TIMBER TRADE AND WOOD FLOW–STUDY

Lao PDR

By

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Abbreviations used

ACC Annual Allowable Cut
ADB Asian Development Bank
C&I Criteria and Indicators [for sustainable forest management]
1. Introduction

1.1 Background

The current study on wood demand and supply, and forest industries in Lao PDR is a part of the Poverty Reduction and Environmental Management in Remote Greater Mekong Sub-region Watersheds-project and its Timber Trade and Wood Flow-study. This study is one of six country studies – one for each project country – that are produced during the project. A separate regional report studies the cross-border issues and opportunities in the whole of the subregion.

This report – like all the national reports – deals with three interrelated topics:

i. general pattern of wood use and demand/supply in the country

ii. timber trade to/from the country

DAFI Integrated Agriculture Forestry Development Company
DoF Department of Forestry
DFO District Forestry Office
EIU Economist Intelligence Unit
FIC Foreign Investment Committee
FINNIDA Finnish International Development Agency
FOMACOP Forest Management and Conservation Programme
fy fiscal year (in Lao PDR October 1 to September 30)
GDP Gross Domestic Product
GMS Greater Mekong Subregion
GoL Government of Lao PDR
HEP Hydroelectric Power
ILC Irrevocable Letter of Credit
JFM Joint forest management
JICA Japan International Co-operation Agency
LKS Lesser Known Species
LSFP Lao–Swedish Forestry Programme
MAF Ministry of Agriculture and Forestry
MoD Ministry of Defence
MoTT Ministry of Trade and Tourism
NBCA National Biodiversity Conservation Area
NTFP Non-Timber Forest Product
PDR Peoples’ Democratic Republic
PFO Provincial Forestry Office
SFM Sustainable Forest Management
SIDA Swedish International Development Agency
SoE State-owned Enterprise
TFAP Tropical Forestry Action Plan
USD United Stated Dollar
WB World Bank
iii. forest industries and the role of forest industries in the national industrial strategies

The study was carried out by two members of the project team of consultants between August and December in 1998. Some additional data were collected and the report produced in early 1999. The team on this study consisted of

- Mr. Thongleua Southavilay (Lao Montgomery Watson) – National Consultant
- Mr. Tuukka Castrén (Indufor Oy) – International Consultant

The work of the consultants was supervised and assisted by Mr. Stephen Devenish, the team leader of the Project.

1.2 Data

The intention of the study is not to assess detailed volumes and structure of trade, but rather to facilitate the visualisation of the pattern in wood and primary wood product trade. Taking into consideration the accuracy of data available in all the project countries, any attempts to gain detailed information on actual volumes traded would be fruitless for, among others, the following reasons:

- inaccuracy of official statistics,
- much of wood consumption is local, household level utilisation goes largely unrecorded,
- domestic subsistence use does not even pass through the market mechanism, viz. products are not valued in monetary terms,
- decentralised forest authority

The data has been collected from a number of sources, from both official statistics and informal communication with various stakeholders. The official sources have consisted of, among others, trade, industrial and other economic statistics. The forest inventory data, though limited, has proved to be a valuable source of information. Previous and on-going forestry projects in the country have produced much of the forestry data available. The largest present projects with relevance to this study are:

- The Lao-Swedish Forestry Programme 1996-2000 (SIDA)
- Forest Management and Conservation Programme (Government of Finland)
- Industrial Tree Plantation (ADB)

More extensive field research was carried out in seven provinces: Luang Prabang, Oudomxay and Phongsaly provinces in the northern parts of Laos, and Champasak, Saravane, Sekong and Attapeu provinces in the South. Some provincial data were also collected during visits to Khammouane and Savannakhet provinces.

The consultants have also interviewed a large number of people who have shared their knowledge of the forest utilisation in the country. The list of personal contacts is presented in Annex 1. All conclusions and recommendations, however, are entirely those of the consultants.

2. Forest Sector

2.1 Forest Resources

Natural Forests

Lao PDR is, despite declining forest areas, one the most forested countries in the region. In 1940’s, 70% of the land area was under forest cover. In the forest inventory of 1989, forest cover had declined to 47%. The most recent forest cover estimate is 41% and was prepared in 1999 based on satellite imaginary and other data from 1997. However, the figures from different years are not fully comparable due to differences in methods and classifications. The total area of forests is 8.5 mill. ha while another 8.2 mill. hectares represents poor growth areas, less dense wood and shrub land. (Figure 2.1)

Figure 2.1: Land Classification, 1997
In recent years the decline in forest area has become slower due to increased forest cover by secondary forest growth. This is naturally reflected in the biodiversity of the forests. Much of the remaining virgin forests are in remote areas where logging or encroachment poses less danger for forests. With improved transport infrastructure the situation is likely to change.

All forest land in Lao PDR is owned by the state and mostly managed by the Department of Forestry (DoF) under the Ministry of Agriculture and Forestry (MAF). The only exception is that some areas, even National Biodiversity Conservation Areas (NBCA), which fall under the mandate of the Ministry of Defence.

There are currently 155 000 ha of community managed forests established by two projects (the World Bank–Government of Finland financed Forest Management and the Conservation Project and the Lao–Swedish Forestry Programme financed by SIDA). Community forestry and joint management models have been deemed to be the main path for the future development of the forest management structure to overcome the institutional deficiencies of the current top-down management of Lao forest resources.

Lao forests incorporate vast biodiversity values and this has been included in national forest policy. In total there are 20 central government level declared National Biodiversity Conservation Areas (NBCA, » national parks) covering 3.01 mill. ha of forest (not incl. wood and shrub land). Eleven more NBCAs have been proposed. Additionally, there are large areas of forestland in over 1 000 province and district-level protected areas. There is little information on these local level protected areas; what have been the criteria in their establishment and how well they are managed or if they have even been demarcated is unclear. The DoF is currently preparing an inventory of these areas.

The total area of protected forest cover in Laos is 7-8 mill. ha corresponding to 70-80% of productive forestland in the country. It may questioned whether setting such a high share of forest resources outside wood production is feasible, particularly in view of the apparently non-consistent approach used in declaring local level protected areas and inadequate management resources. There is a need for a thorough analysis of the areas where it may become apparent that some of the areas would be more valuable in productive uses.

**Plantations**

Forest plantation activities in Lao PDR have progressed on two fronts simultaneously: a) fast growing exotics (mainly *Eucalyptus camaldulensis* and *Acacia mangium*) for the production of fuelwood and charcoal and b) teak and other valuable indigenous species. Some attempts to sell wood chips from exotic plantations to Thailand have also been made.

The fast growing exotic plantations are mainly located in the central and southern parts of the country:
Vientiane, Khammouane, Savannakhet and Bolokamxai provinces. In the northern parts of the country indigenous species (particularly teak) have been preferred in plantations. These plantations have not yet reached mature age and thus there is no logging experience.

In all, the area under tree plantations is not large. In total 33 800 ha. of forest plantations have been created since 1975. No accurate data on previous plantations is available. The areas planted, however, may be estimated as small. Since 1992, the areas annually planted have increased substantially. (Figure 2.1)

**Figure 2.1: Forest Plantations – annual areas planted (ha, 1975-96/97)**

![Graph showing forest plantations annual areas planted (1975-96/97)](image)

Source: DoF

The area distribution of plantation activities in 1995 and 1998 is presented in Table 2.1. However, it should be noted that the statistics refer to planting activities, and no reference is made to the survival of the plantations. For example, in late 1980’s GoL promoted forest plantation through extension and distribution of seedlings. Some 6 250 ha were reported to have been planted. In an inventory in 1991 only 2 900 ha of plantations were recorded. The disparity was caused by a) a lack of management leading to the disappearance of the plantation or b) plantations were double-counted during the replanting.

**Table 2.1: Distribution of Plantation Establishment (1995, ha)**

<table>
<thead>
<tr>
<th>Region/Province</th>
<th>1995</th>
<th>1998</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Northern Region</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luang Prabang</td>
<td>1 383</td>
<td>1 409</td>
</tr>
<tr>
<td>Xayabury</td>
<td>470</td>
<td>1 104</td>
</tr>
<tr>
<td>Oudomxay</td>
<td>424</td>
<td>150</td>
</tr>
<tr>
<td>others</td>
<td>861</td>
<td>551</td>
</tr>
<tr>
<td><strong>sub-total</strong></td>
<td>3 138</td>
<td>3 214</td>
</tr>
<tr>
<td><strong>Central Region</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Khammouane</td>
<td>1 542</td>
<td>806</td>
</tr>
<tr>
<td>Vientiane Province</td>
<td>1 036</td>
<td>98</td>
</tr>
</tbody>
</table>
The total plantation area is estimated at 12-15 000 ha which is well below the cumulative establishment since 1975 (33 000 ha).

A notable feature in plantation establishment is the active role of the private sector as opposed to government initiatives. In the early 1990's the GoL initiated a plantation promotion programme to produce fast growing exotics to alleviate pressure on natural forests to produce woodfuel to the urban populace. The largest forest plantation holders are private companies or joint ventures between private and state enterprises.

**Production potential**

Assessments of sustainable yield or annual allowable cut (AAC) are based on inventory results and growth models. Neither one is available in Laos and consequently no accurate AAC estimations can be made. The Tropical Forestry Action Plan (TFAP) estimated the annual sustainable yield to be only 282 580 m$^3$, or only 0.24 m$^3$/ha.

Based on rough growth estimates applied widely in the region, annual production potential at national level becomes somewhat higher than presented in the TFAP. The net growth may be estimated at 9.0 mill. Growth in protected areas is out of bounds for commercial utilisation reducing the growth in production forests to 2.2 mill. m$^3$/yr. However, much of this is not commercially attractive and based on regional experience and the little inventory information available it may be assumed that the AAC becomes 600-700 000 m$^3$/yr.

This is below the estimate used by the LSFP of allowable cut being 0.5 m$^3$/ha/yr. which corresponds to 1.0 mill. m$^3$/yr. when applied to the production forest area. With the lack of inventory and growth trial data AAC assessment will inevitably result in a wide margin, and in the case of Laos it may be estimated to be 600 000–1 000 000 m$^3$ of commercial removals (incl. logging waste).

**Certification**

New administrative tools in guiding Lao forest industries to be introduced are related to the certification of sustainable forest management. The items include overall design of the certification scheme and the criteria and indicators for sustainable forest management (C&I) and chain-of-custody in particular. Once successfully implemented these new schemes will ease the market penetration of Lao forest products. However, the schemes must:

- be based on internationally accepted criteria
- cover all forest production, and
- be easily and reliably verified.

If these prerequisites are not met, the schemes will not be internationally accepted and will not fill their purpose.
as proof of the sustainability of the Lao forestry. Particularly in environmentally sensitive markets in North America and Central Europe national initiatives are not adequate in themselves. Regional and global approaches are needed to improve the environmental image of wood and wood products from the GMS countries.

The national approach to the certification of sustainable forest management is under development. As an initial step, the C&I for sustainable forest management are to be developed in a forthcoming donor assisted project.

Another initiative will be started under FOMACOP which has invited an international certification body to evaluate the management practises in the project area. The aim is to certify community management forests, starting May 1999. The wood logged would thus become the first SFM certified Lao wood entering the market. It will also demonstrate a) if certified wood has better market acceptance in the depressed market and b) if there is a price premium over non-certified wood.

### 2.2 Role of Forest Sector in the Lao Economy

#### Production

The actual role of forest sector for the economy in Laos is difficult, if not impossible, to quantify. In official statistics the contribution of forests to GDP has been in the range of 4.5% in 1990’s. The share of forestry in official statistics is downwardly biased for two reasons: a) subsistence household wood consumption goes unrecorded, and b) unofficial commercial logging is not recorded.

#### Exports

Forest produce has been an important export item for the country. In the past decade forest sector exports have accounted for half of the official exports. In the 1980’s forestry products and hydroelectric power were almost the only export products forming some 90% of all exports. In the 1990’s exports have become more diversified, particularly garments and coffee have become increasingly important (Figure 2.2).

![Figure 2.2: Lao PDR: Exports and Share of Wood and Wood Products (USD mill., 1992-1996 est.)](source:EIU (1998))

### 3. Utilisation of Forest Resources
3.1 Legal Framework

The Forestry Law of 1996 has decrees on the utilisation of forest resources and the setting-up of forest industries in the country. Generally, all forestland is owned by the State. However, private individuals and organisations may obtain tenure rights to trees, natural forests and forestland. These tenure rights may be transferred and inherited. For land tenure holders there is a general requirement of sustainability:

Article 57: Obligations of Forest and Forest Land Users

- make use of forest and forestland in accordance with the purpose defined for in agreements, regulations and laws.
- ...
- employ all means in order to protect, conserve and develop forest and forestland to make it a sustainable resource
- ...

The Harvesting of Forest Produce

For logging and other forest produce utilisation the following general instructions, among others, are given:

- logging is allowed only in areas with forest management plans
- clear cutting is allowed only if necessary [no indication is given of which cases may be considered necessary]
- replanting and/or good maintenance of the logging area
- efficient harvesting methods and minimisation of logging residues through maximum use of cut trees
- collection of NTFPs is regulated by specific regulations by concerned agencies [however, no list of such agencies is presented]

In addition to harvesting, there are also regulations on other aspects of forest utilisation:

- Article 26: The Transport of Timber and Other Forest Produce
  in addition to the general requirement of the above regulations, the marking of each tree is required [this is the only section where references to such marking is made, it is not disclosed what type of markings are required, made by whom and for which purpose]
- Article 27: The Felling of Planted Trees
  the cutting of planted trees for household use requires a local permit while the cutting of commercial plantations requires a provincial level permit
- Article 28: The Harvesting of Timber and other Forest Produce from Village Management & Use Forest for Household Consumption
  household wood, max. 5 m³ per year, may be collected only from production forests with authorisation of village authorities. Also the harvesting of NTFPs requires village level authorisation.
- Article 29: The Export of Timber and other Forest Produce to other Countries
  all forest produce export requires a license from the government [no detailed description of the license system is presented]
- Article 30: Customary Use of Forest and Forest Land
  a provision is made to allow customary use of forest land for small-scale domestic use.

In addition to the Forestry Law, much of the regulating is done through decrees and ad hoc orders by the Prime Minister or other relevant authorities. These lower level regulations are still in the preliminary draft stage. However, administrative orders tend to accumulate and may, in the long term, form an inconsistent web of orders.

Forest and Forest Produce Industry

The Forestry Law is to some extent vague in respect of forest industries. The only regulation dealing directly with forest industry can be found in Article 31:

Article 31: The Establishment and Operations of Timber and Forest Produce Processing Industry

The establishment of timber and forest produce processing industry must strictly comply with regulations and receive the authorisation of the Ministry of Agriculture and Forestry and other concerned authorities. The operations of timber and forest products produce industry must comply with regulations, such as those on the efficient use of raw materials and the distribution and sale of the processed materials.

The other article in Part 2: Forest and Forest Produce Industry states that all sawing and wood cutting
equipment in the country must be registered at provincial or prefecture forest authorities.

Article 31 does not provide any indication on what types of permits or licences are actually needed to establish forest products industries; the authorities to be consulted are not identified, and only an obvious requirement of following other regulations is included.

Deficiencies in the Forest Legislation

The current Forestry Law deals with a wide range of issues related to forest utilisation. Its approach is partly modern but is still vague in the creation of a regulatory framework for forest utilisation and trade. Some areas that need strengthening include:

1. harvesting on state managed land
   there are no apparent regulations on who assesses logging volumes and issues permits for logging in state land, not even references to other legislation.

2. pricing of wood sales from state forest
   no reference is made to which mechanisms are applied in the pricing of wood sales from public forests, administrative or market prices. This leaves private enterprises insecure with few possibilities of long-term business planning.

3. harvesting from hydroelectric power (HEP)– development sites
   half of official harvesting comes from clear cutting in HEP-development sites but the current forestry legislation makes no reference to such logging.

4. administration
   there is no description of forest administration in Laos, neither at national, provincial nor district level.

5. establishment of forest produce industries
   the law does not provide any guidelines for forest industry policy. An authorisation from MAF and other, undisclosed agencies is required. No criteria on which agencies should base the authorisation are presented. Other shortcomings and inefficiencies in the regulations governing investments in forest industries are presented in Chapter 4.

6. other issues
   many of the articles in the law are not clear and leave room for ad hoc interpretations. Some such comments are marked in [brackets] above.

3.2 Logging Quotas

Quota Assessment

Commercial wood harvesting in Lao PDR is based on annual logging quotas. These quotas set the limits for volumes that may be logged in the country and are based on assessment by the provinces, and the Ministries of Agriculture and Forestry, Trade and Tourism, and Finance as well as the Prime Minister's Office. However, according to the staff of the Division of Inventory and Planning at the DoF, the ministries do not consult this Division.

The MAF finally issues the logging quotas and distributes them to the provinces as provincial quotas. This forms the logging plan. In dam construction sites logging is also limited by quotas. There, however, the final aim is to clear the area of all wood and change the land use type. Consequently, the sustainability of the resource needs not to be considered.

The forest inventory methods and information in Lao PDR still need strengthening. The DoF does not have growth models for most species and even the information on the current growth stock is not adequate. Not only is the quota based on other criteria than sustainable yield; the forest authorities are not even able to assess whether the quota is above or below sustainable level.

Forest royalties formed 11% of government revenues in 1997/98 and forest revenues are a major part of the domestic revenue collection for the GoL. Despite the vital role of the logging revenues, the setting of the quota is not carried out transparently and the actual criteria are not disclosed. However, in assessing the decision making process it is apparent that the quotas are based on:

- fiscal needs of the GoL, and
- needs of the State-owned Enterprises (SoE) in terms of supply contracts and available logging capacity
The provincial authorities may affect the provincial quotas. This leads to, particularly in well-forested central and southern parts of the country, rather high logging quotas. The provincial authorities officially allocate the logging sites. However, they are prone to be influenced by the powerful logging companies and do not possess adequate information on which to base the decision. Consequently, the commercially most attractive logging sites are selected with little consideration of sustainability issues.

Even among the officials involved in the assessment the processes are not clear. The process is characterised by covert influence and bargaining among various public sector institutions. After consultation with parties concerned the final quota is decided by the Prime Minister’s Office, not by the forest authorities.

**Quota Distribution**

In practise there are two types of quotas: a) HEP development sites and b) production forests. The HEP quotas are allocated to the SoEs while the provincial production forest quotas are distributed to local forest industries, mainly sawmills.

The provincial quota has the same royalty level as the HEP quota. The royalty is based on the species and grade of the logs. It is the same in each part of the country with no variation based on the harvesting conditions. GoL sets the royalty by issuing instructions.

Due to lack of market mechanisms in the roundwood market the allocation of logs is administratively decided by the Provincial Wood Trade Committee based on:

1. capacity of the mill,
2. political awareness, and
3. contribution to community development.

Based on experience from other countries such non-market allocation leads to several negative side effects. When allocation is based on capacity, over-investments to ensure excess capacity are needed to ensure even a modest log supply. The other qualitative criteria allow nepotism, the rewarding of political allies, and naturally corruption.

Field studies from six provinces reveal that the estimated sawmill capacities are manifold compared to provincial logging quotas. Even when taking the four southern provinces combined, the capacity exceeds the logging quota. (Table 3.1)

<table>
<thead>
<tr>
<th>Province</th>
<th>Quota 97/98</th>
<th>Quota 98/99</th>
<th>Estimated capacity – m³ – (log use)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phongsaly</td>
<td>1 500</td>
<td>1 000*</td>
<td>2 400</td>
</tr>
<tr>
<td>Oudomxay</td>
<td>3 000</td>
<td>2 000</td>
<td>20 000</td>
</tr>
<tr>
<td><strong>Southern provinces:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Champasak</td>
<td>15 000</td>
<td>7 500</td>
<td>90 000</td>
</tr>
<tr>
<td>Saravane</td>
<td>7 000</td>
<td>3 000</td>
<td>14 400</td>
</tr>
<tr>
<td>Sekong</td>
<td>5 500</td>
<td>8 000</td>
<td>9 600</td>
</tr>
<tr>
<td>Attopeu</td>
<td>7 000</td>
<td>12 500</td>
<td>16 800</td>
</tr>
<tr>
<td>Sub-Total</td>
<td>34 500</td>
<td>31 000</td>
<td></td>
</tr>
</tbody>
</table>

Source: Based on data from PFOs and sawmills.

* Phongsaly quota excludes the additional 20 000 m³ granted for a road project.
** Based on theoretical 240 days of operation annually. Includes only sawmills that have recently had any operation, de facto defunct mills not included.
The administrative distribution allows operations even by inefficient producers who under competition in market conditions would not be able to stay in business. Poorly performing sawmills get a similar log supply to performing ones. Particularly in the case of public enterprises there is no incentive to add value added or efficiency in the production.

The market value of roundwood is poorly represented in the raw material price. Based on experience from other countries this, together with artificial limitations in log trade (both domestic and international), may lead to "value decreased" by the sawmills. The national economy may sometimes benefit more from roundwood exports than from the processing and sale of sawnwood.

Once a quota has been allocated the enterprise has to apply for a logging permit and site. This has to be done for each separate supply contract or even a single shipment under a long-term contract. The permit may be applied for only once a contract has been signed with the buyer. In the case of exports even an advance payment must have been received or an ILC opened.

The provincial authorities allocate the logging site for the company. This is allegedly assisted by the professional assessment of provincial forest authorities. The quotee may log by itself or, as more common, subcontract to a logging company to carry out the work.

3.3 Harvesting

The official volume harvested in the budget year 1996-97 was 661 700 m$^3$ (Figure 3.1). The annual variations in harvested volumes, of up to 30%, are a striking feature.

![Figure 3.1: Official Volumes Harvested (m$^3$)](image)

Source: MAF/DoF from various years. The 98/99 quota includes 240 000 m$^3$ of logs harvested 97/98 but stockpiled and not removed from second landing.

As presented in Figure 3.2, half of the official log supply comes from hydroelectric development sites rather than designated production forests. The log harvest is a vital part of the economics of the hydroelectric development plans, especially as it provides the early cashflow for the State, often a major partner in the HEP projects. This is important for capital intensive projects like HEP development.

Timber forms a valuable resource and revenue potential, and in some cases logging has been started even before the feasibility of the HEP project has thoroughly been assessed and the project has later been put on
hold. The dam site logging is financially particularly attractive as no regeneration of the forest is required.

As a result of the a) inadequate resources in forest inventory, b) central role of the SoEs, and c) large-scale logging in HEP-development sites, the DoF does not have final control over the utilisation of forest resources in the country. The DoF has been partly marginalised in some segments of the logging policy process in the country.

![Figure 3.2: Source of Official Log Supply (97/98 plan)](image)

**3.4 Log Pricing**

Royalties (stumpage fees) are set by administrative order and there is no automatic linkage between export/world market prices and stumpage fees. Additionally, the fees are homogenous around the country despite variety in logging conditions, communication networks and the structure of the local demand. The administrative pricing is technically a prerequisite for the current administrative allocation of logs; were the prices set by an open market process the less efficient mills, just the ones that are protected by administrative allocation, would not be able to purchase the raw material.

Floor prices are set by the MoTT, after consultations with MAF, DoF and SoEs. Since the prices are administrative this may be justified by the better access to customs information. The sawmills that have been issued quotas have to pay only the royalty and possible local taxes. For any additional logs, the final stumpage is decided in the negotiations between the provincial authorities — who are in charge of the actual sale — and the contractor. The unit of measurement is the United States dollar per cubic meter, and various categories of logs as well as logging residues are priced separately. However, the payment does not need to be in dollars, but may be in Kip or any other currency. This is decided by the contracting partners. A sample pricing for teak (*Tectona grandis*) and mae dou (rosewood, *Pterocarpus macrocarpus*) is presented in Table 3.2. The current prices were set in June 1998 and currently both export and domestic market logs have the same royalty, this has not always been the case. Until 1998 domestic mills were subsidised by lower log prices or restrictions in log exports.

<table>
<thead>
<tr>
<th>Table 3.2: Royalties for Teak and Mae Dou</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
</tr>
<tr>
<td>-------------------------</td>
</tr>
<tr>
<td>Xepian and Xe Nam Nbi</td>
</tr>
<tr>
<td>Xe Nam Nbi</td>
</tr>
<tr>
<td>Xe Nam Kai</td>
</tr>
<tr>
<td>Nam Leuk</td>
</tr>
<tr>
<td>Nam Ngum</td>
</tr>
<tr>
<td>Nam Thuen</td>
</tr>
<tr>
<td>Production forests (incl. some small dam projects)</td>
</tr>
</tbody>
</table>

Source: MAF/DoF

**Figure 3.2: Source of Official Log Supply (97/98 plan)**
In addition to the central government royalties, some provincial authorities set additional levies, or development fees, for wood and wood products produced in the province. For example in Savannakhet province the authorities collect an additional USD 25/ m³ (mae dou) from sawmills and exporters.

There is no information on how these floor prices were derived. In February 1997 prices were set using the residual pricing approach: log export prices were established, and operating costs (incl. interest) and acceptable profit were subtracted. The residual was set as the floor stumpage. It may be that current prices were derived the same way, or that the change is based on subjective examination of the world market. Despite the fall in world market prices the floor prices applied from VI/98 onwards are higher than those established in II/97.

The list prices and planned value of the quota do not necessarily reflect the actual prices paid. The logs are assessed and most of the royalty (70%) paid only when they leave the 2nd landing which may be a long time after the harvest, leading to degradation of the logs during storage. Generally the actual price paid is only half of the estimated value of the quota. In addition to degradation this may be due to valuation errors in quota establishment or final royalty assessment. (Table 3.3)

**Table 3.3: Average Royalty Paid vs. Average Quota Value**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>royalty value of entire quota</td>
<td>151</td>
<td>123</td>
<td>76</td>
<td>60</td>
</tr>
<tr>
<td>average actually paid</td>
<td>74</td>
<td>46</td>
<td>50</td>
<td>19</td>
</tr>
<tr>
<td>%</td>
<td>49</td>
<td>37</td>
<td>66</td>
<td>32</td>
</tr>
</tbody>
</table>

Source: MAF, Forestry Protection and Wood Industry Division in World Bank (1998), DoF

### 3.5 State Owned Enterprises

Much of the annual logging volumes are allocated to State Owned Enterprises (SoE) by the MAF. These companies cover all provinces: Agriculture Forest Development Company the northern part of the country, Phudoi Development Company in central Laos, and Integrated Agriculture Forestry Development Company (DAFI) in the southern provinces. In addition to forestry, these three companies are involved in the utilisation of other natural resources, such as mining.

The SoEs should be in charge of the utilisation of their logging quota. The actual harvesting may, however, be sub-contracted to other, also private sector, companies. The SoEs do not fall under the jurisdiction of the DoF but the military and MoD. The forestry authorities have no mandate to control their activities. The companies are very independent and secretive about the level of their activities. Therefore there is no information on a) how well the logging quotas are respected, b) whether sustainable forest management practises are followed,
and c) how the logs are marketed.

The SoEs have four options to market the logs:

1. export the logs,
2. process the logs in sawmills owned fully or in joint ventures by the SoE,
3. sub-contract private sawmills to process the logs on behalf of the Company, or
4. sell the logs to a private sawmill/plywood factory.

4. Forest Industries

4.1 Industry Structure

Lao forest industries consist of small and medium sized sawmills, plywood mills and other wood-based panel production. In addition, some secondary processing, mainly furniture production takes place. There is one small paper mill in the country using recycled fibre. There is no pulpwood utilisation in the country. The wood utilisation plants in Lao PDR are presented in Table 4.1.

Table 4.1: Wood and NTFP Processing Industries in Lao PDR

<table>
<thead>
<tr>
<th>Type of plant</th>
<th>Number of plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>primary industries</td>
<td></td>
</tr>
<tr>
<td>sawmill</td>
<td>109</td>
</tr>
<tr>
<td>plywood factory</td>
<td>2</td>
</tr>
<tr>
<td>secondary processing and NTFP</td>
<td></td>
</tr>
<tr>
<td>re-saw shops</td>
<td>18</td>
</tr>
<tr>
<td>furniture and other products factory</td>
<td>38</td>
</tr>
<tr>
<td>parquet factory</td>
<td>3</td>
</tr>
<tr>
<td>rattan factory</td>
<td>3</td>
</tr>
<tr>
<td>bong bark factory</td>
<td>1</td>
</tr>
<tr>
<td><strong>edible NTFPs not included</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Silavanh (1998)

4.2 Administrative Structure

Foreign companies are shareholders in many forest industries in Lao PDR. The companies are Lao-foreign joint ventures and the Lao partners are private sector companies and the State-owned-Enterprises. These SoEs also fully own some sawmills. Their main emphasis is, however, in the logging.

The ownership structure gives the SoEs notable competitive advantages over private sawmills. The enterprises both control the raw material supply and process many of the logs. Consequently the sawmills that belong to the SoEs fully or in joint ventures with others may obtain a) the best raw material and b) the logging operations [i.e. also the private sawmills] are able to subsidise sawmills to compete against other sawmills.

The authority in charge of the development and promotion of forest industries is the DoF. This makes forest industries subject to forest policies rather than industrial policy.

However, the DoF has disengaged itself from active production functions in forest industries. Sawmills are now privately or SoE owned. The main duties of DoF in industrial activities are defined as:

- controlling existing industries
- promoting value-added production
promoting production for exports

In general terms, the State has let the private sector to self-regulate the day-to-day running of the businesses. Main control mechanism is through a) state ownership of natural resources, and b) thorough control of investments (see Chapter 0 below)

4.3 Investments

Any new investments in forest industries need to be approved by the Foreign Investment Committee (FIC) under the Prime Minister’s Office. The Committee asks an expert opinion from the DoF. The Department, however, does not have an absolute veto to halt any investment proposals. This, combined with the system of administrative allocation of logs also to infeasible producers tends to keep sawmilling capacity above reasonable levels leading to wasteful investment.

In addition to legal and environmental aspects, the FIC also assesses the business feasibility of the projects. In some consumer goods the Committee even protects the de facto monopoly of the first-to-come investor. The Committee also evaluates the technological level of investments, transfer of knowledge and training provided by the company. Hence, the Committee partly makes similar investment appraisal as an investor would do.

Officially all new investments should be based on plantation wood. Introduction of additional capacity for the processing of indigenous logs is discouraged.

4.4 Forest Industry Production

Production Volumes

Reliable statistical data on production volumes of the Lao forest industries is not available, and it is apparent that the interest of the authorities is in controlling log trade rather than processing, the processing industries are not monitored on a large scale. Production statistics may also be seen as business secrets.

Lao sawmilling and plywood industries have grown immensely over the past few decades. Sawnwood production has grown from 11 000 m$^3$ in 1980 to 289 000 m$^3$ in 1995 making the average annual growth an astounding 24% p.a. In plywood production the respective figures are 76 000 sheets in 1980 and 2 069 000 sheets in 1995, average annual growth being 25%.

Production Efficiency and Waste Management

Industrial wood utilisation in the country occurs mostly in sawmilling and the average recovery is in the range of 30-45%. In many areas the recovery rates have gradually been declining due to a decrease in log size. This has increased the amount of industrial residues produced.

Characteristic of the Lao situation is the limited use for production of wood residues. Some may be used in the production of particleboard. In countries where sawmilling industry is partly integrated with the pulp industry much of the residues are used in pulping. However, there are no pulp mills in Lao PDR and attempts to export wood chips to pulp mills in Thailand have not been successful. In addition, the species structure may hinder such exports. Pulp mill processes are generally optimised to use fast growing exotic plantation wood (eucalyptus and acacia) while sawmills in Laos use mainly indigenous hardwoods.

The volume of residues wasted may be reduced through two lines of action:

- increased efficiency in residue utilisation
- increased raw material productivity leading to less residues

The first option is short to medium term while the latter is longer term strategy requiring more investments.

In addition, the current administrative raw material allocation does not include any incentive for increased raw material productivity.

*Increased efficiency in residue utilisation*
Currently much of the residues go to waste and are not utilised effectively. Even in current circumstances, their utilisation could be more efficient through charcoal production.

Relatively small investments in drying kilns would benefit the industry in two ways: a) increased value added, and b) fuel for the kilns has low marginal costs. Use of processing residues makes the kiln investment highly attractive. With larger investments wood-based panel production based on sawmill residues could be increased. This would have two-fold benefits: a) increased efficiency in roundwood utilisation, and b) easing pressure on natural forests through substituting plywood production.

**Increased raw material productivity**

The rapid increase in forest industry production and production capacity indicates that much of the capacity is relatively modern, particularly as the production growth has not been even. Most of the growth has taken place in the 1990’s through new production units.

In order to decrease wood use at the mills without affecting production, i.e. to increase raw material productivity (increase recovery rates) the following issues need to be addressed. Activities related to machinery are long-term and may depend on the pace of new investments while those of training and institutional activities may be implemented sooner.

- declining log size in some areas lead to *inappropriate machinery* which is originally aimed processing larger logs. This leads to low recovery rates when sawing smaller logs.
- *innovative use of LKS* (Lesser Known Species) could widen the scope of processing large size logs.
- *training* of sawmill personnel and managers would increase the value added, production efficiency and use of smaller logs. The training should also include business skills to ensure that the economic and financial advantages of raw material efficiency are fully recognised.
- *the pricing policy of logs* should be aimed at strengthening the efficient utilisation of logs. Currently there is no market mechanism directing the logs to efficient producers, on the contrary, the administrative allocation guarantees log supply also to badly inefficient mills.
- in areas where the sawmilling capacity is concentrated, enterprises could form *joint ventures* utilising small diameter logs and sawing residues, e.g. in wood-based panel production.

5. International Wood Trade

Wood and wood products are an important export merchandise for Lao PDR. It used to be the most important but has been surpassed by garments. However, in terms of net exports (exports-imported production materials) it is still the most important and its relative share has in the 1990’s fluctuated round 30-40% of all exports in value terms. Laos is a net exporter of forest and wood products as only small quantities are being imported. The imports mostly take place from Cambodia; both transit to Thailand and for processing at some SoE sawmills.

5.1 Export Regulations

The administrative process for exporting logs and wood products is complex and considered an obstacle for business development and formal business contacts abroad.

All exports of logs and forest industry produce are subject to an export permit. Like the logging permits, the export permits may be applied for only once a contract with a buyer has been reached. After signing a supply contract the exporter has to go through the following steps:

1. application for a logging site from the provincial authorities
2. sub-contract to a logging company
3. DoF inspection of the logged trees
4. application for an export permit from the provincial trade authorities and/or from the Ministry of Trade in Vientiane. This includes verification of

- logging made legally
- corporate taxes paid
- royalty fees paid

5. application for customs clearance of the goods. This is the duplication of stage 4 above including the verification of

- logging made legally
- corporate taxes paid
- royalty fees paid
- export permit is valid

It is apparent that the length of the process has a negative impact on the export performance of the industry. This impact is felt as a) buyers turn to more secure sources of supply and b) complications in trade arrangements lead to lower sale prices. Thai furniture makers interviewed preferred to buy wood from auctions in Myanmar rather than from Laos because of the simpler procedures.

Most of the exported logs originate from the reservoir areas; in 1996/97 there were only few exports from provincial quotas. However, the national and provincial statistics provide conflicting information.

5.2 Export Volumes and Destinations

Data on forest products is limited, and not readily available. Data on the destination of exports and latest national export statistics were not available to the consultant team. Occasionally information available is not only inaccurate but not even in the right ballpark; Ministry of Agriculture (1997) statistics claim log exports in 1997 to have been 423 million m\(^3\) and sawnwood exports 97 mill. m\(^3\). This may be compared to the previous fiscal year X/1996-IX/97 which recorded log exports of 82 695 m\(^3\).

| Table 5.1: Log and Sawnwood Exports 1994/95-1997/98e |
|-------------------|---|---|---|---|
|                  | 94/95 | 95/96 | 96/97 | 97/98e |
| Logs             | 150 339 | 129 977 | 82 695 | 70 715 |
| Sawnwood         | 88 201 | 120 926 | 119 544 | 36 240 |
| Total, rwe       | 346 341 | 398 701 | 348 347 | 151 248 |

Source: MAF/DoF, PFOs, *italics* refer to estimates based on data from limited number of provinces. Estimated recovery rate 45%.

The main export countries are Thailand, Viet Nam and China. Exports take place also to other countries but their role is marginal, only the Republic of Korea has imported volumes worth mentioning. Naturally, unknown volumes are being re-exported from Thailand and Viet Nam.

**Thailand**

Thailand is by far the most important market for Lao forest sector exports and its changes greatly affected the development of the whole sector in the recent years. Viet Nam has become increasingly important. The volumes cannot be straightforwardly established as there is a wide disparity between the Thai and Lao data sources, not only caused by the different reporting periods (calendar vs. fiscal year). The Thai sawnwood imports have constantly been approximately double the total exported by from Laos. Not only does this indicate underreporting of Lao exports; the anomaly may cover also a) illegal Thai wood being labelled as Lao imports to disguise the wood as imported, or b) more likely [illegally cut] Cambodian wood transported through Laos or directly from Cambodia. The logging situation in Cambodia is anarchic and large volumes are exported...
illegally. In order to "legalise" the wood may be labelled as imported from Laos. (Table 2.1)

**Table 5.2: Import Reported by Thailand**

<table>
<thead>
<tr>
<th></th>
<th>Logs</th>
<th>Sawnwood</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>57 000</td>
<td>217 000</td>
</tr>
<tr>
<td>1996</td>
<td>50 000</td>
<td>191 000</td>
</tr>
<tr>
<td>1997</td>
<td>45 000</td>
<td>154 000</td>
</tr>
</tbody>
</table>

Source: Royal Forestry Department (1998)

Thailand is the main, if not only, export destination of Lao plywood. Khammouane province – which in addition to being the most important export port, also has the most plywood capacity in the country – exported, in 1996/97 (latest available statistics) 22 000 m³ while there were no exports to other countries. Thailand is the most important market for sawnwood while in log exports Viet Nam is an equally important client (Table 5.3).

**Table 5.3: Khammouane Province Log and Sawnwood Exports 1996/97**

<table>
<thead>
<tr>
<th>Country</th>
<th>Logs</th>
<th>Sawnwood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand</td>
<td>22 035</td>
<td>66 083</td>
</tr>
<tr>
<td>Japan</td>
<td>4 385</td>
<td>93%</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>18 217</td>
<td>41%</td>
</tr>
<tr>
<td>Taiwan (RoC)</td>
<td>60</td>
<td>0%</td>
</tr>
<tr>
<td>R. of Korea</td>
<td>4 646</td>
<td>10%</td>
</tr>
<tr>
<td>Italy</td>
<td>366</td>
<td>1%</td>
</tr>
<tr>
<td>USA</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>44 898</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: Khammouane Province, Department of Commerce

**China**

China, and Yunnan province in particular, has become an increasingly important buyer of Lao logs particularly from the northern provinces. Trade with China takes two forms:

- barter with Chinese construction companies to pay for road and dam construction. Barter also takes place when the SoEs buy machinery from China. Species are usually medium class and are processed in Yunnan,

- cash sale of mae dou logs. Trade takes place at the Laos–China-border posts where the buyers buy the logs by truckloads (spot delivery, in cash). The wood is mainly exported further beyond Yunnan to the thriving business provinces in coastal China.

During the fieldwork in February 1999, a 5 000 m³ log pile of mae dou was found by the border ready to export. Most of the wood originated from Xayabury province while some came from Oudomxay, Vientiane province and as faraway as Champasak. The trade is done with small-scale individual traders rather than with long term contracts. In Phongsaly an additional quota of 20 000 m³ was issued for 1998/99 to cater for the road construction projects in the province. In the first quarter of fy. 1998/99 the exports were 2 300 m³.
Volumes of sawnwood have been much smaller than those of logs as most Chinese buyers wish to process the logs themselves.

Yunnan province introduced a logging ban in October 1998 and it is apparent that, despite the official policy, the plantations are not able to provide adequate wood for the provincial markets. The impact of the ban is still to be seen though the province is seen as a future wood deficit area and will have to import increasing amounts of wood from Laos in the coming years.

**Viet Nam**

Viet Nam has – since its own forest resources are being depleted – become a notable importer of logs from Laos. Most of the imports take place from Khammouane and Savannakhet provinces since they have the best road connections with Viet Nam. Trade from the southern provinces of Saravane, Sekong and Attapeu is quite small due to poor infrastructure.

Vietnamese enterprises have been subcontracted in the Nam Theun dam construction site and much of this trade is barter trade to pay for construction work, and civilian and military services. There are also allegations that Vietnamese companies are granted concessions in remote eastern areas of Laos with no connecting road network to rest of the Laos and that unknown volumes could be harvested.

In Savannakhet province DAFI has subcontracted Vietnamese logging companies for cutting may kacha logs for export to Viet Nam on Road 9. In 19997/98 the logging volume was 6 480 m$^3$ at the price of USD 160/ m$^3$ (quota 7 000 m$^3$). Vietnamese companies imported also from Phongsaly province.

### 5.3 Imports

Wood product imports to Laos are small. Since the country has only small paper industry, most paper products need to be imported. Also some wood consumer goods are imported.

Cambodia has been exporting to Laos some volumes of logs. Five companies are given licenses to transit Cambodian logs through Laos to Thailand; despite the fact that log exports have been prohibited in Cambodia since 1996. The actual volumes have been only a fraction of the 113 000 m$^3$ quota after the Thai government decided to disallow roundwood imports from Cambodia in support of the ban.

Some volumes are also bought by Lao companies for respective re-export to Thailand. Such log trade has fluctuated widely between 400 and 21 000 m$^3$ for logs and 9 000-14 000 m$^3$ for sawnwood in 1994-1997. In 1998 there was no such log trade and only 600 m$^3$ sawnwood trade. In 1997 8500 m$^3$ of Cambodian illegal logs were sold to a sawmill in Champasak in exchange for trucks; other reported imports in that year averaged 8 000-10 000 m$^3$. The imports from Cambodia are made possible by the unstable situation in Cambodia and will likely diminish once the situation in the country becomes settled.

### 6. Demand–Supply Balance

Laos has vast forest resources left outside commercial utilisation for three reasons a) a generous protected areas network, b) rugged terrain and demanding topography, and c) unsatisfactory infrastructure. The latter factor may translate to expensive, and possibly even technically impossible, harvesting options and lead to large areas being outside commercial log production, also outside the protected areas network. There may, however, still be some utilisation to meet household demand. This lessens the feasibility of national level demand–supply-analysis in complex surroundings like the case in Lao forestry. In order for such analysis to have more than just academic ex post-value the analysis should be carried out at forest management unit level. National analyses may have value in presenting a historical track record of forest policy implications. In Laos logging quotas are set at national level and great care should be taken when such policies are implemented. It needs to be noted that sustainable yield decreases once it analysed at smaller unit levels; e.g. over-logging in one province cannot be compensated for in other provinces if provincial sustainability is the policy objective.

### 6.1 Commercial Demand
Log production has been dominated by supply from HEP development sites and the role of production forests has been small, but, despite general belief, increasing. (Table 6.1)

**Table 6.1: Logging Quota, Sources and Utilisation 1994/95-1998/99**

<table>
<thead>
<tr>
<th></th>
<th>94/95</th>
<th>95/96</th>
<th>96/97</th>
<th>97/98</th>
<th>98/99*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quota</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production forests</td>
<td>-</td>
<td>518</td>
<td>251</td>
<td>247</td>
<td>267</td>
</tr>
<tr>
<td>Dam sites</td>
<td>-</td>
<td>195</td>
<td>430</td>
<td>293</td>
<td>183</td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>713</td>
<td>681</td>
<td>540</td>
<td>450</td>
</tr>
<tr>
<td>- share of dam sites</td>
<td>27%</td>
<td>63%</td>
<td>54%</td>
<td>41%</td>
<td></td>
</tr>
<tr>
<td><strong>Production</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production forests</td>
<td>149</td>
<td>263</td>
<td>226</td>
<td>258</td>
<td></td>
</tr>
<tr>
<td>Dam sites</td>
<td>670</td>
<td>396</td>
<td>333</td>
<td>208</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>820</td>
<td>659</td>
<td>559</td>
<td>465</td>
<td></td>
</tr>
<tr>
<td>- share of dam sites</td>
<td>82%</td>
<td>60%</td>
<td>60%</td>
<td>45%</td>
<td>n/a</td>
</tr>
<tr>
<td><strong>Quota utilisation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Production forests</td>
<td>-</td>
<td>51%</td>
<td>90%</td>
<td>104%</td>
<td></td>
</tr>
<tr>
<td>Dam sites</td>
<td>-</td>
<td>203%</td>
<td>78%</td>
<td>71%</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>-</td>
<td>93%</td>
<td>82%</td>
<td>86%</td>
<td></td>
</tr>
</tbody>
</table>

Source: MAF/DoF, annual statistics. There is some inconsistency among various DoF statistics both on logging and the quota.

* The 98/99 quota includes 240 000 m$^3$ of logs harvested 97/98 but stockpiled and not removed from second landings.

The management of dam sites is straightforward: the area is to be cleared for future flooding and no consideration for sustainability is required. Therefore this logging has often been left out when assessing the sustainability of existing forest management approaches in a country. In Laos this approach may be questioned on the grounds that this supply has existed for a long time and it has been incorporated in the regional wood trade pattern. However, it cannot be maintained *ad infinitum* and there is a possibility that later, once the dam constructions are terminated, the demand will divert to natural production forests. The utilisation statistics are based on removals from second landings and the actual removals have been higher due to inefficient logging methods (waste assumed to be 30%).

The commercial removals have been declining constantly since fy. 1994/95. There is no direct evidence concerning the volumes illegally logged but anecdotal evidence and some structural reasons indicate that volumes of illegal commercial logging in Laos are small and restricted to over logging quotas rather than operations concentrating entirely on illegal logging. The structural factors contributing to such a situation are:

- persistent oversupply of logs from HEP sites
- dominant role of the three SoEs who are able to monitor the log market in the country
- strict control of existing sawmills
- few illegal sawmills

Removals from production forests, even after adjustment for 15% illegal logging, are well below the estimated annual allowable cut. Only if the logging from infrastructure sites is included has the total removals been above even the upper limits of the estimate. But, as stated above, the logging decisions have been based on other criteria than sustainability. (Figure 6.1)
On top of the plain illegal logging there are also cases of misuse of “traditional use licenses” when local sawmills have bought logs from rural households that are allowed to cut modest volumes for domestic use. The volume of logs involved in the scam is, however, unknown.

**Figure 6.1: Demand–Supply-balance, Commercial Logging**

![Graph showing demand and supply balance for commercial logging](image)

Volumes adjusted for 30% logging waste. Source: MAF/DoF and Consultants’ estimates.

The current crisis in Thailand, the main export market, has led to greatly reduced logging in the current fiscal year 1998/99. No national statistics are available, but a survey made in the most notable wood processing provinces indicated that production volumes have been greatly curtailed. In some provinces first quarter harvesting was only a fraction of the quota, and this was during the dry season that is the optimal harvesting season. (Table 6.2) The same decline in market demand is made evident by the vast log stockpiles round the country. In Khammouane province alone there were some 240 000 m³ logs stockpiled at second landings when the markets dried up, this corresponds to ½ of the total harvest in the previous fiscal year.

**Table 6.2: Logging in Six Provinces 1997/98-1998/99 (I qr.)**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>quota</td>
<td>actual</td>
</tr>
<tr>
<td></td>
<td>m³</td>
<td></td>
</tr>
<tr>
<td>Champasak</td>
<td>15 000</td>
<td>8 110</td>
</tr>
<tr>
<td>Saravane</td>
<td>7 000</td>
<td>7 085</td>
</tr>
<tr>
<td>Sekong</td>
<td>5 500</td>
<td>3 053</td>
</tr>
<tr>
<td>Attapeu</td>
<td>7 000</td>
<td>7 008</td>
</tr>
<tr>
<td>Phongsaly</td>
<td>1 500</td>
<td>1 418</td>
</tr>
<tr>
<td>Oudomxay</td>
<td>3 000</td>
<td>1 683</td>
</tr>
<tr>
<td>Sayabury</td>
<td>9 185</td>
<td>6 140</td>
</tr>
</tbody>
</table>

* includes the additional 20 000 m³ quota issued to allow a barter agreement for a road construction project by a Chinese enterprise. Source: PFOs
6.2 Household Utilisation

Like in all developing countries, households constitute the major part of wood demand in Laos. Dynamics of household utilisation differ from those of commercial logging a great deal and the supply potential of the forests and woodlands to cater for household needs is higher. Not only is the wood species flexibility greater but due to the lower price of harvesting lower densities of the supply are acceptable (c.f. Box 1). Household demand for non-fuel forest produce falls, in flexibility terms, in between these two categories.

Household demand per capita varies widely based on the cultural heritage, available supply and availability of other construction materials and energy. This use is rural in character, and in urban areas, particularly in Vientiane, woodfuel is used mainly for culinary reasons and it is losing popularity. Traditional values, however, still encourage charcoal and fuelwood; gas and electricity are seen as "lazy man's energy".

de Vletter (1997) has, based on a field survey, estimated the annual demand to be as high as 19 m³/yr. per household (average size 6.5 people) in the Nam Ngum watershed area distributed as follows:

- house building 1 m³ 5% (house à 15 m³, built every 15 years)
- house repair 2 m³ 11%
- firewood 10 m³ 53%
- poles, fencing 2.5 m³ 13%
- other 3.5 m³ 18%
- Total 19 m³ 100%

Another, national level estimate states the total fuelwood and charcoal demand at 4.4 mill. m³ (1 m³/rural cap.) and construction wood 0.62 mill. m³ (0.14 m³/rural cap., 1 m³/rural household). Based on these two estimates it may be safely argued that the total rural household, non-market demand ranges from 5.5-6.0 mill. m³ annually, ¾ of which consists of small diameter fuelwood, the remaining ¼ being larger size construction wood, though well below commercial dimensions.

The commercial AAC was estimated at 0.6-1.0 mill. m³, and non-commercial but household-applicable supply may be estimated at 1.0-1.2 mill. m³. Additional supply comes from wood and shrub land from which an additional 1.5 mill. m³ could be obtained, and from logging waste of 0.2 mill. m³. The total sustainable supply for rural demand from production forests thus becomes 2.7-3.0 mill. m³, 50% of the demand. An unknown but still significant supply is obtained from fallow land being cleared for the next shifting cultivation cycle.

As discussed in Box 1, woodfuel analysis suffers from various methodological difficulties as well as persistently inadequate data. There is no detailed information on the availability of non-forest wood energy. The Regional Wood Energy Development Programme (RWEDP 1997) – an FAO sponsored study – has found notable resources outside forests. In the study region as a whole, only one third of wood energy would come from forests. The total supply would be:

- sustainable woodfuel from forest land 35% of woodfuel mass
- sustainable woodfuel from agricultural areas 31%
- sustainable woodfuel from other wooded land 3%
- waste woodfuels from deforestation 31%

There is also notable supply from crop residues which also should have use in agriculture.

Based on the assumptions of RWEDP the woodfuel situation in Laos is less alarming than assessed above. There would have been a notable surplus both in 1994 and 2010, though the relative surplus would decline to some extent.

Table 6.3: Woodfuel – Potential Supply and Estimated Consumption (1994 and 2010)
Production forests cover only ¼ of the forests in Laos and the excessive protected areas, though technically illegally, are utilised to supply household wood demand. This applies in particular to the provincial and district level protected areas whereas the NBCAs may be better guarded.

### 7. Conclusions and Recommendations

#### 7.1 Current Situation

Unlike its neighbours, Lao PDR is in a fortunate situation of having abundant forest resources and low population pressure; it may argued these two are not independent but rather the former is caused by the latter. The indisputable environmental issues related to declining forest cover are generally local and caused by factors beyond the traditional realm of forestry; *i.e.* commercial logging and household utilisation of wood for construction and energy. In many studies the main factor behind deforestation has been found to be expansion of permanent agriculture, and particularly shifting cultivation.

The constraints of the Lao forestry sector may mainly be found in the institutional particulars. This may contribute both to the management and commercialisation of the resource. In both aspects the GoL has initiated innovative transition processes; the joint management concepts of FOMACOP and LSFP to name a few. These are still at pilot stage, and likely will not cover the whole national forest estate.

The GoL shall need to identify strategies for the forest estate that will remain under state management taking into consideration the institutional capabilities and natural facts; much of Laos is outside feasible logging activities due to difficult terrain and, for a long time still, inadequate infrastructure.

#### 7.2 Recommendations

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<tr>
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<td><strong>Supply</strong></td>
<td><strong>Consumption</strong></td>
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<td>2 329</td>
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Source: From RWEDP (1997)

Box 1: Woodfuel in National Demand–Supply-Analyses

Dynamics of household woodfuel analysis differ from those of commercial logging. Much of the fuelwood is collected for subsistence use and consequently does not have a monetary price. Another specific characteristic is that the commodity is to a large extent non-tradable. Energy for cooking and heating is a basic necessity in human life and thus its demand must be met; consequently people will always find ways to fulfil the need; even if this happens at the expense of other production activities such as agriculture, or if it is obviously unsustainable.

Main differences to the dynamics of commercial logging are:

- even if some species are preferred over others as fuelwood, in principle any woody biomass will do
- technically there is no lower limit in size of wood to be utilised; for very small pieces the economic price of collection may, however, be high. In any case, much smaller pieces are used than in commercial logging, thus the use of logging residues as fuelwood
- demand creates new supply; people have innovative approaches to meet their woodfuel needs
- in the case of fuelwood deficit demand will divert the ever smaller, previously under-utilised fuelwood sources. In such cases demand creates respective supply
- there is no national, not to mention international, market for fuelwood. Low unit value if traded inhibits long transport distances. The impact is strengthened by the generally modest monetary income of the segment of population that uses woodfuel. Ideally woodfuel demand–supply-analysis should be carried out at village or district level. At national level there a large number of localised markets rather than one single national market.
Information Systems and Forest Statistics

There is a need to increase collection and dissemination of forest resources, forestry operations and forest industry information and statistical data. Information is a powerful tool in managing and analysing the sector. It is recommended that Lao PDR initiates a program to collect forestry data and publish it; this process would include a national level forest inventory, research on growth and classification of forests, and the economics and social aspects of forest utilisation. The research initiatives on growth particularly need to be started soon as obtaining results takes a long period of time. For effective and transparent forest management and forest policy implementation it is essential that

- forestry related statistical data are widely collected and made accessible in a consistent and coherent manner
- practise of incomplete industrial production and foreign trade statistics should be discontinued, and the information should be collected and made public.

Development could go through a two-step process:

i. naming independent body/ies, e.g. a research institute or national statistical institute, responsible for such information services. The institute would have a right to collect all relevant market and forest resource information in Laos. They would also have access to all relevant information already collected in the country.
ii. the institute[s] would publish the information in such a way that no information from a single market player would be disclosed.

All the countries in the GMS region need strengthening in forest statistics systems and their development should be harmonised in the region. The initial stage would be to jointly agree upon the nomenclature, methodology of measurements and units of measure. The harmonised level would form the minimum level, e.g. in eight-digit production and trade nomenclature harmonisation would reach six-digit level leaving two for national specifications.

It needs to be stressed that the data collection and actual statistical work would be a national responsibility but would be based on jointly agreed standards. Regional co-operation would have three main benefits compared to entirely national processes: a) training and training material production could be partly jointly implemented, b) development costs per country would be lower, this particularly applies to expensive and time consuming computer software development, and c) common nomenclature enables further regional co-operation in analysing and monitoring wood flows.

Protected areas inventory and reassessment

Most of the Lao forests are under some sort of protected area classification; the total area of protected areas is 70-80% of total forest area. It is evident that some of these areas

a. are not managed adequately and have lost some of their original value
b. do not have notable biodiversity, watershed or other protection value, and that
c. such an extensive protected areas network combined with the existing management resources leads to inadequate management in all areas.

It is recommended that a thorough survey of all protected areas is carried out and the status of degraded areas is reassessed. All remaining areas are to be clearly demarcated and management plans prepared.

Forest inventory

There is a forest inventory in its finalisation stages in Laos and its results will be available in late-1999. However, no growth data is collected and no permanent sample plots are established outside the FOMACOP area. It is recommended that inventories are made regular and permanent sample plots are established to monitor growth. Inventory results need to be included and cross linked with the recommended forest information system.

Market orientation in forest utilisation and wood auctions
Several previous reviews have stressed the quite inflexible administrative set-up of the commercial forest utilisation in the country and lack of efficiency incentives in the a) allocation of logging rights, and b) allocations of logs to the processing industries. Despite acknowledgement of these issues, there has been only little alteration in the institutional set-up. In stable situations this may be bearable; but the problems have become apparent with the current downturn in the regional wood market. Hundreds of thousands of cubic meters of logs are left to degrade due to inappropriate log trade systems in the country. There is neither incentive to increase efficiency in logging nor in domestic processing; the system has an in-built bias enforcing the status quo.

It is recommended that logging and processing be restructured to better emphasise market efficiency. The DoF, PFOs and DFOs are to be seen as the primary custodians of the national forest estate – together with the communities in the community forestry areas – and logging may be carried out by any capable institution under their guidance and monitoring and hence the logging operations of the SoEs may be split to several competing entities with their monopolies abandoned. Log sales would be through a competitive process in which any mill could participate.

In the longer term the role of the forest administration as a government agency should be analysed; the administration could be made an autonomous body not part of government line administration. This would ensure much needed flexibility, particularly if community forestry initiatives are expanded.

An attempt should be made to ensure that logs-for-infrastructure-deals are made fewer; logs should be sold for money at the best price and the procurement of such services should be through competitive bidding. The markets should be seen as an efficient resource allocator.

**Plantations**

Plantation activities should be promoted in line with Fortech (1999). The role of the GoL should be limited to creating an enabling environment for investments by, e.g. curtailing red tape and leasing under-utilised state land for plantation establishment. Subsidies should be used only if obvious external benefits may be obtained despite projects being financially unattractive. In such cases attempts should be made to make projects self-sufficient.

Promotion of community plantations/wood lots need to be encouraged in areas where there apparently is need for increased domestic wood supply. Purely commercial plantations should be subsidised in lines with agricultural support. In fragile watershed areas joint implementation schemes should be aimed at; the communities would provide labour and some monetary contribution while state subsidies for market inputs would make the plantations financially attractive. The subsidies would need to be combined with increasing extension and awareness of forestry. The communities would be allowed to utilise the forests and get revenue according to jointly established management plans/rules.

**ANNEX 1**

**People met during the mission**

Only people specifically interviewed have been listed. Many more people, who go unlisted, also provided their valuable advice and comments. (P. = Province)

<table>
<thead>
<tr>
<th>Institution</th>
<th>Name</th>
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<td>Keo Thammavongsa</td>
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<td></td>
<td>Ny</td>
<td>Log Trader, Champassak Province</td>
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<td></td>
<td>Vixay</td>
<td>Sawmiller, Champassak Province</td>
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<td></td>
<td>Xang Kham Alangsing</td>
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<td>Attapeu P.</td>
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<td>Khamdy Atsayavong</td>
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<td>Vongviengsavanh</td>
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<td><strong>Peter R. Stevens</strong></td>
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<tr>
<td><strong>University of Tsukuda, Japan</strong></td>
<td><strong>Laboratory of Appropriate Technology for Rural Development</strong></td>
<td><strong>Maya Terada</strong></td>
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ANNEX 3

Itinerary of the Consultancy

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<td>Commencement of the Project</td>
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<tr>
<td>July 30</td>
<td>Arrival of Mr. Castrén (the international consultant) in Vientiane</td>
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<td>July 31-</td>
<td>Literature studies and initial meetings in Vientiane</td>
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<tr>
<td>August 26</td>
<td>Mr. Thongleua (the national consultant) commences work</td>
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<td>September 21-22</td>
<td>Field visit Thak Hek, Khammouane Province</td>
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<td>February 22-March 5</td>
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<tr>
<td>April</td>
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<td>June 9-10</td>
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