Regional Environmental Technical Assistance 5771
Poverty Reduction & Environmental Management in Remote Greater Mekong Subregion (GMS) Watersheds Project (Phase I)

TIMBER TRADE AND WOOD FLOW–STUDY

Viet Nam

By

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Abbreviations Used

ADB	Asian Development Bank
DAI	Development Alternatives International
DARD	Department of Agriculture and Rural Development
EU	European Union
FAO	United Nations Food and Agriculture Organisation
FIPI	Forest Inventory and Planning Institute
GMS	Greater Mekong Sub-region
GoV	Government of Viet Nam
IUCN	World Conservation Union
JV	Joint venture
MARD	Ministry of Agriculture and Rural Development
NISTPASS	National Institute for Scientific and Techological Policy and Strategy Studies
PDR	People's Democratic Republic
PPC	Provincial People's Committee
PPI	Public Investment Programme
SFE	State Forest Enterprise
USD	United States Dollar
VINAFOR	Viet Nam Forestry Corporation
VND	Viet Nam Dong
Exchange rate	USD 1 = VND 13 900

1. Introduction

1.1 Background

The current study on wood demand and supply, and forest industries in Viet Nam 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 the 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

iii. forest industries and the role of forest industries in the national industrial strategies

The study was prepared by Mr. Tuukka Castrén (Indufor Oy) and a project team in Viet Nam led by Mr. Gregory Booth (IUCN) in September and December in 1998. Some additional data was collected and the report produced in early 1999.

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

1.2 Data

Data for this report was collected from three sources: interviews with stakeholders in forestry and industry, statistical sources and secondary data, such as consultant reports and Government Development Plans. International sources were also utilised as feasible. The interviews were mainly carried out by the international consultant during his visit to Hanoi in October 1998. The list of people met is presented in Annex 2. All the interviewees provided interesting and valuable information on forestry and related sectors. The conclusions and recommendations presented in the report are, however, entirely those of the consultant.

Two Vietnamese research institutions were contracted to prepare studies providing statistical and analytical information on wood flows and timber trade in the country. The institutions involved and the studies prepared were:

- Department of Environmental Policy Studies, National Institute for Scientific and Technological Policy and Strategy Studies (Nistpass): Forestry Data on Wood Flow and Timber Trade Study (Hanoi, November 1998), and
- Ministry of Agriculture and Rural Development (Mard), Forest Science Institute of Viet Nam: Some Information on Forest Industry Economic in Viet Nam (Hanoi, November 1998).

These reports were based on a large volume of official Vietnamese and other statistics which are not referenced separately.

The volume of information available on the Vietnamese forest sector is large and gives a wide view over the issues related to the sector. There are, however, some deficiencies in the data that hinder independent analysis of the sector. Any statistical information related to production or data on international trade is classified and no national *Forest Statistics Yearbook* is being published in the country. Three institutional factors hinder effective dissemination of information:

- market players and authorities are (over)sensitive in protecting information they believe forms part of business/state secrets
- forestry statistics are not collected and/or access to them is inadequate
- the value of concise forest statistics not deemed high by the stakeholders

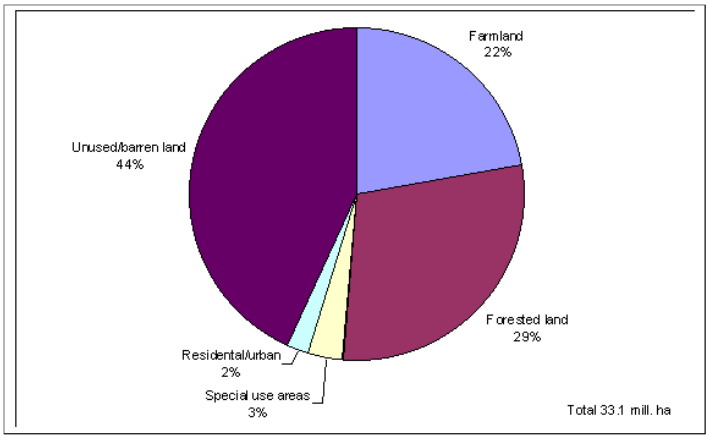
The Vietnamese forest sector has been decentralised to provincial authorities, and recently in an increasing manner to the private sector and joint ventures (JV). In such a context of scattered information generation, concise analysis of the sector and wood flows has become utterly complicated. Information is a powerful tool in increasing transparency and efficiency both in public and private sector decision making. Therefore it is recommended that information system development is initiated.

2. Forest Resources

2.1 Natural Forests

Viet Nam is one of the most densely populated areas in South-East Asia. This, among other factors, has led to declined forest area in the country. In the 1940's slightly below half of the country was forested while the figure currently is 25-30%. Current (1995) land use allocation is presented in Figure 2.1.

Figure 2.1: Land Use Structure (1995)



Source: Nguyen Tuong Van (1997)

2.1.1 Area

The total forestland in Viet Nam is estimated at 19.2 mill. ha. Roughly 6% (1.1 mill. ha) of the area consists of man-made plantations. Both forested areas and some barren lands are classified as forestland. The forestland distribution is presented Table 2.1. In addition to the classified forestland there are an estimated 1-2 billion scattered trees on non-forestland in home gardens, by rivers and canal banks, *etc*. It is estimated that this is equivalent to 1-2 mill. hectares of plantations. This resource has a supply role in subsistence use of fuelwood and construction timber.

Table 2.1: Forestland Classification (1995, mill. ha, %)

Category	Forested		Non-forested		Total	
	- mill. ha -	- %-	- mill. ha -	- %-	- mill. ha -	- %-
Special use forests	0.9	10	0.3	3	1.2	6
Protection forests	3.5	38	4.5	46	8.0	42
Production forests	4.9	53	5.0	51	9.9	52
	9.3	100	9.8	100	19.1	100
	49%		51%		100%	

Includes 1.1 mill. ha of plantations and 0.9 mill. ha bamboo and other non-wood forests. Source: Nguyen Tuong Van (1997)

The categories are defined as follows:

Special use forests: mainly national parks, protected landscapes and other protected areas.

Protection forests: watersheds, mangroves, etc. forests with special protective functions

Production forests: forests where logging is allowed, includes industrial plantations. Gradually this category will be phased out to natural forests (*c.f.* Chapter 3.3).

2.1.2 Growing Stock and Yield

No thorough forest inventory has been carried out in Viet Nam recently. Consequently, information on the stocking and yield of the Vietnamese forests is not accurate or consistent.

The growing stock in the forests is estimated at 560-590 mill. m^3, the average stocking thus being 62 m^3/ha (forested lands) or 30 m^3/ha (all forestland). The figure includes stem volume only and the estimate was done in late 1980's. No more recent or accurate data on the volume in Vietnamese forests is available.

As for the mean annual increment (MAI) estimations, they are more variable. Estimations for the average yield range from 1 to 3 m^3/ha/yr. In plantation areas the growth is estimated to be notably higher, 5-10 m^3/ha/yr. Based on international experience, the estimated plantation yield may be considered optimistic but realistic.

The consultant estimate on the total production potential in Viet Nam is presented in Table 2.2 below. The assumptions of the estimation are:

- natural forest (special and protection) growth 1.0 m^3/ha
- natural forest (production) growth 1.5 m^3/ha

- plantations, growth 6.0 m^3/ha
- plantations (production) 0.6 mill. ha
- trees on non-forestland 1.5 mill. ha plantation equivalent
- trees on non-forestland, yield 6.6 m^3/ha
- areas from Table 2.1

The high estimated yield of trees on non-forestland (6.6 m^3/ha, 10% above plantation yield) is justified by a) intensive management of the woodlots and individual trees, and b) more efficient utilisation of the wood material, *i.e.* efficient utilisation of branches and small diameter wood as fuelwood. It needs to be noted that such scattered trees may be considered as part of wood fuel production potential though hardly part of industrial raw material base.

Table 2.2: Growth Potential by Forest Class

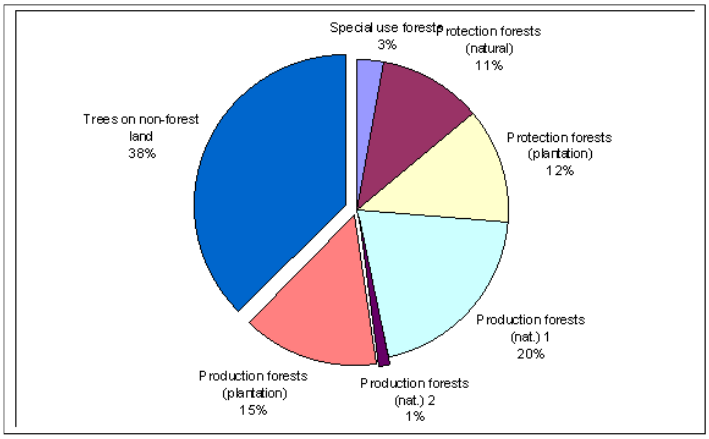
Category	Area	Growth potential	
	– thousand ha –	– thousand m^3 –	– % –
Special use forests	730	730	3%
Protection forests (natural)	2 919	2 919	11%
Protection forests (plantation)	548	3 289	12%
Production forests (nat.) 1	3 776	5 363	20%
Production forests (nat.) 2		300	1%
Production forests (plantation)	647	3 880	15%
Sub-total	8 619	16 481	62%
Trees on non-forest land		9 900	38%
Total		**26 381**	**100%**

Source: Department of Environmental Policy Studies, NISTPASS (1998) and consultant estimates. Excludes bamboo forests in protection and special use forests. Less than 2% of plantation area is under bamboo.
Production forests (nat.) 1: current production forests to be "closed".
Production forests (nat.) 2: 300 000 m^3 of cutting to be allowed in the medium to long-term

Of the total growth potential only 19 mill. m^3 (74%) originates from areas open to utilisation; *special use* and *protection forests* fall outside logging areas. In the medium to long-term, the category of natural production forests will cease to exist. Additionally, trees on non-forestland are outside *industrial* wood production potential. Consequently, the sustainable raw material potential for the industry is only 3.9 m^3 of plantation wood and some 300 000 m^3 in the medium-term, from natural forests. The total available sustainable annual domestic raw material base for the industry is currently appr. 4.2 mill. m^3, forming only 16% of the total growth capacity of the country (Figure 2.2).

No consideration is given to species structure and it needs to be noted that *growth*, even in production forests, is not the same as *allowable cut*. National figures also should not be used in analysing local conditions. Issues of the sustainability of forest utilisation need to be analysed at forest management unit level before any decisions are made.

Figure 2.2: Wood Production Structure



Production forests (nat.) 1: current production forests to be "closed"
Production forests (nat.) 2: 300 000 m^3 of cutting to be allowed in the medium to long-term

2.2 Plantations

The GoV has initiated two forest planting programmes to overcome the environmental problems related to deforestation: *Programme 327* and *Five Million Hectare Programme*. The former, Programme 327, was launched for watershed protection. The Five Million Hectare Programme has wider scope aiming at establishing forests in all categories.

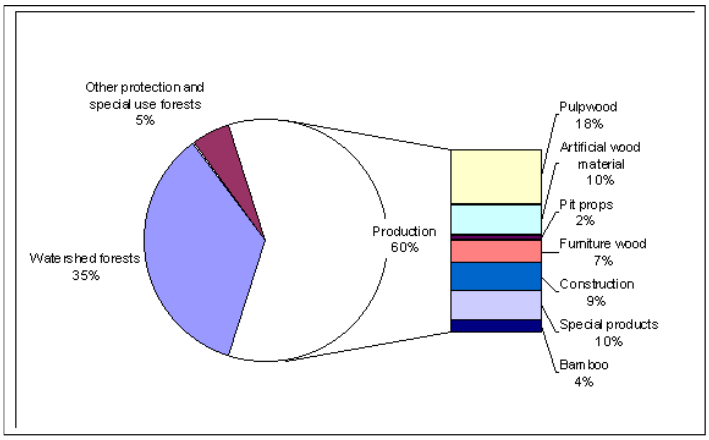
2.2.1 Five Million Hectare Programme

The Five Million Hectare Programme covers years 1998-2010. After it has been completed, most natural forests will be "closed", *i.e.* logging will be disallowed. As the programme is still in its starting phase, no success rate of the plantations may be established. The programme includes both reforestation and "active protection" of existing forests. The objective is that by the end of the programme, year 2010, forests would cover 14.3 mill. ha.

Most of the plantations – 60% – are to be established for production purposes, one third for watershed protection, and the remaining for the protection of coastal sands, flood control, *etc.* (Figure 2.3). The production plantations are classified by the end-use of the wood; most of the production plantations will be fast growing exotic species for pulp production including some bamboo plantations. The furniture wood plantation category includes also 120 000 ha rubber plantations, often classified as agricultural product. The figures are preliminary as the plan is flexible and states that:

In reality these figures should be adjusted based on the market of forest products and investment possibility.

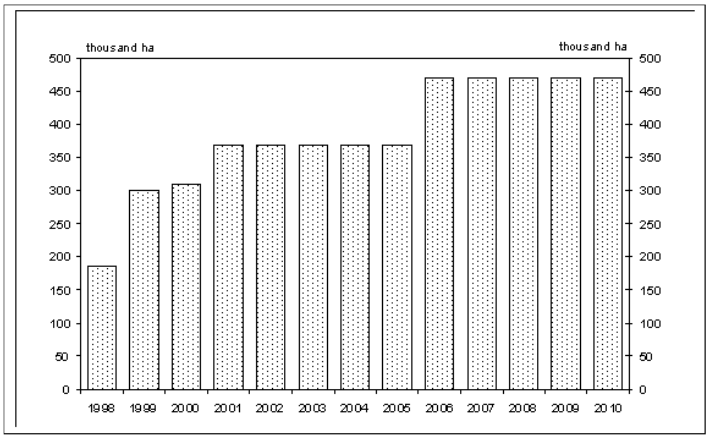
Figure 2.3: Five Million Hectare Programme



In addition to the plantations, some 350-400 million trees are planned to be planted on non-forest land. They are aimed at producing 5 mill. m^3 of fuelwood and 2 mill. m^3 construction wood.

As mentioned earlier, the programme was launched in 1998 and it is intended to run until the year 2010. The planting schedule will gradually increase, reaching almost half a million hectares during the last five years of the programme (Figure 2.4). During the first years of the schedule more emphasis will be put on the protection of forests while the production forests will be planted towards the end of the period.

Figure 2.4: Planned Implementation of the Five Million Hectare Programme (hectares, 1998-2010)



2.2.2 Plantation Management

The production plantations – like all production forests – are managed by:

- state enterprises (State Forest Enterprise – SFE, agricultural units and companies)
- social organs
- military units
- rural communities and local people for long-term use, management and protection

Land allocation is done by the local authorities. Currently most forest production is carried out by the SFEs, though recently this policy has been subject to a lot of criticism as many of the enterprises have not, for various reasons, been able to fulfil their mission. To provide a partial solution to the problem, the Five Million Hectare Programme plan states that:

> 4.1 About land: So far the forest enterprises have still managed a large area of land. It is necessary to review these land and transfer to local authorities for land allocation to local people the areas unused or ineffectively used by forest enterprises. The land will only be allocated for production forest establishment to those households or individuals having needs and being capable to manage in terms of labour and financial resources. This avoids the even distribution of the land to every household without knowing whether people will use land or leave it bare.

The programme clearly aims to increase the role of the private sector in forestry production in Viet Nam. There are, however, no clear mechanisms for land utilisation right transfers presented. Also, many silvicultural activities may be purely based on the desire to keep the land under SFE management rather than optimum land use planning. (The role of SFEs is discussed in more detail in Chapter 3.2)

The parties to be entitled for land allocation for production plantations – for watershed areas and special-use forests application is under different rules – are:

- state-run forest enterprises and state-run public forest enterprises
- collectives
- social holdings
- private businesses and households, and
- joint ventures with foreign funds

The Viet Nam Forestry Corporation (vinafor) will be responsible for managing the SFE-plantations, though the plan does not indicate what degree of autonomy the SFEs would have in respect to vinafor.

As for the sale of revenues the plan states that:

> 4.3 About harvesting and product selling: The forest owners [sic!] have legal right to the ownership of all forest products harvested. They are able to harvest and sell these products easily and conveniently without suffering from many troubles as previous situations which led to the situation that many households refused or hesitated to do forest business.

Constraints

The Programme clearly has two main objectives:

i. to increase forest cover both in protection/special use forests, as well as production forests, and
ii. to increase the raw material base of wood processing industries and household wood consumption

The initial plan does not have strong mechanisms to ensure the sustainability of the plantations. Even the proposed subsidies have a follow-up period of only three years, a period far too short to ensure the long-term establishment of the plantations. The plantations may be disturbed and/or land use pattern may be changed once land allocation to an individual or a private company is thought to be permanent. The SFEs may be inclined to keep areas under forest cover only to ensure ownership of the land; even if alternative land management would give higher returns.

Plantation programmes require complex analysis of optimal land use, social context in the area, *etc*. The plan does not have strong emphasis on these aspects. Plantation establishment appears to be considered more of a technical rather than socio-environmental issue.

The production forest establishment is not required to go through typical investment analyses of financial and economic feasibility. It is intended that the GoV would subsidy plantation establishment with a conditional grant of 1.5 million Vietnamese Dong (USD 110).

The production forests should be considered commercial enterprises while the forests that have notable environmental benefits are in Vietnamese classification protection forests. This is not to say that production forests would not have environmental externalities. Basically, business activities – like industrial tree plantations – should be left to finance themselves. Otherwise indiscriminately levied subsidies form to a large extent a transfer payment to SFEs and rural middle-class from the urban populace and rural poor. A more developed system needs to be introduced to compensate for the external benefits accruing from the production plantations.

Box 1: Program 327 – Watershed Protection Programme

A predecessor of the Five Million Hectare Programme – Greening the Barren Hills a.k.a. Program 327 – was initiated in 1992. Originally the programme had a wide range of objectives ranging from "re-greening the major part of the degraded hills" to "creating incomes to the State and consolidating the national security". Later, in 1996, the programme was re-emphasised to concentrate on the protection and re-establishment of watershed and special-use forests.

The programme had a strong top-down and state control emphasis. All financing took place through state farms and enterprises. In areas where such institutions did not exist, they were formed for the sole purpose of obtaining financing for plantation projects. Project approval was also a complex process initiated at district level. Final decisions were, however, always made at central level. Neither were there specific practical project planning guidelines, project planning was carried out based on an ad hoc interpretation of various Degrees and Circulars. However, the recipient communities were not involved in the planning processes.

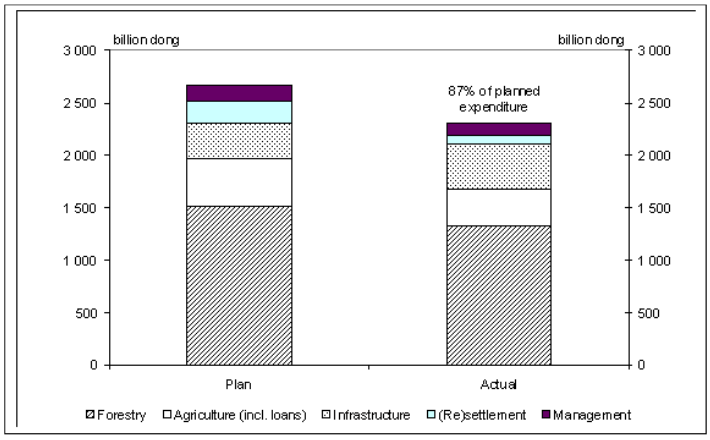
The areas where project money was to be used included:

- infrastructure, scientific and technical facilities
- public welfare
- reforestation and seed production
- subsidies to families wishing to reclaim unused land
- 40% of the financing could be used for interest free loans to project area households

Revenue originating from project support was shared between individual households (50% in planted forests, 25% in the case of protecting existing forest) and the GoV (50% and 75% respectively).

The overall expenditure of the programme was is presented below (Box figure 1).

Box figure 1: Programme 327 Expenditure, planned and actual 1993-97



Achievements

Some of the main achievements in 1993-97 were

plan 1993-97 — achieved 1993-97
forest protection 5 477 600 — ha 6 791 700 ha
forest regeneration 758 500 ha — 989 900 ha
(re)settlement 178 213 families — 92 420 families

Problems faced

Large-scale plantation programmes – such as Programme 327 and possibly the Five Million Hectares Programme – tend to have notable problems in their implementation. The ones specific to the Programme 327 were identified in a World Bank reviews:

- top-down approach, bureaucracy and lack of participatory approaches
- constantly changing objectives, and insufficient and erratic financing
- problems in land allocation
- many projects were developed purely to support ailing SFEs

- poor quality in seeds, seedlings and implementation work
- lack of knowledge on species selection and silvicultural methods and approaches
- no market orientation in commercial activities
- many projects were considered alien by the local communities, and poor households give higher priority to food security than to wood production (*i.e.* high discount rates)
- long-term viability of the plantations remains to be seen

The review concludes that the shortcomings identified jeopardise achieving the broad objectives of the Programme.

The Five Million Hectare Programme is viewed as a continuation of an earlier national plantation programme – Programme 327 (see Box 1). Some, but by far not all, problems identified in 327 have been corrected in the new design. However, the most notable ones of a) top-down approach and the lack of community participation and b) inadequate social and biological knowledge have not been tackled. The most apparent modification in project approach is the switch from protection to production forests. The households will also be entitled to a higher share of logging revenues (upto 100%).

The impact of the programme on wood supply is discussed in more detail in Chapter 7.

3. Utilisation of Forest Resources

3.1 Forest Ownership

All forestland is owned by the State. The land is allocated for management to

- state forest enterprises (SFE)
- communes
- private enterprises
- small areas also to private individuals and households

The State ownership is implemented through the Provincial People's Committees (PPC). The bulk of the forests are in the hands of the SFEs. They have the role to a) protect and manage the resources and b) utilise those forests not allocated to non-State entities. This applies to production and protection forests. For the special use forests there are separate institutional arrangements.

3.2 State Forest Enterprises

The State Forest Enterprises (SFEs) were established in the 1970's and 1980' to manage and utilise the country's natural forest resources and 412 SFEs have so far been established. The logging volumes by enterprise were in the first years of operation high, some 20 000-30 000 m^3/yr. These volumes led to serious over-logging and a review of the logging activities – *i.e.* decreased logging volumes – and consequently the operational role of the enterprises was changed a great deal.

Currently only 241 (58%) officially have a logging role, though only 107 (26%) have any forests to log and even then, the annual quotas are very small, only 1000-2000 m^3/yr. The rest have depleted their forests through over-logging and are supposed to be active in management of the forest estate.

The most active SFEs are the some 90 (22%) enterprises that are involved in plantation forestry. Their average annual logging is 3000-8000 m^3 and they have even been able to invest in new plantations with their own resources.

Out of the remaining enterprises 120 (29%) entirely depend on Program 327 funding to stay operational. These funds are for the establishment of non-production forests and thus will not give the enterprises any future income. Once the programme ends the enterprises will face dire difficulties or will continue to depend on Five Million Hectares programme. Even if some of these SFEs are not active, some 50 (12%) are in an even worse situation and have no designated activity and depend entirely on capital to pay salaries and other recurrent expenditure.

The GoV has noticed the unsatisfactory situation among the SFEs and has initiated a reform project with ADB assistance as a part of a larger ADB forestry sector project. The enterprises would separate their administrative and business functions. The enterprises are to be divided into different categories that would be based on their main activity: natural forest logging, plantation establishment and administrative duties related to forests. The renovation project is still on-going but it will include also dissolving some of the SFEs that do not have a feasible future.

In the Master Plan for Forestry Development 1996-2000 separation of all forest support activities from production activities was stressed. This would have a major impact on SFEs if the forest management decisions were made independent of forest utilisation decisions.

3.3 Legal Framework

Logging in *natural forests* requires a permit from the Department of Agriculture and Rural Development (DARD) in the Province. This permit, which is valid for one year, is issued to the enterprise or other entity that carries out the harvesting rather than the forest owner. One prerequisite is that the area, once logged, has to be later "closed" from encroachment, *etc.* and other disturbances.

All the harvesting units (state or non-state) have to follow the approved harvesting designs. When bidding the stand (selling stumpage), the approved harvesting design shall be used as the basis for negotiations. After the bidding process, all designs will be transferred to the harvesting enterprise with the approval of the relevant authorities. However, during the harvesting the forest owner is responsible for monitoring adherence to the design. The owner is additionally responsible for the procedures of "closing" the forest after logging.

The authorities have a right to on-site checking of the logging activities; this right applies both to DARD and MARD, the latter executes indirect control through monitoring DARD activities.

A harvesting design needs to be prepared also for *plantation forests*. There are three basic rules applied in the design of logging in plantations:

i. only mature stands may be harvested
ii. no clearcutting on steeper slopes than 15°
iii. cutting in "bands" if steeper slopes than 15° o r if prone to harsh conditions, *e.g.* wind

Two exceptions are applied:

- in family established plantations the household that has invested in the plantation is allowed to follow their own logging plans, and
- in long-term supply contracts the terms of the contract supersede the general provisions.

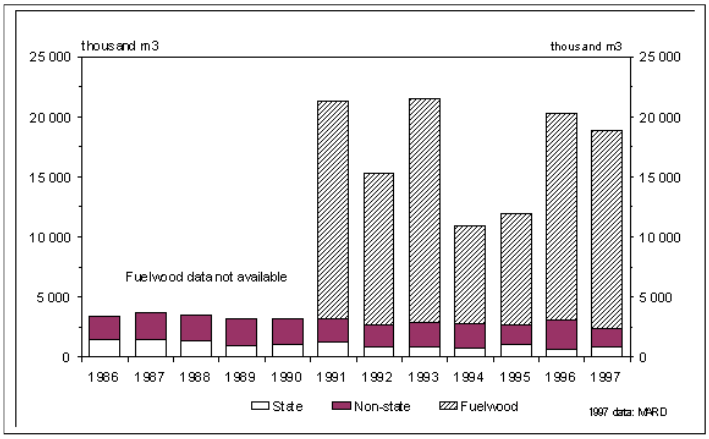
3.4 Harvesting

3.4.1 Recorded Logging

For the past decade officially recorded logging volumes in Viet Nam have fluctuated round three million m^3. Despite expanding forest industries logging volumes have had a declining trend.

The Vietnamese authorities, affected by the over logging and declining natural forest cover, have initiated a "closed forest" policy. This means a gradual introduction of logging bans in natural forests. The logging ban will not be absolute as some logging in well-forested areas will be allowed. The planned volumes will, however, be less than a third of the recent peak levels in 1992 when official commercial logging from natural forests was 1.2 mill. m^3.

Figure 3.1: Recorded Logging Volumes



However, the recorded wood exploitation statistics are of dubious value. The wide annual variations of fuelwood utilisation, a 56% decline 1994/95 in the use of a stable commodity like fuelwood clearly is not reliable.

The government has set up a policy to gradually reduce logging from natural forests. In the policy the limit for 1997 was set at 520 000 m^3. However, *recorded* logging was much higher (Table 3.1. Thus recorded logging was 153% of the medium-term plan. Additionally, it is highly unbelievable that the *unplanned local utilisation* from natural forest would have declined by 88% in only two years.

Table 3.1: Recorded Natural Forest Logging

Source	1995	1997
Centrally planned logging	124 305	2 300
Local level planning	571 780	589 000
Unplanned local logging	1 649 881	202 660
Total		794 760

The long-term logging level from natural forests is estimated to settle at 300 000 m^3. This volume will be obtained from areas with a high volume of standing stock. Despite being acceptable from a forest management viewpoint, partial legalising of logging in natural forests may have negative side effects.

Any legal logs from natural forests form a category of *legally cut Vietnamese natural forest logs* thus creating a possibility of any logs to be declared as belonging to such a group. This may take place through, *e.g.* forged documents, use of same batch identification for several shipments or declaring smaller volumes than those actually being logged. To overcome these problems excessively strict control mechanisms are needed. Generally, partial logging bans are difficult to enforce.

Anyhow, the whole concept of a logging ban may be questioned. Even if in some areas logging has not been sustainable not *all* logging needs to be banned in the whole country. Improved forest management methods and forest laws, and naturally their enforcement, could be more beneficial and cause less economic loss. Total bans additionally direct domestic raw material supply to illegal and non-controlled sources. Logging bans, to be effective, need to be coupled with abated demand. This is clearly not the case in Viet Nam.

3.4.2 Unrecorded/Illegal Logging

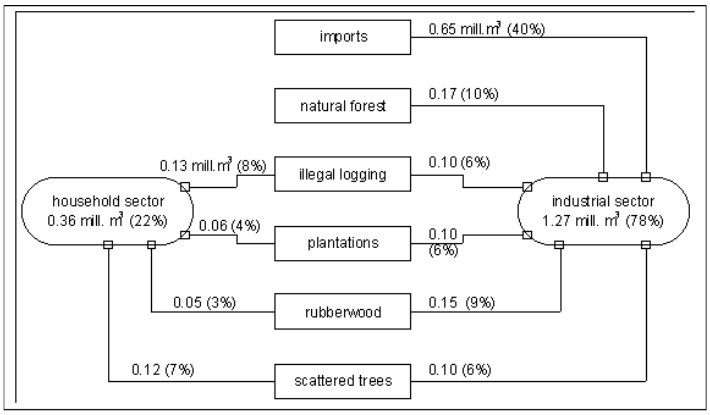
Illegal utilisation of natural forests is rampant in Viet Nam. No thorough research has been done on the topic. In the Western Plateau and Southern region – a region consisting of 22 out of 61 Vietnamese provinces – it has been estimated in mid-90's* that the total volume of illegal logging in the natural forests would be 0.23 mill. m^3. Out of this 0.13 mill. m^3 would have been used for household purposes while the remaining 0.1 mill m^3 would have entered the wood market.

This may be compared to the legally obtained natural forest wood and to the total natural forest logging in the country:

a. legally obtained natural forest wood in the Western Plateau and Southern region was in the same study estimated at 0.17 mill. m^3 . Illegal logging would thus be 135% of the legal cut and the marketed illegal logs 58% of legal domestic supply.
b. the region imported 0.65 mill. m^3 from outside making the total supply in wood markets 0.92 mill. m^3. The illegal logs provided 11% of the total supply.
c. in 1996 the recorded log imports to Viet Nam were 0.092 mill. m^3 and the reported use of imported wood 0.6 mill. m^3. All reported imports were from Cambodia. Even if all officially imported wood was used in the study region, 0.51 mill. m^3 was imported illegally. Thus the total share if illegal supplies in the region was 66%.

The use of plantation wood in the study was 1.6 mill. m^3 of which local use was 0.6 mill m^3 and 1.0 mill. m^3 market wood. Other wood sources in the study area were: rubberwood 0.2 mill. m^3 (0.15 mill. m^3 market wood) and scattered trees 2.2 mill. m^3 (1.0 mill. m^3). (Figure 3.2)

Figure 3.2: Woodflow in Southern Provinces (mill. m^3)



Source: Based on Forest Science Institute of Viet Nam. Sub-Forest Science Institute in the Southern of Viet Nam (1998)

The study area – Western Plateau and Southern region – has one of the biggest concentrations of wood and wood processing industries in the country in Ho Chi Minh City region. Therefore demand for wood is high. This applies in particular to imported wood. The Cambodian sources are easily accessible and Vietnamese companies are reported to be logging in the country. Therefore most of the imported wood is likely to have been utilised in the region. (For import and export of wood, see Chapter 7.1)

Assuming a constant volume of illegal logs in the whole country the total commercial logging volume may be estimated to have been 1.11 mill. m^3 in 1995 (Table 3.2). Using the same pattern, in 1997 the total logging volume would have been 1.0 mill. m^3. The share of illegal domestic supply would have increased from 37% to 41% in the same period.

Table 3.2: Viet Nam – Commercial Logging Volume (natural forests) 1995 and 1997

	1995		1997	
	– mill. m^3 –	– % –	– mill. m^3 –	– % –
South				
- legal	0.17	15	0.14	14
- illegal	0.10	9	0.10	10
Sub-total	0.27	24	0.24	24
North				
- legal	0.53	48	0.45	45
- illegal	0.31	28	0.31	31
Sub-total	0.84	76	0.76	76
Whole Country				
- legal	0.70	63	0.59	59
- illegal	0.41	37	0.41	41
Total	**1.11**	**100**	**1.00**	**100**

Source: Consultant's estimates based on Forest Science Institute of Viet Nam, Southern Sub-Institute (1998) and Department of … NISTPASS (1998)

There is no information available on previous illegal logging. The estimated total logging volumes are, however, at the same level as the peak official logging volumes in early 1990's. In 1992 recorded logging was 1.2 mill. m^3. Either the share of illegal logging has remained constant or the logging curtailing policy (*closing the forests*) has not been successful. Logging volumes have not lowered but previously legal logging has continued but now without authorisation.

4. Forest Industries

4.1 Industry Structure

Viet Nam has a wide variety of wood processing industries. The product range covers such products as sawnwood, wood based panels, and pulp and paper. In total the number of registered wood processing enterprises is 290 divided administratively as follows;

i. foreign owned (under Foreign Investment Act) 30

ii. private owned (under Company Law and Private Enterprise Law) 60

iii. owned by the State and run at ministerial level 60

iv. owned by the State and run at provincial level 140

There is no information available on the distribution of production capacity among the various owner categories. In addition there are "thousands of pit-saws being established" in the densely populated areas where local demand is high. These pitsaws produce sawnwood and further processed wood products (mainly furniture) to rural markets. Based on the anecdotal evidence available, it could be safely concluded that these pitsaws are also the first link in the raw material chain to some formal furniture makers.

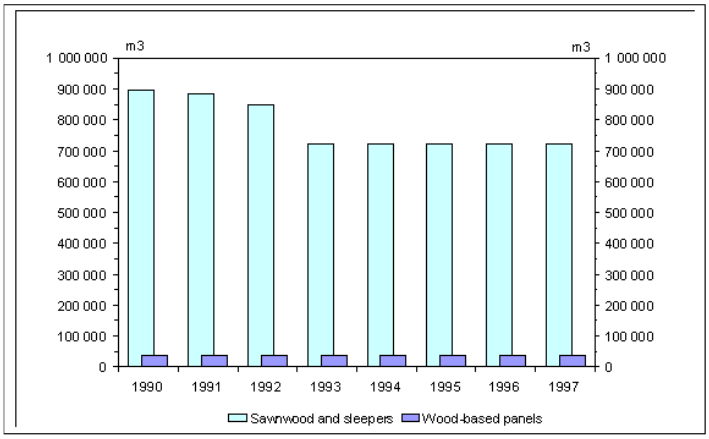
These figures may be underestimates. In late 1998 it was reported that in Ho Chi Minh City alone there were 800 registered wood processing units.

Generally, the available information on the forest industries is limited. Moreover, the available information often has statistical anomalies; different sources provide highly variable production figures and supply and consumption do not match by a wide margin. A large number of stakeholders have an interest in keeping the actual level of their activities veiled. There are a large number of regulatory bodies and decrees, and in order to be able to operate it is necessary occasionally to overlook some administrative procedures. This leads to a situation where there are numerous regulatory and research agencies, and state and private enterprises that have isolated, vested interests in keeping their activities private and limiting information sharing. In a transition economy like Viet Nam the *administrative* and *business* roles of state entities are not yet clearly separated. This leads to minimised information flow, as all information is classified business information.

4.2 Production Volumes

As discussed above, information of production volumes in Viet Nam is scarce. The only production statistics publicly available are those published in FAO reports. According to these statistics there has been no change in wood industry production since 1993 which is highly unlikely. (Figure 4.1)

Figure 4.1: Viet Nam – Wood Industry Production 1990-97 (FAO)



FAO (1998): FAOStat Database. www.fao.org 07.01.1999

4.3 Production Efficiency and Waste Management

Like in the neighbouring countries, sawmilling capacity in the country is often outdated and the level of technology is ignoble and the environmental technology applied has not been of the highest quality.

At many mills recovery rates are low but, on the other hand, residues are utilised effectively by:

- making use of odds and ends for fuelwood, grafting wood, and production of small goods such as rulers, furniture parts, *etc.*
- using sawdust in kilns and heat insulation

As for the harmful emissions, they are treated on the site. There is a process of relocating all emitting industries away from residential areas where they would be less harmful. The process would likely lead also to the closing of the most harmful plants. There is, however, no information on the scale and time schedule of the process.

4.4 Pulp and Paper Industry

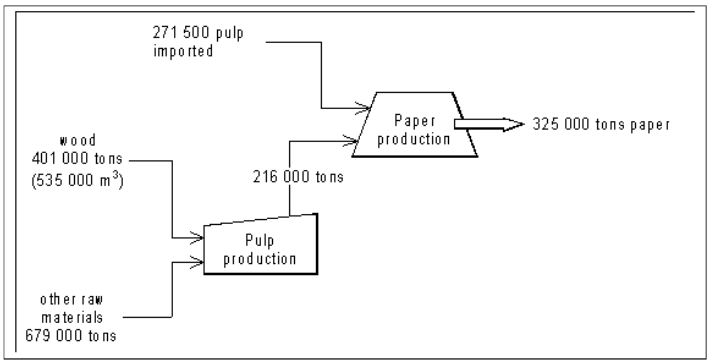
Paper production in Viet Nam has been on the increase over recent years. Currently paper production is 325 000 tons while pulp production lacks behinds at 216 000 tons; as a consequence the Vietnamese paper industry is dependent on imported market pulp. On the other hand, it also demonstrates that there has been a policy to develop more value added production in the country by importing raw materials and semi-processed materials and processing them locally. The same approach has been used also in wood industry as may be seen in the recent expansion of the wood furniture industry based on imported Cambodian and Lao logs and sawnwood. Generally the level of production technology is low and machinery out-dated; the largest Vietnamese paper maker claims to have one modern paper mill, the only in the country, in Bai Bang and even that one started operations in 1982.

Imports play only a marginal role in the paper market and the *per capita* demand has been limited by the domestic production capacity. The annual paper consumption is only 4 kg/cap. This may be compared to the Southeast Asian average of 13 kg and the world average of 50 kg/cap.

The fibre balance of the pulp and paper industry is presented in Figure 4.2. The balance is based on the following unit consumptions:

- 6.7 m^3 wood à 5 tons wood à 1 ton pulp
- 1.5 tons pulp à 1.0 ton paper

Figure 4.2: Pulp and Paper Industry Fibre Balance



5. Role of Forest Sector in the National Economy

5.1 Sector in National Economy

The Vietnamese economy is evenly distributed between the three main sectors: primary production (agriculture and forestry), processing (industry and construction) and services. Their shares of the GDP are (1996):

- agriculture and forestry 27%
- industry and construction 31%

- services 42%

Despite the almost even distribution of GDP among the sectors it is obvious that the level of production technology and labour productivity varies greatly among the sectors. The employment pattern is dominated by agriculture, which employs currently 69% of the total labour force, though it has lost some of its weight in recent years, though only marginally, in 1992 the share was 72%. The role of services as an employer has increased from 14% in 1992 to 18% in 1996.

For statistical reasons the role of forestry and forest industries in Viet Nam need to be analysed through secondary indicators; employment and share of gross industrial production. Both wood, and pulp and paper industries have grown dramatically in the 1990's which is presented by the two-digit annual growth figures in both industries. (Table 5.1)

Table 5.1: Forest Industry Production
(constant price value index, 1992=100) and Annual Change

	1992	1993	1994	1995	1996
		– index 1992 =100 –			
Wood industry	100	100	132	172	192
- change from previous year		0%	32%	31%	11%
Pulp and paper	100	111	131	167	192
- change from previous year		11%	18%	28%	14%
Forest industry total	100	103	131	171	192
- change from previous year		3%	27%	30%	12%
Industrial Production, total	100	113	128	147	171
- change from previous year		13%	14%	15%	16%

Source: IMF (1998)

The growth in the production value has been impressive but has not been reflected as a respective increase in the share of forest industries in the total industrial structure of Viet Nam; also other industrial sectors have had impressive growth rates throughout the decade. The forestry industry production value is dominated by the wood industry that contributes some 2/3 of the gross production value of the sector. However, even if combined the role of wood processing industries is small. Only 6% of the industrial production originate from this sector. (Table 5.2)

Table 5.2: Forest Industry Production – share in industrial production

	1992	1993	1994	1995	1996
			– % –		
Wood industry	3.4	3.0	3.5	3.9	3.8
Pulp and paper	1.9	1.8	1.9	2.1	2.1
Forest industry	5.3	4.8	5.4	6.1	6.0

Source: IMF (1998)

As for employment, the share of forestry (not including processing) is only marginal, even if compared to the other primary production sectors. As presented in Table 5.3, in total less than 1% of the formal labour force is employed by forestry production. The table refers to formal full time or regular part time employment while the actual number of people having at least part of their income from forestry and related activities should be higher. The difference may be contributed to illegal logging and trade, household woodlots and owners' work on private plantations.

Table 5.3: Forestry Employment

	1992	1993	1994	1995	1996
		– thousand people –			
Public sector	63	63	43	40	42
Private	147	151	180	188	190
Total	210	214	223	228	232
- change from previous year		2%	4%	2%	2%
Forestry of					
- agriculture and forestry	0.9%	0.9%	0.9%	0.9%	0.9%
- total employment	0.7%	0.7%	0.7%	0.7%	0.6%

Source: IMF (1998)

5.2 Development and Government Policies

5.2.1 Investments

The Government of Viet Nam approved in 1996 the Public Investment Programme (PIP) for 1996-2000 to represent GoV policies both in qualitative description and monetary terms based on the government's commitment to utilise public finances for national development. The plan has very little on forestry or forest industries.

Only one paragraph of nineteen in the agriculture chapter of the plan deals with forestry and tree crop development. The plan states that:

> 18: According to plan, in the coming 5 years, 9.3 million ha of existing forests will be protected, another 2.5 million ha of forests replanted and 450 000-600 000 hectares of additional tree plant development, including:

- rubber 200 hectares of new planting
- coffee 70
- cashews 70-100
- tea 15-20
- fruit trees 120-200

The investments in forestry in PIP amount to VND 13 000 million (USD 0.9 mill.), 14% of the agriculture sector investments and 3% of the total PPI. This total figure includes all investments, including private, under PIP. State investments for forestry are planned at VND 4 000 million (USD 0.3 mill.), 18% of total state investments in agricultural sector and 4% of total state investments, clearly more than the share of forestry in the economy. It needs to be noted, however, that the investments are not entirely towards *production* forestry as the investments schemes include also reforestation in protection forests.

As for forest industry, both wood and, pulp and paper industries, they are not even mentioned in the plan. The main reference that may be an indication, especially for pulp and

paper industry, is;

> 15 … In larger scale basic industry (e.g. oil and gas, steel; cement…), state enterprises will continue to play the leading role, but there will be co-operation with international firms and mobilise equity from domestic investors.

It is not directly stated but the pulp and paper industry may easily be classified as *larger scale basic industry*. For light industry a mix of domestic private enterprise, co-operative and handicraft producers could form JVs and state enterprises to operate on market principles. This could be considered to apply to wood industries. This strategy is also apparent in the current production structure of the industries where the share of private industries is small in paper and paper products as compared to wood industries which have a remarkably high share of non-state production. The share of non-state producers was in 1997

- wood industry 43%
- paper and paper products 24%
- total manufacturing industry 27%

(Source: Socialist Republic of Viet Nam-General Statistical Office (1998))

5.2.2 Certification

Vietnamese forestry stakeholders have realised the increasing concern over the sustainability of forest management and the importance of environmentalism existing in their export markets in Europe and North America. There have been some initiatives on forest management certification as the European importers have been concerned on their image in the market. The line of development will be based on the Forest Stewardship Council approach in sustainable forest management. It has not yet been decided by the GoV if the aim is only to increase sustainability of management or if full scale, official certification should be sought.

Two initiatives have progressed to some extent. A European wood furniture importer sponsored a study on the origin of the wood it receives and to develop chain-of-custody verification. In another recent initiative the World Bank together with the World Wide Fund for Nature will implement a pilot certification scheme in a SFE in Kantum province.

6. International Wood Trade

6.1 Exports

Viet Nam introduced an export ban on roundwood and sawnwood in 1994. Officially there should be no exports. However, there exists wide scale evidence that at least Cambodian and Lao logs are being re-exported through Viet Nam. The Cambodian logs exported are illegal, as there is a log export ban in Cambodia. Nevertheless, Vietnamese officials have allowed such re-exports despite public policy statements otherwise. However, there is no accurate information on volumes of roundwood and sawnwood exported in such a way. The volumes are, however, adequate to justify BPK Phudoi – a Laotian logging and mining company – to have a merchant fleet stationed in Vietnamese ports.

There have been unconfirmed allegations that wood is being exported to Yunnan and Guangxi provinces in China from various parts of Northern Viet Nam. Like in the case of re-export of logs from neighbouring countries, the volumes involved are unknown.

Like the industrial production statistics, also the foreign trade statistics are state secrets and trade analysis based on local data is not possible. This obstacle may be overcome by analysing *import* data from some trading partners. An analysis on these import statistics was carried out on two non-GMS, important trading partners: the European Union – a group of 15 western European countries – and Japan. Import statistics for EU covered years 1995-97 and for Japan 1995-96. For other countries comparable information was not readily available. As mentioned above, due to lack of information it is not possible to estimate what share of the Vietnamese exports are covered by the analysis. Additionally, wood and wood products are often bought by international traders who then re-export the products making the foreign trade statistics obscure. The reported volumes should be seen as the lowest estimates of the actual volumes.

There has been an immense growth in wood product, and particularly wood furniture, imports from Viet Nam to the sixteen countries studied in the late 1990's; wood furniture imports increased threefold and wood imports almost doubled (Table 6.1). The increase in furniture exports may mainly be contributed to the "flood" of moderately priced garden furniture from Viet Nam. It has been successful in replacing plastic furniture and more expensive wood furniture. The other wood products imported are mainly processed products like flooring, and kitchen and tableware. There are also notable woodchip imports to Japan, in 1996 151 000 tons were imported. No such imports were reported by the EU countries.

Table 6.1: Imports from Viet Nam to EU and Japan 1995-97

	1995	1996	1997
		- tons -	
Wood (excl. woodchips)			
Japan	6 412	14 152	*14 152*
EU	4 365	5 774	5 460
Sub-total	10 777	19 926	*19 612*
Wooden Furniture			
Japan	4 996	10 809	*10 809*
EU	3 782	8 082	16 624
Sub-total	8 778	18 891	*27 433*
Total			
Japan	11 408	24 961	*24 961*
EU	8 147	13 856	22 084
Total	19 555	38 817	*47 045*
Viet Nam % of GMS imports			
Japan	5	12	n.a.
EU	10	19	27
Total	7	14	*16*

Source: EuroStat and Japanese Foreign Trade Statistics
Japanese imports in 1997 estimated at 1996 levels. GMS excludes Yunnan

The imports to EU from the GMS (excl. Yunnan) are dominated by Thailand (59% in 1997) but with the increased imports, Viet Nam has become the second most important supplier in the region, replacing Myanmar. Thailand is also the most important supplier from the sub-region to the Japanese market followed by Viet Nam. Previously Lao PDR supplied more but in 1996 the 120% increase in imports from Viet Nam reversed the order.

The increased wood demand in exports have replaced other wood flow destinations. In the same period reported supply (domestic logging and imports) to wood industries had declined by 30% (Table 6.2). In 1997 8% of all supply (excl. pulp and fuelwood) went to supply these two export markets. The increase in the exports to Japan and the EU must have replaced domestic demand or other export markets. There is no information available on species structure of either supply or export. However, it may safely be assumed that the export demand is dominated by medium to high value species and the switch in the demand pattern has been more dramatic in this segment.

Table 6.2: Wood Supply and Export Demand

	1995	1996	1997
		- tons -	
Reported supply	2 701 000	2 373 000	*1 904 000*
Export demand	57 744	117 409	150 918
	2 %	5 %	8 %

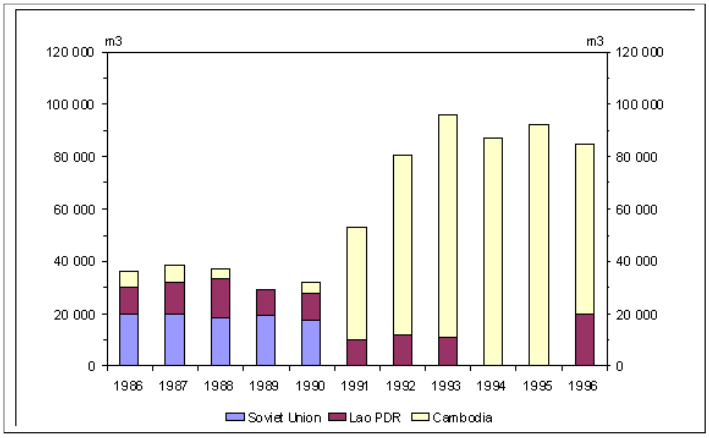
Source: Table 6.1, Chapter 3.4

The origin of the wood from which export products are made may also be questioned. In a Global Witness (1999) study on Vietnamese garden furniture exports to Europe many importers interviewed suspected that the wood came from Cambodia and that the documentation of the origin of the wood and sustainability of forest management were not fully reliable.

6.2 Imports

Vietnamese statistics are very limited on wood imports. The official imports have been constantly in the region on 0.l mill. m^3. (Figure 6.1) The vast majority of wood has been coming from Cambodia while some wood has been coming from Lao PDR.

Figure 6.1: Viet Nam – Official Imports 1986-1996, m^3



Source: Ministry of Agriculture and Rural Development. Forest Science Institute of Viet Nam (national consultant, 1998)

The official figures are far below the ones reported in other sources. In a study on the forest products market in the Western Plateau and southern region it was estimated that industry in that region alone used some 0.6 mill. m^3 of imported wood. This alone would be some six times the official imports to the whole country.

Among Vietnamese officials there is a high degree of confusion over imports. The head of the Environmental Economic Unit in the National University stated that there are no imports from Lao PDR or Cambodia. FIPI officials interviewed, on the other hand, stated Cambodia as a major supplier of wood to the industries in Ho Chi Minh City.

Viet Nam has become the most important destination for illegally exported Cambodian logs. It has replaced Thailand that has, due to international pressure cut illegal imports from Cambodia. The Vietnamese buyers have also carried out the logging themselves with Vietnamese personnel and machinery in Cambodia. As the same companies that carry out harvesting in Viet Nam also have logging operations in Cambodia it may be impossible to differentiate between local and Cambodian wood.

All log exports from Cambodia have been illegal since December 1996. Therefore *all* logs entering Viet Nam from Cambodia are smuggled and there are, for obvious reasons, no statistics available. Global Witness estimates the volumes to be very high:

> In September 1998 Global Witness saw 350 log rafts on the Mekong carrying a minimum of 31 000 m^3, much of which was destined for Viet Nam. Vietnamese loggers are already working in Ratanakiri Province [in Cambodia], indicating that large scale land exports will take place in the 1998/99 dry season. These figures come on top of the minimum 260 000 m^3 of Cambodian logs illegally felled and exported to Viet Nam in 1997 and early 1998.

A fourth estimate may be based on the World Bank Financed Log Monitoring and Logging Control Project in Cambodia. A summary of the various estimations on the imports from Cambodia is presented in Table 6.3.

Table 6.3: Log Imports from Cambodia Viet Nam

Source	Logs	Sawnwood, rwe	Total	Year
	– m^3 –			
Official	65 000		65 000	1996
Global Witness	>260 000		>260 000	1997
DAI	497 000	450 000-492 000	947 000-989 000	1997
Forest Research	600 000		600 000	mid-1990's

Source: MARD (1998), Global Witness (1998a), DAI (1998),
Forest Science Institute of Viet Nam. Sub-Forest Science Institute in the Southern of Viet Nam (1998)

Despite Cambodia being by far the most important source of supply, other countries have a role in the Vietnamese wood supply strategy. Information on these imports is even more coarse than that on the Cambodian wood. Based on scattered information from exporting countries it may safely be assumed that Lao PDR is clearly the second most important source of supply. Much of the wood imported from Laos to Viet Nam has been logged by Vietnamese companies that have been subcontracted by Lao counterpart state enterprises who have been issued with concessions, often from dam and other infrastructure construction sites. Some wood is also being received in barter trade for implementation of construction projects in Laos. In total the imports may be estimated to be in the range of 100 000 m^3 annually.

Other countries from where Viet Nam imports are the Myanmar, Malaysia and Indonesia. There is little information on the shares of individual countries though the total may be estimated at 100-150 000 m^3.

7. Demand – Supply Balance

7.1 Industrial Roundwood

Viet Nam is aiming at switching almost totally to plantation wood in its industrial roundwood supply. This will happen mainly through large-scale industrial plantations. Based on the preliminary plan of the Five Million Hectare Programme and experience on other plantation programmes in the region two wood supply scenarios were prepared: a) the planned scenario based on official figures and b) an alternative analysis based on experience in other projects. The basic data and assumptions are presented in more detail in Annex 4.

7.1.1 Demand

The commercial roundwood demand is dependent of the production volumes. The current production figures are not available but the GoV development plans include a projection of wood demand until year 2010. The validity of the projections cannot be evaluated; they, however, offer insights on the direction in which the authorities officially wish the development to lead. The projection is based on a continuous increase in most segments of wood industry and in the economy as a whole. For pulp and paper industry an immense increase is estimated, in the 14 year period 1996-2010 the annual increase would be 22% making the total demand increase sixteen fold. This is very unlikely, especially when taking into consideration the vast capital investments needed for the annual 22% increase in the pulp industry capacity.

Table 7.1: Wood Utilisation Projections 2005 and 2010

	2005		2010		Change p.a.
	– mill. m^3 –	– % –	– mill. m^3 –	– % –	1996-2010
Commercial / Industrial					
- wood-based panels	2.0	4	3.0	5	n.a.
- furniture making	2.0	4	2.5	4	1%
- construction	1.0	2	1.5	3	3%
- pulp and paper industry	4.0	8	6.0	11	22%
- pitprops	0.4	1	0.5	1	4%
Sub-Total	9.4	18	13.5	24	9%
Fuelwood	42.7	82	42.3	76	
Total	52.1	100	55.8	100	

Source: MARD (1998)

Another approach to estimate demand is to utilise a thoroughly analysed supply and assume it to be consumed fully within the country. The total supply in the domestic market is a combination of legally cut wood both in plantations and natural forests and official imports, that being the legal category, rural household utilisation (mostly legal), and illegal logging and smuggling (illegal sources). What is striking is the high dependence on the illegal sources of supply; one third of all non-fuelwood consumption in Viet Nam is either illegally logged or imported without records. In the pure commercial use the share of illegal sources was even higher, two thirds (*c.f.* Chapter 3.4.2). (Table 7.2)

Table 7.2: Wood Supply by Source, 1997

Supply category	– thousand m^3 –	
Planned Supply		
Legal natural forest	592	15%
Legal plantation	203	5%
Legal Imports	85	2%
Sub-total	880	23%
Household, excl. fuelwood		
Rural household utilisation, natural	203	5%
Rural household utilisation, plantations	1 449	37%
Sub-total	1 652	42%
Illegal Supply		
Illegal commercial logging	410	11%
Illegal imports	950	24%
Sub-total	1 360	35%
Grand Total	**3 892**	**100%**

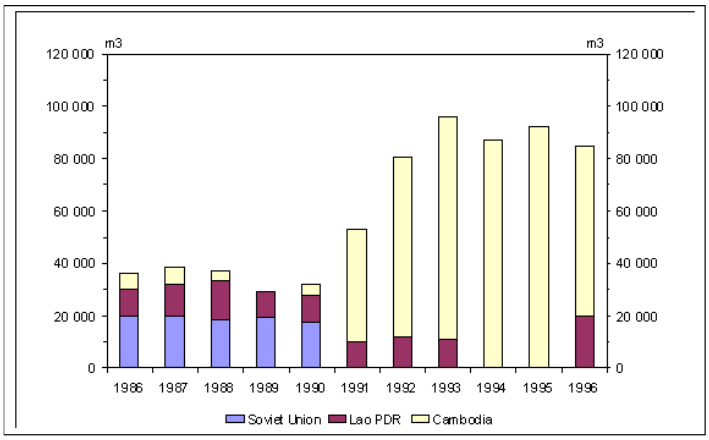
Source: Table 3.1, Table 3.2, Table 6.3, and MARD (1998)

7.1.2 Supply – Planned Scenario (Five Million Hectare Programme)

The plantation programme was established in 1998, the same year as the logging volumes from natural forests were to be lowered. This will lead to a deficit of some 1 mill m^3 if no changes occur in raw material demand in industry or no measures are taken to replace large natural forest logs with imported plantation wood. This may be made more difficult if Cambodian authorities manage to curtail the rampant illegal wood trade from their country.

In 2007 when the first fast-growing species plantations reach maturity the total supply will increase nearly twofold (Figure 7.1). After that, supply potential increases gradually following the pattern of plantation establishment a decade before. In 2018, twenty years after planting, the first medium rotation plantations reach maturity. Some commercial wood may be obtained from thinnings in the medium and long rotation plantations. However, the commercially viable volume is estimated to be small (only 0.2 mill. m^3 at the peak in 2020). No long rotation plantations will reach maturity during the projection period.

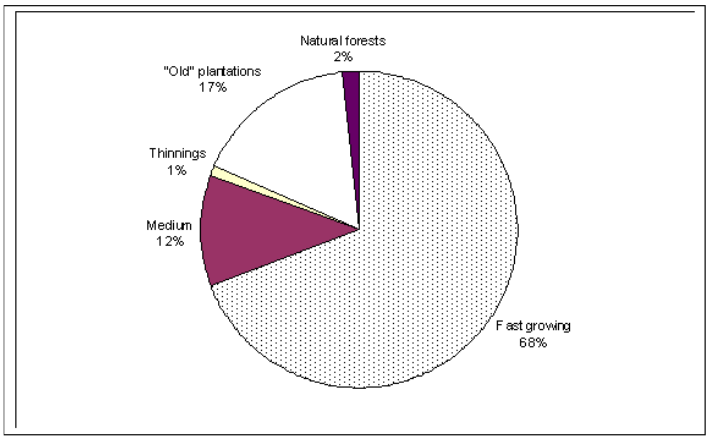
Figure 7.1: Domestic Wood Supply Projection, 1998-2020 (mill. m^3) – Planned Scenario



In the medium-term, most wood supply will come from fast growing [exotic] plantations (Figure 7.1). The projected wood supply in 2015-2020 will mainly consist of small diameter wood from fast growing plantations and thinnings (64%). Larger logs used by wood industries come from natural forests and "old" plantations and to some extent from medium rotation plantation (making up the remaining 36%). The projected wood supply structure is in line with the projected industrial roundwood use in the first and second decade of next century (*c.f.* Chapter 7.1.1) which concentrates on the development of pulp and wood based panel industries. When comparing the wood supply with the projected demand, it needs to be kept in mind that Vietnamese logging methods are generally considered inefficient. As much as 35% of logged volume is wasted. Thus the supply available to industry is lower.

By comparison, the total volume of sustainable production potential is presented as though – somewhat unrealistically – logging restrictions were lifted and all natural production forests were utilised in a sustainable manner. It is assumed, that 25% of the growth potential may be found in commercially attractive species and that deforestation continues at the, rather alarming, 1.5% *p.a.* rate. In the beginning of the projection period the "loss" due to logging restrictions would be in the range of 1.3 mill. m^3 (29% of total supply potential) and gradually decline to well below 1 mill. m^3 (4%) with decreasing forest area.

Figure 7.2: Wood Supply Sources, 2015-2020, average



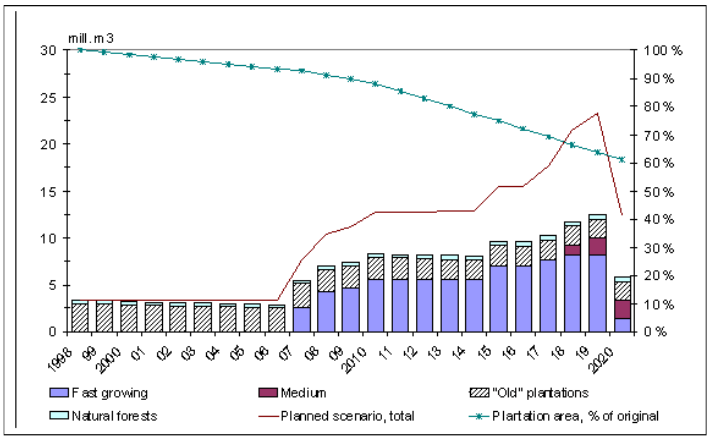
7.1.3 Supply – Realistic Scenario

The Planned Scenario was based on the assumptions presented in the plans for the *Five Million Hectare Programme*. Based on experience in Programme 327 (for more detailed description of the Programme 327, see Box 1) and other comparable plantation schemes in the region, some of these assumptions may be considered overoptimistic, particularly if the deficiencies in the programme design were not changed. Based on these experiences, a more pessimistic *Realistic scenario* was prepared. The main modifications from the *Planned scenario* are:

- a survival rate reduced from 85% to 60%
- 2% of the plantation area (both newly established and "old" plantations) is converted to other land uses annually
- thinnings do not produce any commercial roundwood
- only 50% of the clearcut fast growing plantations are replanted
- lower than anticipated wood supply from plantations compensated by *de facto* allowing increased logging in natural forests

The modifications cause a remarkable gap between the scenarios. At the end of the projection period in 2020, wood supply under the *Realistic scenario* is sited as only 6.6 mill. m^3, 46% of the *Planned scenario*'s 14.4 mill. m^3. The remaining plantation area is sited as only 61% of the original 3.0 mill. ha, *i.e.* 1.8 mill. ha. (Figure 7.3).

Figure 7.3: Wood Supply Projection, 1998-2020 (mill. m^3) – Realistic Scenario



The wood supply structure for the last five years of the projection period differs from that of the *Planned scenario*. The new plantations will be producing less wood than expected and the role of natural forests in timber supply is growing. The share of small-diameter wood is only 57% while the larger logs form the remaining 43%. The Vietnamese forest industry need to analyse thoroughly the various projections on the wood supply and base investment decisions on those projections.

Generally, industries unable to rely a) on natural forests with known structure and wood supply potential, or b) on large [monoculture] plantations under their own management with known yields, are more in vulnerable position that their competitors. Those producers face a double risk, i) yield of the plantations may be lower than expected, and ii) the forest owners may change their production patterns and land allocation to other products – such as rubber or annual crops - if they become more financially attractive. Centrally led plantation schemes do not present a reliable raw material base until a proven track record may be presented.

7.2 Woodfuel and Other Household Wood

Viet Nam is no exception among developing countries with fuelwood being (in volume terms) the most important form of wood utilisation. The current (1992) household fuelwood consumption is estimated at 25 721 000 tons (36.0 mill. m^3). Charcoal clearly has a smaller role, even in urban areas; the country uses 557 000 tons of charcoal per year (2.6 mill. m^3 in wood equivalent). The *per capita* fuelwood demand in rural areas has been estimated at 0.59 m^3/yr. and in urban areas at 0.47 m^3/yr. Total woodfuel consumption would be 44.4 mill. m^3 if projected to 1998.

There are five major sources of woodfuel in Viet Nam:

a. logging residues (both small branches and stemwood not utilised due to its inefficiency in harvesting)

b. trees on non-forestland

c. natural forests (often officially illegal collection)

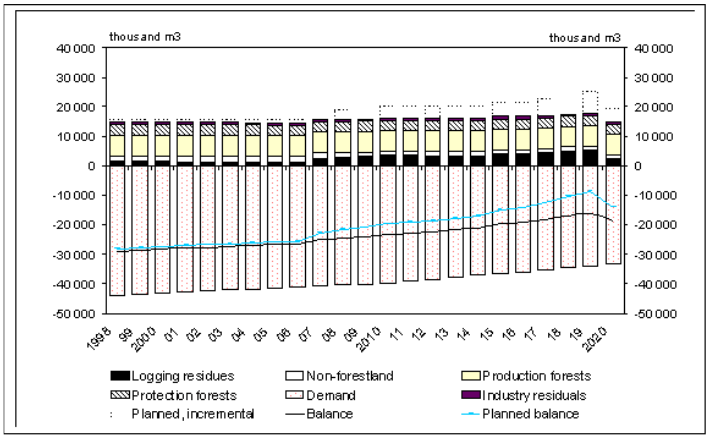
d. clearing forests for other land uses (temporary source)

e. production residue from wood industries

If these methods do not provide adequate fuelwood at a feasible economic price, substituting sources of energy will be used, such as crop residue in rural areas and coal and electricity in urban areas. Woodfuel is, particularly in the countryside, the preferred source of energy. If other sources are used it is usually more due to necessity than choice.

There are two projections concerning woodfuel balance as presented in Figure 7.4. The more optimistic is based on the *Planned scenario* of plantation establishment and the other on the *Realistic scenario*. In the figure the breakdown of sources is based on the *Realistic scenario* while the incremental supply of the *Planned scenario* (increased logging and wood industry production, and thus residue) is presented in a single block.

Figure 7.4: Woodfuel Balance 1998-2020



The average supply structure is dominated by sustainable utilisation of [current] production forests (Table 7.3). Even if natural production forests were "closed" they would inevitably be used for fuelwood collection anyway. The same applies to protected forests. As long as the utilisation is sustainable it does not pose any environmental hazard. Logging and industry residue is estimated based on the assumption that logging is at full capacity utilisation. Industrial residues to be used as energy represent 30% of the log volume harvested. The remainder will be utilised in wood-based panel industry and pulp industry.

Table 7.3: Woodfuel Sources (projection period average)

Woodfuel source	Share
Production forests	41%
Protection forests	24%
Logging residues	12%

Non-forestland	6%
Industry residues	5%
Planned scenario, incremental	13%

Even assuming a best case scenario, – with efficient plantation establishment combined with inefficient logging – there is a projected deficit of 9 to 28 mill. m^3. Under a more pessimistic analysis, the deficit range becomes wider, 16 to 28 mill. m^3 with no improvement towards the end of the projection period.

The deficit is the national average. Woodfuel is a low value product and is only traded locally. Therefore in highly populated areas with low forestation, like the Red River and Mekong Deltas, the regional situation is even worse while in areas with much forest *per capita* left the situation would be less critical. The deficit in traditional woodfuel sources may force people to switch their energy supply strategies by a) switching to other energy sources, such as crop and animal husbandry residues, and b) using ever smaller branches of wood. The former strategy would have negative impact on nutrient balance in agricultural land and the latter would be an increasingly labour intensive option. For an additional discussion on woodfuel demand–supply-analysis, see Box 2.

Box 2: Woodfuel in National Demand-Supply Analyses

The 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 financial value. 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 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* wood or 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 levels. At the national level there a large number of localised markets rather than one single national market.

As discussed in Box 2 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 conducted a regional study and found that people use notable resources outside forests. In the study region as a whole, only one third of wood energy came from forests. The total supply was 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 residue which also has uses in agriculture.

Based on the assumptions of RWEDP the woodfuel situation in Viet Nam is less alarming than assessed above. There would have been some surplus in 1994 and will still be in 2010, though the relative surplus would have all but disappeared (Table 7.4).

Table 7.4: Woodfuel – Potential Supply and Estimated Consumption (1994 and 2010)

1994			2010		
Supply	**Consumption**		**Supply**	**Consumption**	
– kton –		**– % –**	**– kton –**		**– % –**
48 960	29368	60	42 730	39 418	92

Source: From RWEDP (1997)

In 2010 the national surplus would be only 8% of the supply indicating that in large areas there likely are severe local deficiencies.

8. Conclusions and Recommendations

8.1 Current Situation

The Vietnamese forest sector is facing two challenges pulling to opposite directions; increasing international trade in wood products combined with increasing domestic demand, and declining domestic supply. The increasing gap has been so far been met with enlarging imports, mainly from Cambodia. The imports have consisted of large natural forest logs and sawnwood to cater the need of the furniture and other wood industries. Viet Nam does not import large volumes of pulpwood, though imports of market pulp are notable.

The sector where disparity between demand and supply is the largest is naturally domestic woodfuel. Currently sustainable production covers only some 1/3 of the demand, and other sources need to be sought; the alternatives are substituting energy sources and/or unsustainable use of wood supply.

These two segments of wood utilisation are both in imbalance and are threatening the sustainability of forestry in Viet Nam, or rather inhibit the restoration of sustainability. The recent attempts to achieve more balanced situation have been concentrated on large-scale plantation programmes; recent Programme 327 and recently initiated Five Million Hectare Programme.

8.2 Recommendations

The recommendations presented concentrate mainly on the institutional set-up of forest utilisation in the country. However, the SFEs are currently under a thorough review by an ADB-project the findings of which are not yet available. It is apparent, however, that the roles of the SFEs need to be clarified and they should be either incorporated into the mainstream national forest administration or, if they have activities of commercial type, they should become pure business units as financially viable enterprises. Based on international experience, any non-transparent mix of administrative and business duties leads almost inevitably to misuse of public authority role to benefit the business operations.

Community involvement in forest management is the most important weapon in achieving sustainability in forests and maximising the benefits obtained. Development of community forestry schemes needs to be continued and expanded, while their actual design is, however, beyond the objectives of the current project.

The recommendations presented below need to be implemented in the short to medium-term. Many of the obstacles encountered in the Vietnamese forestry are similar in other neighbouring countries. Seeking co-operation with other GMS countries will not only lead to cost savings but also increase the efficiency in information flows and harmonisation of information structure.

Information Systems and Forest Statistics

There is a need to increase collection and dissemination of forest resource, forestry operation and forest industry information and statistical data. Information is a powerful tool in managing and analysing the sector. It is recommended that Viet Nam initiates a program to collect forestry data and publish it; this process would include also a nation level forest inventory, research on growth and classification of forests and the economics and social aspects of forest utilisation. The latter research initiatives 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

i. forestry related statistical data is widely collected and made accessible in a consistent and coherent manner

ii. practise of classified 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:

a. 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 Viet Nam. They would also have access to all relevant information already collected in the country.
b. the institute[s] would publish the information in such a way that no information from a single market player would be disclosed.

There is also a need to carry out a large-scale forest inventory in Viet Nam and to keep it updated. 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.

In needs to be stressed that the data collection and actual statistical work would be a national responsibility but would be based on the jointly agreed standards. The 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.

Wood Research

The Vietnamese wood processing industries are facing raw material shortage, particularly if the Cambodian authorities manage to curtail the illegal logging. And even if they do not, the deficit will be there, though only a year or two later. The industry needs to identify other sources of supply through wood research. This research program would analyse raw material supply options and introduce new products based a) on plantation wood (incl. rubber and bamboo) and b) lesser known natural forest species. Declining supplies of traditional sawlog species has led to increased use of other species in wood industry. Some of the other species may be used like the "major" species while some may have different technical specifications and need new product ideas or production methods. The recommended program would consist not only of technical research but also market analysis and active promotion of products made of these species. Cambodia is facing a similar problem of wood industry capacity being beyond wood production capacity and co-operation with the country should be sought.

Supply Strategies Development

The GoV has initiated plantation programmes to replace the "closed" forests. Based on the previous experiences from plantation programmes, the new Five Million Hectare Programme may possibly not meet all, or even most, of the expectations. There is need for a detailed analysis of the demand–supply-projections and redesigning parts of the wood supply strategy, particularly in the view of declining imports from neighbouring countries.

The following issues should be addressed in the development of a national wood supply strategy:

i. redrafting the Five Million Hectare Programme taking into consideration the problems identified in the Programme 327, and reanalyse the wood supply potential

ii. assessing the feasibility and need for "closing the forests"; will the logging ban be respected and would strict, but feasible, management provide better results with lower economic costs

iii. curtailing illegal logging by both effective on-site and transport control, and chain of custody monitoring

iv. rural communities both as suppliers and consumers of wood

ANNEX 1

Literature Consulted

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ANNEX 2

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.

Institution		**Name**		**Title**
ADB Forestry Sector Project – State Forest Enterprise Reform		Blackney	Jay	Forest Management Specialist
ADB Forestry Sector Project – State Forest Enterprise Reform		Alan	Ogle	Forestry Business Specialist
Forest Planning and Inventory Institute (FIPI)	Forest Resources and Environment Centre	Nguyen Huu	Dong	Director
Forest Planning and Inventory Institute (FIPI)	Forest Resources and Environment Centre	Vu Vang	Dung	Vice Director
Forest Planning and Inventory Institute (FIPI)	Forest Resources and Environment Centre	Nguyen Gia	Thuy	Senior Expert
Forest Science Institute of Viet Nam	Forest Economic Research Division	Bui Minh	Vu	Dr., Professor
MARD-GTZ	Reform of the Forestry Administration System	Martin	Geiger	Forestry Advisor
Ministry of Agriculture and Rural Development	Forestry Development Department	Pham Hoai	Duc	Dr., International Co-operation Officer
Ministry of Agriculture and Rural Development	Forestry Development Department	Nguyen Hong	Quan	Director
National Institute for Scientific and Technological Policy and Strategy Studies	Department of Environmental Policy Studies	Tang The	Cuong	Researcher
National Institute for Scientific and Technological Policy and Strategy Studies	Department of Environmental Policy Studies	Nguyen Quang	Tuan	Head
National Institute for Scientific and Technological Policy and Strategy Studies	Department of Environmental Policy Studies	Nguen Hong	Viet	Researcher
Social Forestry Support Programme		Paul	Bardolf	Chief Technical Advisor
Sustainable Management of Resources in the Lower Mekong Basin (MRC-GTZ)		Hans	Heimrich	Dr., Chief Technical Adviser
Sustainable Management of Resources in the Lower Mekong Basin (MRC-GTZ)		Nguyen Hong	Quan	Dr., National Project Director
Viet Nam – Finland Forestry Sector Co-operation Programme		Petri	Lehtonen	Chief Technical Advisor
Vinafor	Import Export Trading Department	Hoang Hai	Tri	Manager
World Bank		Shane	Rosenthal	Coordinator of Environmental Programmes
World Wide Fund for Nature (WWF)		Jack	Hurd	

ANNEX 3

Itinerary of the Consultancy

1998	
June 1	Arrival of Mr. Devenish (the Team Leader) to Vientiane Commencement of the Project
July 30	Arrival of Mr Castrén to the project hq in Vientiane, Lao PDR
July 31-	Literature studies and initial meetings in Vientiane
September 28-October 2	Mission to Hanoi by Mr Castrén. National research teams commence their work
1999	
February 3-5	Mid-Term Workshop
March	First draft of Viet Nam country report
March 16-19	Finalisation of the report by Mr Castrén in Hanoi
June 8-9	Final Workshop, Project ends

ANNEX 4

Wood supply scenarions

		rotation, yr.	growth, m^3 /ha	survival rate	realistic												
Fast growing	55%	9.		10		85%		60%									
Medium	19%	20		7		85%		60%									
Long rotation	27%	1		5		85%		60%									
	1998	99	2000	01	02	03	04	05	06	07	08	09	2010	11-15	16-18	19	2020
Planting, ha																	
Fast growing	57 800	93 500	101 800	122 700	122 700	122 700	122 700	122 700	156 800	156 800	156 800	156 800	156 800				
Medium	20 000	32 300	35 200	42 400	42 400	42 400	42 400	42 400	54 200	54 200	54 200	54 200	54 200				
Long rotation	28 400	45 900	50 000	60 200	60 200	60 200	60 200	60 200	77 000	77 000	77 000	77 000	77 000				
Total	105 000	170 000	185 000	223 000	223 000	223 000	223 000	223 000	285 000	285 000	285 000	285 000	285 000				
Fast growing, replanting											28 900	46 750	50 900	61 350	78 400	78 400	78 400
Medium, replanting																10 000	16 150

Logging potential (mill. m^3)	1998	99	2000	01	02	03	04	05	06	07	08	09	2010	11	12	13	14	15	16	17	18	19	20
Planned Scenario																							
Fast growing										4.4	7.2	7.8	9.4	9.4	9.4	9.4	9.4	12.0	12.0	14.2	15.6	15.9	4.7
Medium																					2.4	3.8	4.2
Thinnings																0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
"Old" plantations	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Natural forests	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.3	7.7	10.5	11.1	12.7	12.7	12.7	12.8	12.8	15.5	15.5	17.7	21.5	23.2	12.4
Realistic Scenario																							
Fast growing										2.6	4.2	4.6	5.5	5.5	5.5	5.5	5.5	7.1	7.1	7.7	8.1	8.2	1.4
Medium																					1.1	1.8	2.0
"Old" plantations	3.0	2.9	2.9	2.8	2.8	2.7	2.7	2.6	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	1.9
Natural forests	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5
Total	3.4	3.3	3.2	3.1	3.1	3.0	3.0	2.9	2.9	5.5	7.0	7.4	8.3	8.2	8.2	8.1	8.1	9.6	9.6	10.2	11.7	12.4	5.7