I. Introduction

Two years ago, the Sierra Club published a book called *Clear Cuts*. The contents of the book are horrifying: aerial photographs of miles of bald hillside, destroyed watershed, and ravaged forest stretching from state to state, country to country and continent to continent. Deforestation is a crucial global issue, demanding immediate environmental and economic policy. Indonesia's forest lands are deeply threatened in numerous ways.

Forest lands represent an ecosystem which contributes greatly to the survival of the human race: a priority consideration, since we, humans, who are talking about, thinking about, destroying and protecting the forest lands. Indonesia's rainforest are incredibly abundant, containing 10% of the world's flowering plant species, 12% of its mammal species, 17% of its bird species, and 25% of its fish species (World Bank, 1994). Deforestation greatly affects all these living organisms.

The purpose of this paper is to discuss various aspects of the growth of the forestry sector in Indonesia. First, it looks at the relationship between the forestry sector and economic growth, forestry sector contributions in production, exports, and the role of private companies in forest management. Second, it examines forestry problems, particularly deforestation and forest management. The impact of international trade on the forestry agreements and policies; and, control of deforestation are also discussed. Third, it seeks an alternative way to develop the forestry sector in Indonesia: one which can guarantee future sustainability. To this end, transparent forestry management policy is the key.

II. Forest Sector and Economic Growth

1. Economic Growth and Sectoral Contribution

Indonesian Gross Domestic Product (GDP) rose in 1995 by 8.1%, compared to around 7-7.5% during 1992-1994. The 1995 growth was again led by domestic demand. The manufacturing and construction sector continued to expand rapidly, while agriculture, trade and utilities also accelerated. Non-oil GDP aggregate grew 9.0%. GDP from agriculture growth rebounded from the drought-depressed rate of 1994, especially food crops, while a non-rice production continued to be much stronger than rice. Meanwhile, the forestry sector was stagnant because of weak export demand and supply problems attributable to unsustainable sectoral policies. Whithin the manufacturing sector, the export oriented sector grew slowly, while the sector oriented toward domestic consumption grew more rapidly (see table 1).

Final domestic demand on the expenditure side, has led growth in GDP for the second year in a row. Reflecting the strength in construction, foreign investment, and domestic investment approval (up by 33% in 1992-95), fixed investment rose by 13%. The rapid growth
of private consumption compared to growth in GDP may reflect continued sustained real wage growth and the 1995 tax cuts. In contrast, government consumption rose by only 3% in 1995.

The government annual target growth for the next five years is 7-8 percent, while private forecasters estimates exceed 7 percent. Per capita income is estimated to top $1000 and, population to grow to around 210 million by the year 2000 (Economist, 1993).

Indonesia’s timber industry accounts for 7% of GDP and 20% of the country’s exports, much of this timber coming from Kalimantan.

The labor force is estimated around about the 80 million mark, of which about 74% is aged between 15 and 34.

Although the annual population growth rate has been reduced to 1.9 percent annually, the labor force is thought to be growing at about 2.8 percent per year.

2. Economic GDP (Gross Domestic Product) and NNP (Net National Product); Taking Depletion into account

For sustained growth, attempts to forge positive linkages between forest resources—the input for industry operations, and economic growth—the target for these operations, must continue. One step taken by industrialized countries is to compile an environmental and natural resource balance (NASDAL), the principal aim being to assess the condition and availability of natural resources, including forest, and to identify the potential of the natural envi-

Table 1
Real Growth in National Output and Expenditure
(1993 prices, percent per year)

<table>
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<tbody>
<tr>
<td>GDP</td>
<td>9.0</td>
<td>7.2</td>
<td>7.3</td>
<td>7.5</td>
<td>8.1</td>
</tr>
<tr>
<td>Non-oil &amp; LNG</td>
<td>9.3</td>
<td>8.3</td>
<td>8.1</td>
<td>7.9</td>
<td>9.0</td>
</tr>
<tr>
<td>Agriculture</td>
<td>3.6</td>
<td>6.3</td>
<td>1.7</td>
<td>0.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Forestry</td>
<td>-0.3</td>
<td>-2.2</td>
<td>1.6</td>
<td>0.4</td>
<td>0.05</td>
</tr>
<tr>
<td>Non-il/non-agric</td>
<td>11.1</td>
<td>8.9</td>
<td>9.8</td>
<td>9.7</td>
<td>10.1</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>12.0</td>
<td>11.2</td>
<td>13.2</td>
<td>13.5</td>
<td>13.0</td>
</tr>
<tr>
<td>Utilities</td>
<td>13.7</td>
<td>8.9</td>
<td>11.1</td>
<td>12.7</td>
<td>15.5</td>
</tr>
<tr>
<td>Construction</td>
<td>15.0</td>
<td>12.4</td>
<td>14.5</td>
<td>14.9</td>
<td>12.9</td>
</tr>
<tr>
<td>Final Dom. Demand</td>
<td>11.9</td>
<td>6.0</td>
<td>7.1</td>
<td>8.5</td>
<td>10.2</td>
</tr>
<tr>
<td>Consumption</td>
<td>10.9</td>
<td>7.0</td>
<td>7.4</td>
<td>7.0</td>
<td>9.1</td>
</tr>
<tr>
<td>Fixed Invesment</td>
<td>14.6</td>
<td>3.6</td>
<td>6.6</td>
<td>12.6</td>
<td>12.9</td>
</tr>
</tbody>
</table>

This type of balance can be further classified into four categories: cost balance, physical balance, depletion balance, and input-output balance (Grambsch et al., 1991). Initiated by Dr. Robert Repetto, director of the World Resources Institute (WRI), the Office for the Ministry of the Environment in collaboration with the Central Bureau of Statistics, and Environmental Management in Indonesia (EMDI) has developed this concept.

WRI research (Repetto et al., 1989) focused on the natural resources oil, forests, and land, annually inspecting these resources over the 1970-1984 period. The aim of this research was to calculate net domestic product (NDP) by incorporating the net change in the value of these three resources in the GDP and NDP figures.

This research concluded that estimates for the macro economy in Indonesia using GDP did not truly reflect the condition of the nation's natural resources. Using conventional measurement without taking into account net changes in forest resources, oil, and land, GDP saw an annual increase of 7.1 percent between 1971 and 1984, while NDP-taking into account net changes in these resources-grew by just 4 percent over the same period.

NDP has not been calculated in this study, since the figure fluctuates greatly year to year, sometimes even registering a negative figure. As such, it can be concluded that the figures for NDP do not provide a realistic measurement of growth.

The study undertaken by the Office of the Ministry of the Environment, the Central Bureau of Statistics, and EMDI compares NDP figures, minus oil and natural gas, to GDP. Forestry resources are not included in these calculations, however.

Incorporating the NSDAL concept, this study concludes that log availability dropped significantly each year, between 1988 and 1990. Re-growth and replanting replaced just 6 percent and 9.2 percent of the volume taken up by logging, concessions, and damage. Meanwhile, the value of available logs, which takes into account production volume and unit economic rent, rose 16.3 percent. This was not due to a rise in the physical volume, but rather to an increase in log prices. Unit rent per m3 is highest for wood harvested form secondary forest in Sumatra.

The major contributing factors to the drop in log availability, of forested area, are conversion, damage and loss, and burning of more forest than is replenished by regrowth or replanting.

3. Forestry Sector and Wood-based Industries: Production, Export and Private Participation

Wood-based industries, including primary and secondary processing, furniture making, and pulp and paper production have expanded rapidly. Growth averaged 16% per annum between 1985-94, from a small base. Indonesia is now the largest manufacturer of hardwood plywood in the world. Exports of wood-based products have been even more impressive: value of plywood exports increased from $1 billion to $4 billion, and exports of pulp and paper from $28 million to $1 billion between 1985 and 1995. The sector currently employs more than half a million workers, making this subsector the second most important contributor to the rapid growth of the manufacturing sector after textiles.

Wood is the single most important cost component (over 50 percent) of wood-based industries, followed by labor. Labor costs are relatively low and are likely to remain so in the medium-term. Indonesia, therefore, has a strong comparative advantage in wood products as its forestry base is among the richest in the world. Moreover, Indonesia is situated in the fastest growing region in the world, which generating strong and grow-
ing demand for such products.

However, there are a number of issues related to the efficiency in allocation of forestry resources and marketing arrangements which have serious implications for the efficiency of growth, and future prospects. The critical issues in the wood processing industry relate to rent dissipation, price distortions and disincentives for reforestation. Indonesia has followed a deliberate policy of raising local value added in forestry output since the early 1980s: issues of logging rights to concessionaires with strong linkages to processing (particularly in the plywood subsector); a ban on export of sawn timber (subsequently replaced by high export taxes) on export of sawn timber; and tariff protection on some paper products. Plywood producers are the principal beneficiaries of government policy providing regulated preferential direct log supplies to processors, rather than encouraging them to compete for such supply. The market base of the sector, although very large in size, is narrow in scope: the great bulk of output is exported as commodity grade plywood. Margins in this trade are relatively low, and most industry profits come from economic rent.

Possessing high quality wood, and a strong base of woodworking craftsmen, Indonesia appears to have a natural advantage in the area of furniture making, moldings, and woodworking because the country. However, these industries have not developed because of restricted access to raw materials. Much of the resource remains under the control of concessions linked to plymills operations: many sawmills, which prior to 1989 had supplied the exports market, is linked in integrated operations to plymills, and it appears that a significant proportion of log supply from these have been retained in those operations, and are not released to independent secondary processors.

The recent Bank Environment Report documents the unsustainable practices in the exploitation of the Indonesia's forestry sector. The incentive structure which applies at present to logging operations in Indonesia works counter to sustainable management. Major changes in the incentive regime and in government practices are required to maximize the long-term contribution of Indonesia's vast forestry resources to the country's development.

In addition to the above issues, the role of the powerful trade association (APKINDO) is also controversial. APKINDO is a trade cartel which exerts strong influence on its members as to how much to export to what countries and at what price. It also has great bearing over capacity expansion and distribution among its members. While APKINDO may have helped the country to capture the rents associate with market power, then non-transparent allocation of export quotas and capacities have both efficiency and equity implications.

III. Problems of Forest Management

In tropical forest covered about 1.8 billion hectares, with rainforests the most prevalent forest type in the tropics, covering almost 714 million hectares. The FAO reports the total area planted was only one fifth of the total area of natural forest converted to other uses. The world's forest and other wooded land area declined by 2 percent, or 100 million hectares from 1980 to 1990. In addition, lack of transparency regarding forestry management contributes to forest degradation problems.

This section discusses problems associated with forest degradation in Indonesia and similar countries. In general, the problems are related to the following issues; deforestation and logging prac-

1) A more detailed review of these industries is contained in "Forestry : Achieving Sustainability and Competitiveness", The World Bank, 1993.
tices; in-transparency in forest management, and ecolabeling.

In most Asian countries pollution and resource degradation are caused by hundreds of thousands of small companies and informal-sector economic activities as well as by politically influential domestic companies and multinational enterprises.

The root of environmental destruction in the Third World is that the governments of those countries have not implemented serious policy-making environment.

1. Tropical Deforestation

Estimated annual rate of deforestation in tropical areas is ranges from 2.2 per cent in Brazil, to 0.1 per cent in Gabon. The proximate causes of this deforestation are conversion to agricultural and livestock production, fuelwood demand, and commercial logging, and mining. It has been estimated that 18 per cent of deforestation may be attributed to commercial logging and mining. South East Asia currently accounts for around 20 per cent of the world's tropical moist forest (TMF). Indonesia alone has over 50 per cent of the region's TMF and over 10 per cent of the world's total.

At the global level, tropical deforestation accounts for about 25% of heat-trapping emissions. But future carbon flux will be small if, as is the case in Seberida in Riau, Sumatra most of the cleared forest is secondary forest which in term regenerates into secondary forest. Conversion of old growth forest to shifting cultivation will typically lose 30–60% of the initial carbon stock in the vegetation, whereas conversion to permanently cultivated land or pasture loses more than 90%.

Indonesia tropical forest is the evergreen type: the richest and most complicated in the world. Ten percent of the world's tropical forests are in Indonesia, covering a total area of 191 million ha, 144 million hectares (75%) are the

<table>
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<tr>
<th>Table 2</th>
<th>Forestry Products Export, 1985-96 (US$ Billion)</th>
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<tbody>
<tr>
<td>Export of forest products</td>
<td>1985</td>
</tr>
<tr>
<td>Logs, sawnwood</td>
<td>307.2</td>
</tr>
<tr>
<td>Plywood</td>
<td>624.7</td>
</tr>
<tr>
<td>Others</td>
<td>52.9</td>
</tr>
<tr>
<td>Export of forest products</td>
<td>1184.8</td>
</tr>
<tr>
<td>Number Establishments:</td>
<td></td>
</tr>
<tr>
<td>sawmll concessions</td>
<td>2,042 units</td>
</tr>
<tr>
<td>sawmll concessions w/o plymlls</td>
<td>279 units</td>
</tr>
<tr>
<td>plymlls</td>
<td>117 units</td>
</tr>
<tr>
<td>number of timbermlls</td>
<td>2,438 units</td>
</tr>
<tr>
<td>Forest Concessionaires</td>
<td>575 companies</td>
</tr>
<tr>
<td>Num concessionaires</td>
<td>61.1 million hectare</td>
</tr>
<tr>
<td>Nom Rates of protection (%)</td>
<td>1987</td>
</tr>
<tr>
<td>25</td>
<td>33</td>
</tr>
</tbody>
</table>

Notes: *) Jan-April
responsibility of Perhutani; 49 million ha are protected for conservation and scientific research; 30 million ha are earmarked for conversion to forest plantations (HTI); and 65 million ha are designated for timber concession (HPH). In 1993, timber concession covered 60 million ha, the average concession being roughly 150,000 to 200,000 hectares. The largest concession is owned by Prajogo Pangestu in five million hectares.

Deforestation in Indonesia is accelerating from a rate of 300,000 ha/annually in 1970 to 600,000 by 1981, and in 1994 stood at around 12,000,000 ha or 12,000 square km per year. In other words, 1.2 million ha of Indonesian forest is destroyed each year. This deforestation rate is higher than any other country except Brazil. Fire was to blame for some of the deforestation. In 1994, fires destroyed 12.5 m acres of trees. Then on April 1st, 1995 clearing forests by fire was banned. The World Bank reports that Indonesia forest harvests at 50% above the sustainable level, and annual deforestation ranges from 400,000 to two million hectares.

Two factors affect forest degradation: population and economic pressures.

1. Population pressures
Primary direct causes of deforestation in Indonesia are agriculture, which accounts for as much as 45%-60%. Primary forests provide 80% of the transmigration sites. Large scale development projects, transmigration and land rights policies, rising world demand for forest products, unequal distribution of land and wealth in tropical nations, and poverty result from population pressures. It is estimated that 3.3 million ha of Outer Island forest was lost during 1984-1989 due to planned transmigration programs (USAID, 1987). As such, according to Norman Myers, a leading tropical ecologist, the Government

<table>
<thead>
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<th>Tabel 3</th>
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<tbody>
<tr>
<td>Tropical Deforestation in South East Asia and Other Regions</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Total Forest Area (mm ha)</th>
<th>Undisturbed Operable Forest (mm ha)</th>
<th>Annual Deforestation (000 ha)</th>
<th>Total TMF Area Deforested (mm ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SE Asia Insular</td>
<td>167.3</td>
<td>72</td>
<td>1707</td>
<td>117</td>
</tr>
<tr>
<td>Indonesia</td>
<td>108.6</td>
<td></td>
<td>1315</td>
<td></td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>33.5</td>
<td>22</td>
<td>225</td>
<td></td>
</tr>
<tr>
<td>Malaysia*</td>
<td>18.4</td>
<td></td>
<td>110</td>
<td></td>
</tr>
<tr>
<td>Philippines</td>
<td>6.5</td>
<td></td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Brunei</td>
<td>1.3</td>
<td></td>
<td>n.a.</td>
<td></td>
</tr>
<tr>
<td>Other SE Asia*</td>
<td>39.3</td>
<td>18</td>
<td>346</td>
<td>n.a.</td>
</tr>
<tr>
<td>Myanmar</td>
<td>31.2</td>
<td></td>
<td>102</td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td>8.1</td>
<td></td>
<td>244</td>
<td></td>
</tr>
<tr>
<td>Total SE Asia</td>
<td>206.6</td>
<td>90</td>
<td>2053</td>
<td>117</td>
</tr>
<tr>
<td>Amazonia</td>
<td>613.6</td>
<td>453</td>
<td>4129</td>
<td>100</td>
</tr>
<tr>
<td>Central Africa</td>
<td>167.1</td>
<td>107</td>
<td>325</td>
<td>30</td>
</tr>
<tr>
<td>Other Regions</td>
<td>58.4</td>
<td>&lt;10</td>
<td>1900</td>
<td>177*</td>
</tr>
<tr>
<td>World Total</td>
<td>1045.7</td>
<td>352</td>
<td>8480</td>
<td>424</td>
</tr>
</tbody>
</table>

Notes: *Unless indicated, 1990 based on Schmidt (1990). Note that tropical moist forests are defined as broadleaf high closed tropical forests, including wetland and mangrove forests but excluding the deciduous dry forests of South Asia, sub-Saharan Africa and subtropical South America. In 1988, the FAO estimated the total area of all tropical closed forests (including deciduous dry forests) to be 1269.6 million ha.
*Includes forests from Peninsular Malaysia.
*May include estimates for Thailand and Myanmar.
sees tropical forests as obstacles to expanding civilization rather than as permanent resources.

2. Economic Factor

Indonesia has reduced its income from petroleum exports and dramatically increased its exports of forestry products. In 1986 the oil and gas sector accounted for 51% of national export earnings and 39% of government revenues. By 1993 these figures were slashed to 24% and 29% respectively.

Indonesia now controls 90-95% (1994) of the world tropical plywood market, compared to 70% in 1989. Logging in Indonesian tropical forests has been the major economic factor contributing to deforestation (FAO 1981: 211-34). Most of the logs are exported to developed countries: the consumption per person of all major forest products in industrialized countries is three and a half times that in a developing countries. World Bank estimates (1990) out forest depletion due to poor logging practices at about 15-20%.

2. Ecolabeling Issues

In recent years environmental labeling has received world-wide attention. Many countries have already introduced their own labeling schemes, e.g., Canada, Japan, the candinavian states, Singapore and India. Meanwhile world wide international debate about basic principles for environmental labeling, resulted in much agreement, despite some controversial issues over realization.

In response to the ecolabeling issue in tropical forest, in late 1993 the government established an Indonesian Ecolabeling working group, in preparation for an independent Indonesian Eco-labeling Institute (Lembaga Ekolabeling Indonesia, or LEI). Certification of other products will be promoted as future program of LEI. At present Bapedal is responsible for standards and criteria for other products. Ministry of Forestry Decree No. 252/Kpts-II/1993 outlines criteria and indicators of sustainable management for forest resource, sustainable yield, conservation, socio-economic considerations, and institutional development.

Certification for sustainable forest for logging improves forest management. Germany and the Netherlands refuses to buy tropical timber for project they fund themselves. In eco-labeling scheme is being tested in Kalimantan and Riau.

ITTO agreement may not save Indonesia forests, but at least it has stimulated dialogue among timber companies, NGOS, and the government in Indonesia issue biggest effect in Indonesia may be on political system. The Eco-Labeling Foundation, headed by Prof. Emil Salim, might strengthen the role of NGO, particularly if it can still maintain its independent authority.

The government has classified forested areas into different types depending on economic purposes: protected of forests to maintain watersheds; national parks-limited production forests for restired felling; and full production (commercial) forests.

Some researches propose a policy frame work; halt inappropriate incentive;relieve external problems (population, poverty,etc); consolidate existing settlements in the forests and on its dringes; integrate forestry into rural development; set up a clear forest ownership structure, a stable forest authority, and a stable framework of regulations and incentives; coordinate the authorities responsible for forest functions; make clear distinctions between polities for forest production and policies for conserving

2) The most important international unanimous declarations on principle of environmental labelling are: the "Berlin Declaration" on Environment Labelling (1990), the "Lesvos Declaration" in the framework of UNEP/IEO initiative "Promote Cleaner Production" (1991), and the "Washington Declaration" of the International Eco-labeling Forum (1994).
forest ecosystems; evaluate and keep account of the economic, social and ecological functions of forest; ensure participation of local people; diversify forest research, insist upon multiple use management of forest resources; and improve international cooperation.

There seems little scope for the use of trade policy interventions as a means to reduce tropical deforestation in Indonesia. A more appropriate approach may be to deal more directly with the problem by improving sustainable production, forest management and regulation at the timber stand level (Barbier et al., 1993).

Implications of Timber Certification

Application of a timber certification scheme will inevitably raise the price of timber and timber products. It is difficult to assess comprehensively the benefit and cost of certification. Cost can be categorised as:

1. **Cost of certification itself**
2. **Cost of improving forest management of concessions so that it resembles a level allowing certification (cost of sustainable forest management); and**
3. **Costs of foregone profit.**

The willingness to pay for information indicates that demand for certified timber coming from sustainable managed forest exists, although it is still not clear how much this would affect the actual purchasing decision. Liberalization of trade barriers in this increased demand for certified and timber products in the free market, forest management may be improved. Ahmad (1994) defines ecolabeling as a scheme that provides information about the environmental characteristic of a product, thus helping consumers to make an informed choice at the of purchase. There are two broad categories of ecolabeling being proposed; (1) comprehensive eco-labeling, based on a complete "Life Cycle Analysis" (LCA) of the environmental impacts of a product from cradle to grave and, (2) single issue ecolabeling/certification which is based on the impact on environmental sustainability of a product at a particular stage of its life cycle (e.g. timber certification).

As announced by the government, less than 14% of forest concessionaires implemented required forest management in the fiscal year 1992/1993.

**Pros and cons in Eco-labeling Issues**

In environmental issues, most of the time, it is advanced countries that "push" developing countries. Why? People in developing countries assume that advanced countries are pusing environmental issues in developing countries in order to get economic benefits. For instance, logging in tropical countries (mostly developing countries) can be banned by forcing environmental issues. They save a lot of money, and, instead of paying the logs, advanced countries develop imitation woods, such as fiber (Germany).

In addition to economic benefits, people like Prof. Otto Sumawoto, conceive that advanced countries are using tropical countries as a septic tank for industrial wastes, specifically CO2. It is possible that advanced countries' pressure through environmental issues leads to neocolonialism. In general, neocolonialism means that a country has lost its independence, for instance developing countries have to ask permission from other countries when the want to cut the forest for agriculture, housing, etc. However, Otto Sumarwoto does agree with the fact that deforestation rate in Indonesia is getting higher and higher Tempo, 2 January 1991). Northern countries just exploit southern countries. For instance, northern countries refuse to transfer medical technology to southern countries even though their forests contain abundant of genetic sources.

There are two issues in Eco-labeling: ecolabelled products and eco-
labelling of local society. Some people assume that local communities never gain no benefit from forest exploration in their area. Sometimes, even their villages are in the HPH area. However, it is hard if not impossible to count the nominal value of forest in Indonesia. Some experts have tried to count the value by using a with a with or without method. In other words, they measure the effect of a particular project on forest value, and the effect if the project did not exist there.

Charnovitz (1994) believes that there is a large potential for new protectionism here. Although, there are no mandatory eco-labeling provisions yet that involve processing, it is only a matter of time. The difficulty with labeling provisions is that a sufficient number countries must agree to the “acceptable” standards. Even if there are different provisions for developing and industrial countries, labeling agreement is still likely to be difficult.

Trade and Forests
Several independent initiatives have been launched by governments, nongovernmental organizations (NGOs), and private-sector forest proponents—sometimes in concert with one another—to influence markets for sustainably produced forest goods and services.

CITES Monitoring and Protection
The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which became effective in 1975 and now has 128 member countries, is a binding international treaty regulating trade in wildlife and plants to help protect species threatened with extinction. Commercially important timber species were not listed in CITES until 1992, when international trade in Brazilian rosewood (Dalbergia nigra) was banned. Trade in more than a dozen other timber species is either banned or strictly controlled.

In 1994, a contentious battle erupted between the signatory countries over the proposed listing of mahogany (Swietenia macrophylla). The proposal was defeated and further resulted in the delisting of several African timber species. As a result, the Timber Working Group was established to examine the relationship of CITES to the international timber trade. It remains to be seen whether CITES can be used to more actively monitor timber species or whether it will be limited to implementation only after there is scientific consensus that a botanical species is indeed threatened with extinction.

International Tropical Timber Agreement
The International Tropical Timber Agreement (ITTA) of 1983 is a binding agreement governing the trade of tropical timbers and, by extension, tropical forests.

When the ITTA was renegotiated in 1994 after it expired, many criticized the secretariat for focusing too much on individual projects of questionable quality rather than on issues relevant to the broader trade, environment, and policy reform goals of the agreement. Furthermore, many argued that a renegotiated ITTA should include binding requirements for reaching Target 2000 and should be expanded to include all timbers, including temperate and boreal sources. In the end, the agreement’s scope was not expanded and Target 2000
Sustainable Forests

remained a nonbinding agreement. The consuming countries did, however, commit themselves to a parallel but separate effort for the sustainable management of temperate and boreal forest (see Criteria and Indicators, above). Unfortunately, the new agreement has yet to be ratified by a sufficient number of member countries. Major unresolved issues include the agreement's continuing "double standard" problem, since it has not expanded its scope to all forests; the ability of ITTO's project approach to trample with needed policy reforms; and, ultimately, ITTO's ability to promote sustainability within the tropical timber trade.

Forest Stewardship Council

Given the frustration and spotty performance of intergovernmental agreements, several concerned NGOs and private-sector groups have launched voluntary efforts to harness market forces to promote trade in forest products from well-managed forests. However, many critics seriously question the ability of timber certification programs to effect more sustainable practices, largely because the market has not proved willing to bear the additional costs. One prominent initiative that has emerged in this area is the Forest Stewardship Council (FSC).

FSC is an assembly of NGO's, industry representatives, scientists, and indigenous peoples established in 1993 to promote the environmentally appropriate, socially beneficial, and economically viable management of the world's forests. It is governed by a nine-member board of environmental, social, and economic representatives elected by the membership. In 1994, FSC adopted a set of principles and criteria for the sustainable management of forests, as well as guidelines on how to conduct field inspections and verify the chain of custody of certified forest products as they travel from the forest to the store shelf.

In 1995, FSC developed a rigorous framework for the evaluation; accreditation, and monitoring of organizations that issue certification claims in the marketplace, as well as guidelines for developing regional forest management standards and a protocol for endorsing national certification initiatives. National initiatives based on the FSC guidelines are under development in more than 12 countries, ranging from Brazil to Sweden to Indonesia. Although FSC had 4 years of extensive consultations worldwide, some industry associations and government criticize it as being anti-industry and having by a "green" agenda and too dependent on unproven auditors. Nonetheless, as the first international program endorsed by major retailers to ensure public confidence in marketing claims (particularly in Western Europe), it will set the tone for how sustainability is measured in forestry operations and in the verification of "green" claims.

Source: World Resource 1996/97

3. Banning Logging and Forest Degradation

For most countries, export tax on logs generally range between 10 and 20 per cent. Export taxes on sawn timber, veneer and plywood have been negligible. Where sawn timber exports were taxed, rates were typically half that of logs. In Indonesia, the ad valorem export tax on logs was doubled form 10 ad 20 per cent 1978, while most sawnwood and all plywood was exempted. Beginning in 1980 controls on the export of logs were progressively enforced, until an outright ban

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was introduced in 1985 (Gillis, 1998). The export tax structure created nominal protection at 40% percent (see table 2) for plywood manufactures, and the drop in export revenue to the government from diverting log exports was not compensated by any gain in value-added in sawmilling, resulting in a loss of US $15 per m³ at world prices. The result has been the creation of inefficient processing operations and expanded capacity, with consequences for the rate of timber extraction and forest management. Although the switch to value-added processing of timber initially slowed down the rate of timber extraction, the inefficiencies and rapidly expanding capacity of Indonesia processing may have actually increased the rate of deforestation over the medium and long term.

In 1989 Indonesia imposed substantial taxes on sawnwood in an effort to shift processing activities to plywood. A secondary objective for the policy was to improve competitiveness and overall efficiency of sawmills.

According to research conducted by Barbier, Bockstael, Burgess and Strand, using a two-component model which is comprised of two components: a simultaneous equation system determining supply and demand in the logging, sawnwood and plywood sectors of Indonesia and a recursive relationship determining tropical deforestation, that most timber-related deforestation, including subsequent deforestation by agricultural encroachment, may have more to do with the management and regulation of the timber stand than with the amount of logs extracted from the stand per se. Extreme trade intervention, such as the current GOI policy of prohibitive sawnwood export taxes, and total ban by consumer countries on the imports of tropical timber products, clearly impose high economic costs on Indonesia’s forestry industries. An import surcharge on tropical timber imports would have minimal distortionary impacts on Indonesia’s timber trade-provided that it was imposed at a level of less than five percent. Improvements in sustainable timber forest management and regulation by Indonesia could raise log harvesting costs, but there may not be such significant impacts on Indonesia’s processed products and trade. The conclusion is that the model and the policy simulations would suggest extreme caution in the use of broad trade policy interventions as a means to affect timber-related deforestation in Indonesia, and in some cases even as an economic tool to further develop Indonesia’s timber processing capacity.

IV. Sustainable Forest Management

Policy failures in Indonesia forestry management which contribute to over-harvesting and clear-cutting of permanent production forests, as well as illegal feeling of non-production forests (Barbier, 1987; Burgess, 1989; Gray and Hadi, 1990: Sedjo, 1987; and World Bank, 1989) have to be corrected. This would improve sustainable management of Indonesia’s remaining tropical forest, and thus reduce timber-related deforestation, but would also mean higher harvesting costs per m³ of wood extracted.

Lack of transparency discourages the sustainable management of these valuable forests. Prohibitively high export taxes on logs reduce domestic log prices below market prices, effectively giving plywood processors a large input subsidy. The market for logs and their most important processed product, plywood, is cartelized. Apkindo, the Indonesian Plywood Association, controls entry to the industry. Forestry concessions are restricted to existing processors. Finally, all plywood manufacturers are required to market their export through Apkindo.

Concessionaires have little interest or incentive to regenerate the forest, or to maintain its overall condition. Forest concessions are not transferable. The
current low royalty may not last. The penalty for over exploitation is limited to loss of concession, often after the damage is done.

The low price of logs contribute to waste through inefficient logging and industry practices. Wasteful logging practices and inefficient use of wood are pernicious. Because of this, forestry-based exports are expected to fall off sharply in the next decade, while local communities which depend on natural forests experience further alienation. The loss of biodiversity will also accelerate. The low price also reduces the attractiveness of developing industrial plantations of longer rotation hardwoods, and government revenues. According to the World Bank estimates (1996), the effective subsidy to domestic log processors, mainly plywood and paper and pulp processors, is about $2-4 billion a year depending on the size of logging operations. Furthermore, the cartelized domestic plywood industry is estimated to absorb some $750 million of this figure through excessive use of logs in processing. This figure is much larger than total revenues from forestry royalties (IHH) derived by the government.

On the relationship between plywood trade and the environment, Alessandra Casella provided a survey of simple theoretical results on the interaction between free trade and the provision of standards. The general conclusion is that, although standards can be used to distort trade, if policy makers are concerned about economic efficiency, then insistence on harmonization as precondition for free trade is incorrect on two grounds. First, no logical link exists between the efficiency of standards and their being equal or different across countries. Second, standards are not fixed but evolve with economic conditions and change as allocations change.

V. Conclusion

Indonesia has 60% of all tropical forests in Asia, and 90% of the remaining virgin stands. According to a report of 1990. It is important for Indonesia to heed warnings from the deforestation in the neighboring countries of the Philippines and Thailand, which were abundantly forested until this century, and are now facing dangerous levels of deforestation. Thailand was forced to ban all logging in 1988 and now has to import lumber for construction.

Another danger that Indonesia faces is the consistent confusion about the rate of deforestation. The problem goes even deeper than lack of regulation of forest lands. It is hard to figure out the rate of deforestation when inadequate information exists to estimate the extent of forest cover. The lack of information about the extent of forest cover and the rate of deforestation puts Indonesia's forests in a vulnerable position. With such confusion going on, great amounts of forest land could be abused and lost without consequences to the offenders. Even if sanctions were applied, in the form of fines or other reprehensions, they can not in any way make up for the loss to the environment.

The potential demands on the forest are far reaching in Indonesia: from communities that have drawn their livelihoods from the forest for years and continue to depend on them, through the multi-national corporations that are drooling over the virgin tree stands that Indonesia holds, to the large number of people who have been displaced by transmigration programs, and are thus forced to encroach on forest lands for survival.

One of the demands on the forest is conversion in from dense forest land to land that can be used for agriculture. This conversion is an important source of income. It is also important and survival for sustainability in Indonesia as the population continues to expand, and the urban development starts to encroach on existing agricultural land. Transformation
of forest lands to small-scale agricultural lands is actually blamed as being the leading current exiting legal framework. These laws give land ownership right to clear the land, the right to harvest forest products, the right to take water and the right to harvest fish. These rights are still an essential aspect of life in many villages. New laws only consider traditional land holding rights, and not the other rights. The latter rights are thus encroached upon when the government grants land rights to other organizations.

Another problem due to the incomplete lack of registration of the traditional rights is that unregistered land, and land rights are being taken over by transmigrants. Often the transmigrants lack the knowledge of how to properly use the land for farming, and tend to farm it to exhaustion and then move on in search of new land.

Commercial forest harvesting is ruled as the next largest cause of deforestation after the conversion of forest lands to agricultural lands. Government regulations already exist for selective cutting which are supposed to be applied by the concessionaires managing the logging and replanting of the majority of forest land. The concessionaires are private organizations that manage the forests of the outer islands. Java forests are not managed by concessionaires, but by the Forestry Department. The responsibilities of forest concessionaires include preparing forest inventories, submitting twenty year, five year, and annual operating plans to the state Forestry Department, and protecting the concession areas from encroachment and fire.

There are atrocious problems with the concessionaires management and logging practices. A Department of Forestry report in 1990 reported that only 22 of 578 forest concessionaires followed the selective cutting and replanting system, which requires that the concessionaires replant, maintain and enrich the logged over area (Economic Analysis of the Indonesian Forestry Sector, August 1991). Aside from this low rate of adherence to the selective cutting and replanting policy, there are great problems with the policy. Surveys have shown that up to 40% of the standing trees are damaged in selective logging practices, and that the concessions are often relogged before the harvest cycle is complete.

It is important that pre-logging and post-logging inventories are conducted and reported with diligence. This is not happening, and it is reported that only 2.2% of cutover lands have ever had a residual stand inventory. There are also suspicions that bribes are given to the logging inspectors by the concessionaire so that the inspectors will under-report the actual volumes of logging.

Judging from the situation laid out above, Indonesia's forests are under great environmental pressure. There is also economic pressure that adds yet another aspect of concern for the forest lands. In developing countries such as Indonesia there is a tendency to exploit the natural resources. First of all, it is to overharvest any natural resource, because, as demonstrated by the policies mentioned above, there is usually inadequate and unenforced environmental protection, if any at all. Also, the national income levels are very low, and people need to exploit the forest resources in order to survive and create new livelihoods.

There has been an on-going problem in Indonesia with the price of logs extracted being significantly below world market prices. This low price is a result of export bans or prohibitive taxes on the export of logs. The logs are also cheap because of the low price of timber extraction, which implies that people are being paid very low wages to harvest the timber. Since the logs are priced so low, this has led to inefficient and wasteful practices in both the logging and wood processing industries.
The current demand on the forests is higher than the sustainable level of timber extraction. The current level of demand is 44 million cubic meters per year; the maximum sustainable amount is 31 million cubic meters per year. Higher pricing of the logs could perhaps decrease the demand, and also encourage domestic wood-based productions to become more efficient. Efficiency is very low compared to international standards due to the low price.

The forestry sector is also not providing the government with its share of economic rent. Economic rent is the rate of profit above normal profit. Normal profit being equal to the profit earned if the structure of the market is fully competitive. Any profit earned, either because of the uncompetitive market structure, or as the result of natural accumulation makes up the economic rent. It was reported in 1991 that the government only received 17% of the economic rent from the forestry sector, while in the same year it was reported to have received 85% of the economic rent from the petroleum industry. Forest products are the second largest export after oil and gas. If the government introduced policy requiring a higher percentage rate of economic rent from the forestry sector be payable to government, then perhaps they could turn the money around and use it to enforce regulations and develop effective forestry policy.

Another issue is the inefficiency and cartelization that surrounds the systems of forest concessionaires, mentioned above. The system to allocation of of land is accessible only to a small circle of forestry officials, and thus does not result in the government allocating the land to the highest bidder. Such a closed of allocation system means the government does not gain the funds it would if the bidding process were open.

Greater transparency in the management of Indonesia's forests would contribute toward sustainable logging, higher nonoil exports, and higher government revenues. This would include: first, deregulation of the plywood industry, eliminating of prohibitive export export taxes on logs, and of barriers to entry, and, secondly, raising royalty fees. Such fees could be further adjusted through annual royalty reviews, and/or bidding for raw material supplies. Third, it would mean improving monitor of concessions by improving the capacity of administrative staff to provide effective monitoring. And fourth, in order to keep forests ecosystem sustainable, operations should involve local communities.

Economic and environmental protection merge at many cross roads in forestry in Indonesia, and there is great need to upgrading the roads of both. At this point in time, both economic and environment issue are racing forward full blast and if the the "roads" are not improve, may serious issue accident are likely: they will not be easy to clean up.

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