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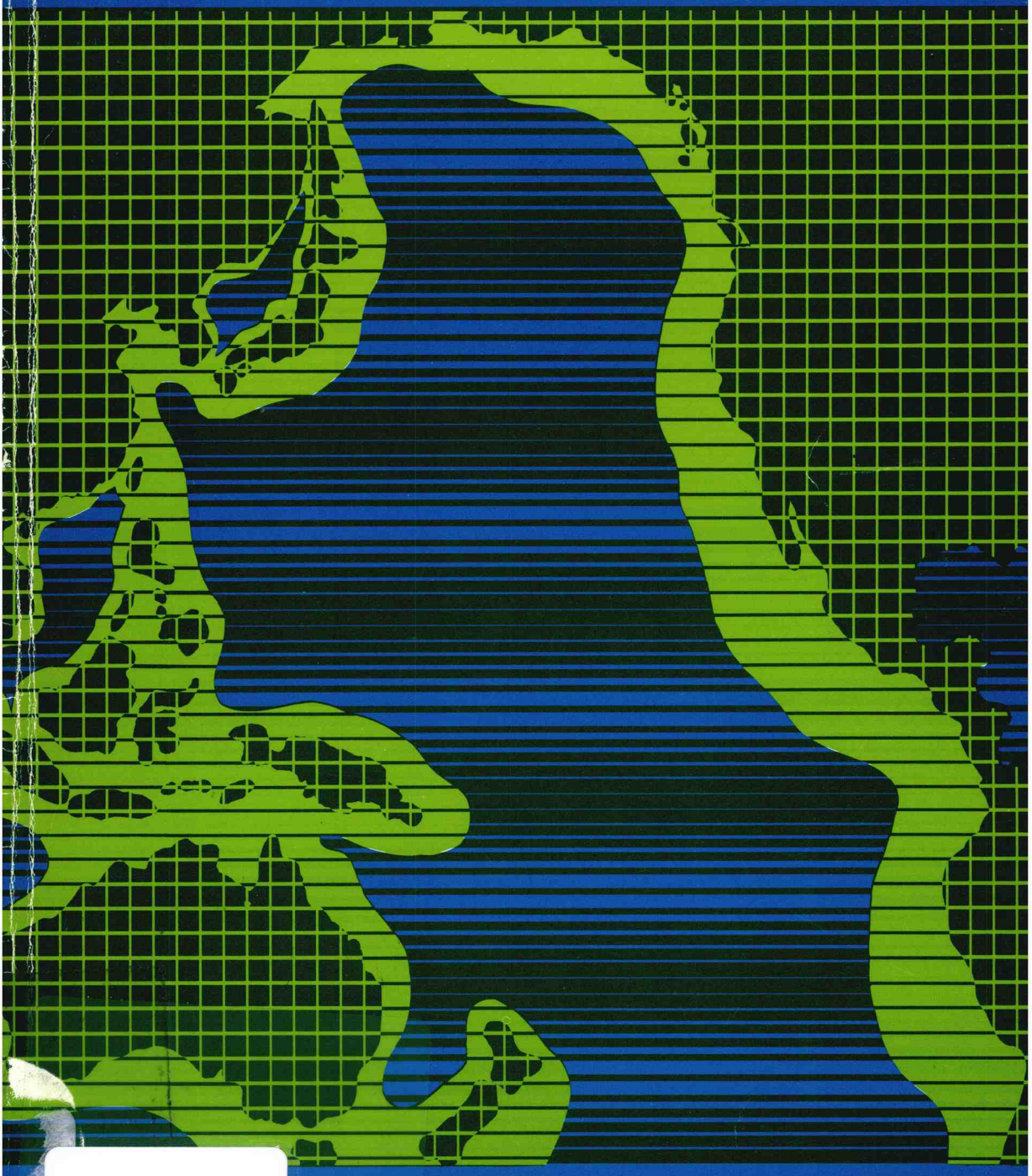
Proceedings of the 12th Pacific Trade and Development Conference, held in Vancouver, Canada, 7–11 September 1981



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Editors: H.E. English[1] and Anthony Scott[2]

[1]Department of Economics, Carleton University, Ottawa, Canada.
[2]Department of Economics, University of British Columbia, Vancouver, Canada.

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Postal Address: Box 8500, Ottawa, Canada K1G 3H9
Head Office: 60 Queen Street, Ottawa, Canada

English, H.E.
Scott, A.

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Development Prospects for Forestry in Indonesia

A.T. Birowo

Ministry of Agriculture, Bureau of Planning, Jakarta, Indonesia

In this paper, I describe the forestry resource base, production pattern, and export economy in Indonesia; assess the implications of international trade on forestry development; and discuss investment prospects in forestry.

Ce document porte sur le potentiel des ressources forestières en Indonésie, les modèles de production et l'économie de l'exportation de ce pays; l'auteur évalue l'impact du marché international sur l'aménagement du secteur forestier et expose divers types d'investissements dans ce domaine.

It was estimated that supply of South-Sea logs from the Pacific region during the 1980s would continuously fall short of the demand in the international market. An estimated deficit of 1.1×10^6 m^3 in 1980 would increase to a deficit of 4.3×10^6 m^3 in 1990, corresponding to 3.3% and 21.7% of the demand. About half of the South-Sea log supply comes from Indonesia.

Forestry has contributed substantially to the foreign exchange earnings of Indonesia, producing the largest foreign exchange after oil. Forestry development has, therefore, been one of the major programs in the overall economic development policy. The program includes public efforts in reforestation, afforestation, and forestland rehabilitation, as well as measures to stimulate private investments in forest exploitation.

Forestry Resource Base

Throughout Indonesia, forestland covers around 122 Mha or roughly 60% of the land total. In 1979, almost 75% was rain forest. The second largest forest types — secondary or idle forest and swamp forest — occupied less than 15% of the total forest area. The remaining four types — coastal, peat, deciduous, and mangrove — each covered around 1% of the total forestland. The predominance of rain forest is not surprising because the country is an archipelago within the monsoon rainbelt.

Between 1972 and 1973, forest exploitation jumped by nine times to reach 63.1 Mha (Table 1); similarly protection forest increased by 23%; and nature conservation forest more than doubled. These increases were possible because the area of reserved forest was reduced by more than 60%. The changing structure of the export market, with decreasing supply from the Philippines, produced a tremendous demand, resulting in the rapid growth of forest exploitation. In terms of geographic distribution (Table 2), more than 90% of the total forestland is in Sumatra, Kalimantan, and Irian Jaya. However, the forest uses differ among the various provinces.

In 1978, 7.8 Mha of land was considered to be critical (Table 3) — the soil has been seriously degraded. Of this area about 60% is within the forest area. Reforestation and afforestation are a major concern of the economic development policy and the areas of reforestation and afforesta-

Table 1. Forest areas (Mha) by function in 1972 and 1979.

Forest function	1972	1979	Change in %
Protection	11.5	14.2	23
Production	11.1	63.1	468
Nature conservation	3.5	7.9	26
Reserved	96.1	37.0	-62

Source: Directorate General of Forestry.

Table 2. Forest areas (Mha) by function in each island, 1979.

Province	Forest type			
	Protection	Production	Nature conservation	Reserved
Sumatra	4.7	18.1	2.2	3.4
Jawa	0.6	1.8	0.4	0.1
Bali and Nusa Tenggara	1.2	0.2	0.2	0.4
Kalimantan	2.7	32.7	0.8	5.2
Sulawesi	2.9	4.2	0.9	1.9
Maluku	2.0	3.9	0.1	0.1
Irian Jaya	0.1	2.3	3.3	25.9

Source: Directorate General of Forestry.

Table 3. Areas (Mha) of critical land by region, 1978.

Region	Outside forest area	Inside forest area
Sumatra	1.4	0.5
Jawa	0.9	0.3
Bali	0.2	0.1
West Nusa Tenggara	0.1	0.1
East Nusa Tenggara	1.0	0.3
Kalimantan	0.4	0.9
Sulawesi	0.6	1.1
Irian Jaya	0.1	0.1

Source: Directorate General of Forestry.

Table 5. Timber production (10^6 m^3) in Indonesia, 1970–79.

Year	Log	Conversion/sawn
1970	10.4	0.2
1971	13.7	0.4
1972	16.9	0.8
1973	25.8	1.3
1974	20.9	0.9
1975	14.6	1.7
1976	20.8	0.6
1977	22.4	0.6
1978	24.8	1.5
1979	21.2	3.4

Source: Directorate General of Forestry.

tion have generally increased in the last 10 years (Table 4). However, it has not yet been possible to rehabilitate all the critical lands.

Production and Exports

In 1981, Indonesia produced 2.46×10^7 m^3 of timber, in which 2.12×10^7 m^3 were logs and 3.4×10^6 m^3 were sawn timber. Both the composition and total production have changed since 1970 (Table 5). Log production increased twofold, whereas sawn timber production expanded more than 10 times. In general, increasing amounts of processed forest commodities were produced (Table 6).

Table 4. Areas ('000 ha) of reforestation and afforestation in Indonesia.

Year	Reforestation	Afforestation
1970–71	26.8	71.9
1971–72	22.1	80.9
1972–73	82.7	42.3
1973–74	78.8	40.0
1974–75	84.3	57.0
1975–76	25.3	37.8
1976–77	162.8	302.6
1977–78	149.4	511.6
1978–79	292.6	651.9
1979–80	301.3	680.1

Source: Directorate General of Forestry.

In 1980, forestry exports amounted to U.S. $1.8 billion and were more than 10 times that of 1970 (Table 7). In terms of volume, exports had doubled. The general upward trend of export prices indicated the increasing gap of demand over supply. However, major constraints to the development of exports of forest products have been inadequate harbour facilities, high shipping costs, poor quality control, and lack of trade skill and management.

Between 1969 and 1980, timber exports varied between about 60% and 85% of total production. The period when a high percentage of total production was exported, 1975–1977, was followed by a decline. Apparently, with increasing incomes, the domestic market is able to use more of the output, particularly of processed wood products.

International Perspectives

Because of insignificant replanting of felled trees in the supplying countries of Asia and the Pacific, log exports in the region are expected to

Table 6. Production of forest and processed forest commodities, 1973 and 1977.

Commodity	1973	1977	Increase in % annually
Logs (10^6 m^3)	25.8	22.4	-1.0
Sawn timber (10^6 m^3)	0.25	0.92	61.7
Plywood ('000 t)	1.37	9.18	65.1
Paper ('000 t)	47	83	13.4
Corrugated board ('000 t)	14	31	31.9

Source: Directorate General of Forestry.

decrease by about 50% between 1980 and 1990. Even with the emergence of fast-growing tropical trees, this situation is unlikely to change in this century. Equally, the planned local processing of logs into manufactured products in Indonesia, Sabah, Sarawak, and Papua New Guinea will accentuate the decline.

The historical preference of the Japanese market for unprocessed material is likely to continue as is the depletion of forest resources to meet the demand. The exports to Japan mean that there is unlikely to be enough resources to supply mills in developing countries for worthwhile investment periods. The average price movements for dipterocarp hardwood logs in 1979–80 from Southeast Asia continued to hold at about twice the level for 1976–78. There is little evidence that this situation will change because Japan purchased 60–70% of the total supply available.

Increasing demand for wood products has come from China for construction purposes, coal mining, railway sleepers, and paper manufacture.

Table 7. Volume, value, and average price of timber exports, 1969–80.

Year	Volume (10^6 m^3)	Value (U.S.$, millions)	Average price[a] (U.S.$/$m^3$)
1969	3.6	26.5	7.36
1970	7.6	86.7	11.36
1971	10.8	168.6	15.67
1972	13.9	230.3	16.58
1973	19.4	583.4	30.02
1974	18.1	725.6	40.13
1975	13.9	500.0	35.91
1976	18.5	781.8	42.21
1977	19.8	951.3	48.03
1978	20.2	995.1	49.26
1979	19.5	1786.6	91.67
1980	14.3	1805.7	126.24

[a]Average price of export equals the value of export divided by the volume of export.

Source: Directorate General of Forestry.

The massive afforestation campaigns of the 1950s and 1960s in that country are unlikely to provide this raw material in the quantities required.

Proposals for increased pulp- and paper-manufacturing plant installations are made at frequent intervals in Asian countries. However, the viability of such plants depends upon government support for the proposals and the adequacy of raw-material supplies. At the moment, initiatives by public and private sector organizations are actively encouraged in various ways in the Philippines, South Korea, Taiwan, Malaysia, Thailand, and Indonesia.

The marked rise in the value of wood as a commodity in the Pacific area has occurred because of the supply and demand in the 1980s, the interest in wood as a renewable energy resource, and the emergence of South Korea, Taiwan, and China as significant purchasers. This may stimulate governments and investors to channel their resources of capital, land, and personnel into a belated, but still necessary, effective afforestation effort.

Investment is needed in permanent forests managed for specific needs and uses. However, with the relatively long payback period and current high interest rates, it is difficult to convince investors of the desirability of such investment. The impetus must come from governments who will either invest in forests themselves or, through fiscal and other appropriate measures, encourage companies and individuals to do so.

Investment Prospects

Today, in Indonesia, there are 525 firms holding forestry concessions with a total invested capital of about U.S. $1.5 billion. Of these, 430 firms are operating under domestic investment facilities and 95 under foreign investment facilities. During the past decade, more and more firms have applied for domestic investment facilities and fewer foreign investors have entered the market.

The government has encouraged the firms to produce more processed wood and fewer logs. In 1980, a new regulation was issued under which firms could export no more than 50% of their logs and were required to process 50% locally. A few months later, the requirement was increased so that an export permit would be issued for one unit of logs if the firm could produce evidence that it had sold, for local manufacturing, two units.

From an international perspective, it seems likely that Indonesia will become a producer of plywood and other manufactured goods. The

major constraint would be the availability of managerial skill.

Special plans are being considered to encourage the establishment of timber manufacturing. Under these plans, no new forest concessions will be granted to applicants who do not submit plans for establishing a wood-processing plant. Equally, existing forest concession holders are advised to merge among themselves to establish a viable wood-manufacturing plant.

The demand for forestry products in the Asia and Pacific markets suggests that extended investment activity in forestry in Indonesia is promising.

Discussion

R.N. Byron: Birowo's paper is extremely useful as a review of the current resource base on trade flows in Indonesia. The change in the area classified as production forest (from 11.1 Mha in 1972 to 63.1 Mha in 1979) is indicative of both past expansion of logging operations and plans for future logging operations. The classification of 7.8 Mha as critical land is also noteworthy. My impression is, however, that the paper has too many "teasers" — the data are presented, but few of the interesting implications are analyzed. For example, I would have liked to have known what is being done about critical lands and to have found much more discussion on the development and upsurge in the logging industry.

Indonesia's policy to encourage local processing through restrictions on the ratio of log exports/logs domestically processed produced dramatic reductions in log exports. The reductions are a reflection of the lack either of domestic processing capacity or of export markets for processed wood. The massive reduction in Indonesian log exports would probably have led to increased log exports from Sarawak — not a member of the Southeast Asian Log Producers' Association —and Sabah, the major suppliers of similar-quality logs, if the three states had not agreed in advance to contract log exports. (Before the agreement, each country had planned to expand log exports over the coming decade.)

The result of the agreement was increased prices for log exports, and, hence, the bonus to the log-exporting states, from a policy basically deriving from the objectives of increased local employment and value-added, was conservation or attenuation of the natural resource.

The constraints on the expansion of domestic processing industries are deficiencies in infrastructure; the foreign exchange costs of new machinery; complex bureaucratic procedures; low levels of labour productivity that at least partially offset low-wage rates; and inexperience in producing commodities to international specifications. These constraints, however, should all be overcome during this decade. Indonesia could become a major supplier of plywood (and, on the same basis, of dowel, doors, mouldings, or parquet flooring).

Birowo implies that the Japanese preference for hardwood logs somehow could be blamed if Indonesia ran short of logs, and this suggestion is perplexing. Surely if Indonesia fears future scarcity of logs, it must slow the harvest of the old-growth forest stock. Increased log prices, increased domestic processing, and increased substitution of oil for log exports are all ways to collect the same amount of foreign exchange from reduced logging operations.

Indonesia has established a modest pulp-and-paper industry assisted by high (nominal) tariffs and governmental technical and financial aid. Production is costly compared with such operations elsewhere partly because of the mismatch between the large-scale plants and the small local markets for a wide range of products and partly because of technical problems. In 1979, Indonesia imported about 116 000 t of pulp — mainly long-fibred, for production of, for example, cement bags — and 20 000 t of waste paper. The Indonesian Pulp and Paper Industry Association (APKI) has predicted greatly increased production to 88% of projected consumption by 1985, but FAO forecasts huge deficits (presumably based on an assumption of constant real prices) of 267 000 t in 1986–90 and 1 Mt in 1996–2000. A recent FAO study identified, evaluated, and recommended 10 new pulp-and-paper projects within the ASEAN region, for 1986–2000. The total cost was estimated at U.S.$6718 million, and the output would build up to 5.4 Mt/year, adding $150 million per year to GNP and saving $2200 million in foreign exchange. Some of these projects may never materialize, however, because of investments in pulp-and-paper production