90%
4	>90%

<u>Health:</u>	
Average travel time to a pharmacy	
1	0 <= 1 hour
2	1 <= 2 hours
3	2 hours <= 4 hours
4	> 4 hours
<u>Health:</u>	
Average travel time to a hospital/dispensary	
1	0 <= 1,5 hour
2	1 5 <= 3 hours
3	3 hours <= 4,5 hours
4	> 4 hours
<u>Education:</u>	
Pupils/population ratio	
1	>17.5
2	15 <= 17.5
3	10 <= 15
4	<= 10
<u>Education:</u>	
Teachers/1000_people ratio	
1	>6
2	4.5 <= 6

4	$\leq 4.5$
<u>Education:</u>	
Percentage of villages with a complete school	
2	$25\% \geq 35\%$
3	$15\% \geq 25\%$
4	$\leq 15\%$
<u>Agriculture:</u>	
Percentage of villages self sufficient in rice	
1	$> 25\%$
2	$17.5\% \geq 25\%$
3	$10\% \geq 17.5\%$
4	$\leq 10\%$

Each characteristic has been rated between 0 and 4. 0 means the circumstances are good and 4 means the circumstances are bad. Thus, a higher rating means a poorer access situation.

The overall score is weighted on the total number of inhabitants of a district.