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

Foreword 5

Preface 6

Introduction 7

General Studies
Intensive, Extensive, and Optimal Development of Forestlands
Anthony Scott 13

Optimizing the Use of Ocean Fish Resources in the Context of Extended National Jurisdictions Parzival Copes 33
Discussion Peter Drysdale, Narongchai Akrasanee, John Bene, Wontack Hong, Francis T. Christy Jr 48

Trade and Investment in Fish Products among Pacific-Area Countries
Biing-Hwan Lin, Rebecca J. Lent, and Richard S. Johnston 57
Discussion Hak Yong Rhee, Yoshiaki Matsuda 71

Pacific Trade and Investment in Forest Products K.L. Aird and W.A.J. Calow 73
Discussion Kenji Takeuchi 81

The Northeast-Asian Market Economies’ Response to Tighter Controls on Fish and Forest Resources Sueo Sekiguchi 83
Discussion Helen Hughes 89

Resources of the Eastern USSR Jan J. Solecki 91

Forestry Case Studies
Forest Plantations, Production, and Trade in the Pacific Basin
Roger A. Sedjo 97
Discussion K. Hemmi 102

Pacific Northwest Timberlands David R. Darr 103
Discussion Wontack Hong 115

Development Prospects for Forestry in Indonesia A.T. Birowo 117
Discussion R.N. Byron 120

Tree Crops in Malaysia Francis K. Chan 123
Discussion Mohamed Ariff 133

Fisheries Case Studies
The Economic Future of Alaska Groundfish under Extended Jurisdiction
R.L. Stokes 137
Discussion Yoshiaki Matsuda 142
Canadian Regulation of Pacific Fisheries David G. Moloney 144
Discussion Yoshiaki Matsuda 154
The Developing Skipjack Tuna Fishery of the Central and Western Pacific Ocean David J. Doulman 156
Discussion Theodore Panayotou 163
Fisheries Development in the South China Sea Teruji Sakiyama 165
Discussion Aida R. Librero, Norman J. Wilimovsky, Theodore Panayotou 171
The Squid Fishery in New Zealand: the Role of Joint Ventures and Foreign Fleets C.C. Wallace 178
Export Potential of Coastal Shrimp Cultured in Thailand Kamphol Adulavidhaya and Thanwa Jitsanguan 188
Discussion Hugh Patrick 193

Renewable Substitutes for Fossil Fuels
Substitution of Nonexhaustible Resources for Fossil Fuel Energy and Industrial Raw Material Resources Ben Smith and Hugh Saddler 197
Discussion Miguel S. Wionczek 207
Prospects for Renewable Energy Resources in South Korea Hoesung Lee and Jee Dong Kim 209
Discussion Romeo M. Bautista 219
Energy Constraints and the Open Economic Strategy in China's Modernization Li Guong-on and Luo Yuanzheng 221
Discussion Jan J. Solecki, Lawrence B. Krause 227

Policy Issues
Location of Mechanical Processing of Tropical Hardwood K. Takeuchi 233
Discussion Alhambra Rachman 245
Cooperative Fisheries Arrangements between Pacific Coastal States and Distant-Water Nations Gordon R. Munro 247
Discussion K. Hemmi 254
Fiscal Policies and Resource Rents in the Extraterritorial Oceans Ross Garnaut 256
Discussion T.K. Shoyama, Hugh Patrick 267

Summary Keith A.J. Hay 271

References 279

Participants 291

Official Hosts and Observers 293
The Northeast-Asian Market Economies’ Response to Tighter Controls on Fish and Forest Resources

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The Northeast-Asian market economies (Hong Kong, Japan, South Korea, and Taiwan) depend heavily on imports from other countries for the raw materials to meet their demands for fish and forest products. Thus, they have been particularly vulnerable to changes in resource management within the exporting countries. Whereas many of the changes have been to promote conservation of renewable resources — a goal that benefits everyone in the long run — some have been the result of protectionist policies that may be viewed as globally counterproductive. Probably the most important change in fisheries has been the general acceptance of coastal states’ rights of jurisdiction over the fish resources within 200 miles of their shores, whereas the most important change in forestry has been the greater involvement of resource-owning countries in manufacturing. The responses by the Northeast-Asian market economies reflect their differing industrial strategies. For example, South Korea’s strategy in the fishing industry is to create foreign exchange through exports, whereas Japan’s is to produce food for a majority of its people. Some of the positive side-effects of the tighter control on fish and forest resources are more intensive efforts in fish culture and reforestation, especially in Japan and Southeast Asia.

L’économie de marché de l’Asie du Nord-Est — comprenant Hong Kong, le Japon, la Corée du Sud et Taiwan — dépend largement des importations pour la satisfaction des besoins de la région en produits forestiers et halieutiques. Ces pays ont par conséquent, été particulièrement vulnérables aux changements survenus dans la gestion des ressources chez les pays exportateurs. Plusieurs de ces changements ont été apportés dans le but d’assurer la conservation des ressources renouvelables, mesures qui à long terme, profitent à tous les intéressés, mais d’autres changements résultent de politiques protectionnistes qui peuvent être considérées dans l’ensemble comme anti-productives. Dans le domaine des pêches, le changement le plus important est peut-être l’établissement de la zone de 200 milles dont la juridiction relève des états riverains alors que dans le domaine des produits forestiers, la principale modification vient de ce que les pays propriétaires de forêts s’intéressent davantage au développement de leur industrie. La stratégie industrielle de protection mise au point par les pays de la région diffère d’une nation à l’autre. La Corée du Sud par exemple, cherche à établir un échange de produits halieutiques avec les pays étrangers en développant l’exportation alors que le Japon essaie d’augmenter la production alimentaire pour répondre aux besoins de la majorité de sa population. Cette situation provoque plusieurs effets secondaires dont les plus positifs sont l’exercice d’un contrôle plus serré sur les ressources forestières et halieutiques et de plus grands efforts de pisciculture et de reboisement, surtout au Japon et en Asie du Sud-Est.

In the last decade, changes in the availability of resources in forestry and fisheries have profoundly affected Northeast Asia. The countries in the region that are based on market economies — Hong Kong, Japan, South Korea, and Taiwan — are small and resource-poor. To offset their lack of natural resources, they have invested in industries for which the resources have been either available to all countries on an equal basis or easily accessible and readily processed for added value. They have, therefore, developed their fishing fleets and wood-processing industries. Three of the four have distant-water fleets that have, in the past, enjoyed equal access to the resources of the sea. The introduction of the exclusive economic zones has been a major setback to these countries, as it has given preferred access to coastal nations. The wood-processing industries have
also been adversely affected by restrictions on access. Many resource-rich countries have limited their exports of logs and have begun investing in processing. The response of the Northeast-Asian countries deserves study.

Fish Resources and Trade

By international standards, people in Northeast Asia eat more fish and other marine products than do people elsewhere, although there are some differences in diet even within the region. Japanese, for example, depend more on fish, especially raw fish, for their diet than do Koreans. Japan depended on the export of fish products in the early stage of its post-War economic development, using the revenue to finance the import of raw materials for industry. In the late 1960s, however, the nation became a net importer of fish products as its own industry lost comparative advantage while demand for these goods continued to grow. Despite the fact that Japan has the world's largest fisheries industry, it is also the largest importer of these products. In contrast, exports of fresh or frozen fish made up 3.3% of South Korea's total 1978 exports.

Although South Korea's fishing industry has suffered because of higher fuel prices and the growing number of established 200-mile economic zones, it still is in a more favourable position than Japan, for wage costs are lower. In fact, South Korean exports of fishery products caught up with those of Japan in 1977 (FAO 1977a).

Japan is a promising market for Korean fishery products, bringing in U.S.$443 million in 1980. (Taiwan, too, is important to Japan as a source of fishery products, but at times trade relations between the two countries have been strained. In 1980, for example, Japan imposed quantitative restrictions on imports of eel from Taiwan.)

For developing countries with poor natural-resource endowments, fishing is an important means to earn foreign exchange, for fishery technology is, in general, labour intensive. Working conditions are severe, and the industry tends to hold a comparatively disadvantageous position as economic growth advances because wage rates rise rapidly. This experience is observed in the stagnation of the Japanese fishing industry and in the continued growth of the industry in South Korea. In the years to come, the ASEAN industry will catch up to that of Northeast Asia (FAO 1980).

Northeast-Asian nations attempted to counter the movement in 1977 by major countries to establish 200-mile economic zones. Up to the present, to avoid conflict, the market economies in the region have refrained from applying economic zoning among themselves. Japan introduced economic zoning to counter the Soviet zone, but there are no exclusive zones between Japan, South Korea, and China.

Forestry and Trade

No country in the region is self-sufficient in lumber, pulp, and wood products. Thus, the lumber-manufacturing industry has rapidly increased as residential construction and consumption of paper have expanded with economic growth. Although forests in Japan are to some extent cultivated for lumber harvest, self-sufficiency has decreased steadily in the past 15 years. The index stood at 71% (for lumber) in 1965, 64% in 1975, and 31% in 1978, and other countries in the region seem to be following similar trends. Production of lumber has an extremely long lead time, so it is expected that all market economies in the region will have large net imports of forestry products.

Lumber production, planting and forest management, and wood-manufacturing industries such as milling and plywood are all labour intensive and are suitable for a labour-affluent country. In Japan, the lumber-manufacturing industry developed as an important exporting sector selling lumber and plywood to industrial countries but is at present declining. Exports of plywood are still important in South Korea, accounting for 2.7% of total exports in 1978. The lumber-manufacturing industry is important in earning foreign exchange reserves, and this industry can easily be adopted by developing-country economies, especially those with both plentiful forests and an abundant labour supply. Time-series data on exports of lumber products suggest that ASEAN countries will become more important in the export of manufactured wood products. Thus, the Northeast-Asian market economies will find it necessary to consider tariff escalation, technology transfer, and capital investment in the industry as well as conservation of forests.

Market Response

Both the fishing and the forestry (more precisely the lumber-manufacturing) industries have life cycles that are closely related to overall economic development, and it will be the ASEAN

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1Statistics have been taken from FAO yearbooks of forest products unless otherwise indicated.
countries that develop these industries in the 1980s. Japanese distributors (trading houses and supermarkets) and fishing companies have responded to the trends by establishing joint ventures with entrepreneurs in almost all countries in the ASEAN region. Technical progress in freezing and cold storage in marine transport has favoured such undertakings. Some joint ventures in cultured fisheries, such as prawn breeding in Indonesia, have also begun, and the number of joint ventures is growing between Japanese trading houses or paper-manufacturing enterprises and lumber companies abroad. In response to regulations on log exports imposed by resource-owning countries, joint ventures, which may replace domestic producers in Japan, also have been established in the plywood industry. In fact, Japanese plywood manufacturers have occasionally requested protection against foreign competition, ultimately shifting to high quality, chemically coated plywood production. A few joint ventures are in experimental planting and reforestation. Japan has imported a growing quantity of lumber from Siberia, and this trade presents a political factor affecting government policy vis-à-vis the USSR.

**Case Study: Japan**

The fishing industry has been important to Japan for centuries. For instance, it played a major role in the early stages of Japan's post-War economic development by providing employment and earning foreign exchange through exports of canned fish and crustaceans. The industry originally grew up in response to domestic demand, which is high by Asian and world standards. Fish and other marine products are the main — and for some Japanese, the only — source of animal protein. This heavy demand combined with changes in the country's economic environment has turned Japan into a net importer of fishery products, although its fishing industry continues to be the largest in the world.

According to a fisheries census for 1979, 468,000 persons were engaged in fishing activities. Of these, 364,000 were small-scale fishing families (Norin Tokei Kyokai 1981) much like the small farmers in Japan. In 1979, fishing households owning their own vessels (gyosen gyoka) depended for 55% of their income on nonfishery work. As in agriculture, in which some 70% of Japanese farmers were classified in 1977 as depending for more than 50% of their income on nonagricultural work, fishery firms are in general small, although some large corporations have developed.

As small farmers have formed a protectionistic interest group, so have fishing personnel. Many of these small operations are now claiming compensation for the damage caused by pollution of inshore fishing grounds, which occurred in the 1950s and 1960s when environmental protection measures were lacking.

Among the various categories of fisheries, pelagic and offshore fisheries expanded the most rapidly until the early 1970s. The first oil crisis in 1973, subsequently higher fuel prices, and the spread of 200-mile economic zones, however, combined to bring Japanese fisheries to stagnation. New trends include increased efforts in fish culture and joint ventures with resource-managing countries.

**Major Changes on the Supply Side**

Because the Japanese fishing industry was based on labour-intensive techniques, it lost its comparative advantage in the 1960s and 1970s when wages increased in response to improved economic conditions. Another factor that drastically affected Japanese fisheries was the rapid increase in fuel costs. Even in coastal fishing, fuel costs rose 6.5 times during 1970–78. Although inshore fishing consumes a relatively small quantity of oil, the proportion for fuel in the total costs rose from 6.5% in 1970 to 9.6% in 1978. Higher oil prices damaged the pelagic fishing operations even more severely (Norin Tokei Kyokai 1981). Labour costs for inshore operations increased 3.4 times during the same period, but the percentage of total costs contributed by labour dropped from 21 to 16.

Higher fuel and labour costs, reduced fish catch due to quotas, and licence fees all combined to reduce the supply of fish and raise the price. Thus, Japanese production of fish and other marine products declined after a peak in 1977–78 (Norin Tokei Kyokai 1981). Imports expanded rapidly, annually increasing 7.9% during 1970–75, whereas domestic production grew at an annual rate of only 2.4%.

The most seriously affected sector has been pelagic fishing, which is operated by large companies. Their response to the changing environment was to enlarge their trading departments to import fish from resource-owning countries. They also established joint ventures in these countries, selling technological know-how both in management and in fishing. According to Norin Tokei Kyokai (1981), sales of the trading departments of large fishery companies (with
paid-in capital of more than 1.0 billion yen) rose from 47% in 1970 to 70% in 1979. The share of fisheries itself declined from 34% to 15% during the same period.

Response on the Demand Side
How sensitive are Japanese consumers to the changes in relative prices between fish, crustaceans, and meat? The consumer price index rose by 121% between 1970 and 1979, whereas that for fresh fish, crustaceans, and molluscs increased by 201% and for meat by only 94%. Food consumption per household increased by 141% in the corresponding period, and the figures indicate that the Japanese reduced their real consumption of fresh marine products and increased that of meat. Substitution proved to be fairly responsive to changes in relative prices.

A new feature of the fishing industry is that uses of fish for products other than human food have rapidly increased. Thus, although demand for food use has leveled, total demand still continues to rise. The total demand for fish, crustaceans, and molluscs increased by 2.5% annually in 1970–79. 2.0% for food use and 3.8% for nonfood use (Norin Tokei Kyokai 1981).

Trade in Fish, Crustaceans, and Molluscs
The major exporters of marine products to Japan are the U.S. (144 billion yen), South Korea (133 billion yen), Taiwan, Indonesia, Canada, India, Spain, China, and Australia. Development of fisheries has been rapid in ASEAN countries, and trade is promising even among the resource-deficient Northeast-Asian market economies, as indicated by the large exports of Korea and Taiwan to Japan.

Exports of fish have lost ground in Japan. In 1979 Japanese exports accounted for only 196 billion yen, whereas imports were as high as 931 billion yen. The most important export market is the U.S. where Japan sold 36 billion yen worth of products. Within the Northeast-Asia region, Taiwan (12 billion yen) and Hong Kong (11 billion yen) were the largest export markets for Japan, though still comparatively small.

Public Policy
The most important aspect of public policy is encouragement of favourable fishery agreements for fish catch. Japan has struck agreements with the USSR, Canada, and the U.S. in the North Pacific. In recent years, fishery agreements have been made with nations of the South Pacific, such as Australia, and these have increased in importance. A common complaint in Japan is that smaller fishing quotas and higher licence fees in the North Pacific have combined to make the pelagic fishery increasingly less attractive (Norin Tokei Kyokai 1981). The Japanese are concerned that the fishing quotas in the 200-mile economic zones are sometimes used as leverage for other trade issues.

The government has declared that fisheries cooperation is one important form of assistance to developing countries, and it extended a 6.6 billion yen grant for fishery cooperation in the 1980 fiscal year. In addition, it sends Japanese experts for consultation and receives trainees from developing countries. As most technical progress in the industry has been promoted by public institutions, just as in agriculture, government-to-government cooperation holds the promise of technology transfer. Government organizations that specialize in these activities are Japan International Cooperation Agency (JICA) and the Overseas Fishery Cooperation Foundation (OFCF).

On the domestic front, Japanese fishery policies focus on assistance to small fisheries by means of subsidies and preferential financing. Fish manufacturing, enlargement of freezing and refrigeration equipment, and improved distribution efficiency are priorities for support. A new area of importance has been the protection of inshore fishing grounds and promotion of fish-culture activities.

Japanese foreign trade policy is a mixture of free trade and protectionism. To protect small inshore fisheries, it tends to restrict imports of competing products. In 1979, there were 27 items under residual import restrictions under the GATT (4-digit BTN classification), 22 of which were agriculture and fish products. Marine products include fresh, frozen, or salted herring, cod, yellowtail, mackerel, pike, etc. (BTN 03.01 and 03.02) and fresh, frozen, salted, or smoked scallops and squid, etc. (BTN 03.03). According to the Ministry of International Trade and Industry (MITI), the Japanese government has occasionally requested that South Korea voluntarily restrain exports (tuna in 1975 and seaweed in 1977) (Sekiguchi 1979).

Similar protectionism is found in the tariff structure. For instance, a 10% tariff for fresh fish is imposed on sardine and cod imports, which are subject to quantity restrictions. Quotas are introduced when domestic prices are higher than international prices plus tariffs (and transportation and other costs). The gap between domestic prices and tariffs plus international prices is attributed to importers as import premiums.
Tariffs are also used to protect the fish-processing sector. Canned herring, for example, has a tariff of 15%, although there is no limit on quantities imported. Tokyo Round agreements will produce a different picture when they have been implemented. Tariffs on marine commodities will decline by about 40% from the levels in 1979, i.e., 10% to 6%; 5% to 3.5%. Although the tariff reduction is substantial, tariffs will remain high, as is suggested by the fact that tariffs on smoked cuttlefish will decrease from 15% to 7.5% (Tokyo Round Study Group 1980).

The Japanese public seems convinced that price increases are inevitable because of higher oil prices and stricter fishing quotas. Debate on freer trade in fish products was rare in the 1970s.

Forestry and Trade in Wood Products

Japanese residential buildings have traditionally been largely constructed of wood. Rapid economic growth in the post-War period was followed by expanding housing construction as well as increased demand for paper, and demand for logs grew rapidly. The forested area of the country is limited, although the government worked to promote replanting of forests soon after the War. Trees planted in the late 1940s, however, are still comparatively young. Thus, the ever-expanding demand for lumber has largely been met by imports. Japan has depended on the U.S., the USSR, and New Zealand for coniferous lumber and on ASEAN countries for deciduous lumber.

The national forests have supplied an important proportion of the total domestic wood production and have been critical in environmental protection. In fact, national and municipal forests supplied 41% of total domestic log production. As the Japanese islands are mountainous with much steep terrain, forests are important not only for lumber production but for prevention of landslides, flooding, and soil erosion. The latter is especially important because rivers are short and steep, and water tends to flow quickly to the sea.

Most private forests are owned and managed by wealthy farmers, but, as wage rates rapidly increased, the production of logs has expanded while forestation has stagnated. Adding to these difficulties is the fact that lumber producers have seldom been an influential pressure group, for lumber users make up a much more numerous and stronger interest group.

Sawing and secondary processing of lumber are carried out by small firms. In 1977, 207000 persons were engaged in sawmills, 62000 in plywood manufacturing, and 150000 in furniture making. All firms are small, and, occasionally, they demand protectionist measures. Plywood manufacturers, especially, face serious difficulties from foreign competition. Some have shifted to high quality, chemically coated plywood, and others who stay with the product lines of ordinary plywood have been allowed to form depression cartels to prevent price decline (Sekiguchi 1979).

Domestic production of logs was 51.8 x 10^6 m^3 in 1967, 34.2 x 10^6 m^3 in 1975, and 33.3 x 10^6 m^3 in 1979. In recent years, the level has been stable at some 33 x 10^6 m^3, 20 x 10^6 m^3 from private forests and 13 x 10^6 m^3 from either national or municipal forests (Japan Forestry Association 1981).

Log imports were 35.7 x 10^6 m^3 in 1975 and 37.5 x 10^6m^3 in 1980. The fluctuations in imports mostly reflect ups and downs in domestic businesses in which housing investment plays an important role. Japan has been the world's largest importer of logs for many years, accounting for some 55% of world trade in 1978 (UN 1978:63). Major source countries for Japan's log imports are the U.S. (10.8 x 10^6 m^3 in 1980), the USSR (6.2 x 10^6 m^3), ASEAN countries (19.1 x 10^6 m^3), and New Zealand (0.7 x 10^6 m^3) (Japan Forestry Association 1981). In 1979, Japan's rate of self-sufficiency in lumber was only 44.6% (Japan Forestry Association 1981).

Among ASEAN countries, Indonesia and Malaysia are the largest exporters of logs to Japan, both at 8.9 x 10^6 m^3 in 1980. The Philippines, because of an embargo on the export of logs in the mid-1970s, exported only 1.1 x 10^6 m^3 in 1980. Similar strategies are now followed by both Indonesia and Malaysia; the approach may have found impetus in the Southeast Asian Lumber Producers' Association (SEALPA), which was formed to develop, among other improvements, better marketing operations.

In the 1970s, Canada began actively to implement an export embargo on logs so that it has become extremely difficult for Japan to import logs. A similar trend has been observed in the U.S. where regulations on log exports are increasing at the federal as well as the state government levels. The revision of the Export Control Act in October 1979 threatens to ban exports of American cedar logs completely from October 1982. One positive development has been the formation of a U.S.-Japan Lumber Trade Promotion Committee by private individuals in both countries; the members met for the first time in November 1980.

Because of its enormous domestic demand for lumber, Japan has turned to the Soviet Union as
an important supplier. During 1975–79, 17.5 × 10^6 m^3 logs and 0.9 × 10^6 m^3 in milled lumber were imported from the USSR. The next contract, for 1981–86, was delayed by economic sanctions against the Soviet Union for its invasion of Afghanistan, but it was concluded in March 1981. Some other contracts exist for trade in pulpwood and wood chips. One problem is said to be less-than-punctual delivery, for the contract states that 80% of the cargo will be carried by Soviet carriers. In the three prefectures where the majority of wood supplies depend on the USSR (Fukushima, Niigata, and Toyama), wood manufacturers are naturally enthusiastic promoters of trade with that country.

According to FAO statistics, Japan’s imports of roundwood expanded from 27.8 × 10^6 m^3 in 1967, to 45.9 × 10^6 m^3 in 1970, and to 53.5 × 10^6 m^3 in 1978. Although Japanese demand for lumber continues to rise, the restrictions by resource owners on their exports have meant that imports into Japan have not kept pace with demand. In 1979, Japan’s total demand for lumber was 109.8 × 10^6 m^3, 55% for milling, 29% for pulp production, 13% for plywood manufacture, and 3% for other uses (Japan Forestry Association 1981).

Most of the wood demand, therefore, is for construction, especially for residences. By 1980 housing investment seemed to have reached a peak. Nevertheless, the demand for lumber continues to increase as the size of families becomes smaller, and progressive urbanization leads to demands for better houses. Demand for pulpwood will also expand along with that for paper.

Another notable feature of Japanese import demand for lumber is its drastic fluctuation. Because of Japan’s large share of worldwide lumber trade, its demand fluctuations have had a strong impact on international prices. On the Japanese domestic front, lumber prices were stable in 1977–78 as the yen exchange rates rose. In 1979–80, the declining value of the yen accelerated the price increase, which was twice that of the previous year.

Because of the serious impact of price fluctuations not only on the importers’ but on the exporters’ economies, a buffer stock scheme was established in October 1974. The size is not yet large enough, however, and price fluctuations are still great.

The government recognized in the early post-War economic development that Japan would inevitably be dependent on imports for most of its raw materials and worked to promote resource development projects. Among these was the establishment of the Alasca Pulp Co. with government support in 1953.

In the early 1970s, the government more actively encouraged private investment in resource development. In 1971, it created a special fund to redress losses incurred by natural-resource development investment (Tennen Shigen Kaihatsu Sionshitsu Junbikin). It allowed firms to deduct a certain percentage of foreign investment for exploration and extraction in their calculation of taxes. The reserve is to be used up equally in 5 years after a 5-year period. Lumber was the only renewable natural resource covered by this scheme. The system reduced the risks firms faced and had an effect of postponing the payment of corporate income taxes (Krause 1976).

In addition, the government subsidized research and development in the utilization of South-Pacific woods. These efforts were directly addressed to the interests of Japan as an importer. The Japanese government was concerned about resource conservation, and any strategy for securing lumber supplies for Japan naturally depended on cooperation with the conservation policies of resource-owning countries.

Among governmental cooperation measures in this area are programs for education and training of persons from abroad and provision of Japanese experts abroad as consultants. A non-profit corporation, called the Kaigai Ringyo Konsalutanto Kyokai (Association of Consultants in Forestry Overseas) has been engaged in consulting not only in lumber production but in reforestation as well. This organization is subsidized by the government, and to date quantitative data have not been published on its activities.

The Japanese government faces difficulties in trade policies for manufactured lumber products. If lumber standards for building are accepted among all nations, exporters can realign products without risking local demand. Still, many small-scale manufacturers operate in this area in Japan, and they demand protection from import competition. For this reason, tariffs in manufactured lumber products are fairly steep. Since implementation of the Tokyo Round agreements, the tariffs will be reduced one-half or two-thirds. For plywood, the tariff will be reduced less than for other products primarily because there are no preferential tariffs for the industry.

**Policy Implications**

Northeast-Asian market economies are all deficient in two important renewable natural
resources — marine (including crustaceans, molluscs, etc.) and forest products. They, thus, face serious difficulties when exporting countries decide to impose mechanisms of direct control, such as embargoes. Resource-owning countries should strengthen conservation policies, but they should ensure that new policies do not discriminate against any particular nation — that is, that higher prices of scarce or limited resources should be borne by all users, both domestic and foreign.

Increasing fishery licence fees has the effect of transferring income from the poor to the wealthier nations because rich countries impose the burden on developing countries. This effect occurs in fisheries because the industry is growing in developing countries and is labour-intensive. A constructive way to absorb excess licence fees would be to direct the funds towards resource studies and regional consultation as well as public relations activities on resource management.

Both fisheries and lumber-manufacturing industries in Northeast-Asian market economies are in transition. These industries, aided by an abundant labour force, have played an important role in earning foreign exchange early in economic development. Because ASEAN countries will be developing these industries in the coming decades, it is desirable that the Northeast-Asian market economies, especially Japan, reduce tariffs in trade in manufactures in this area. If these precautions are taken, the export revenues of ASEAN countries will increase and price increases in importing countries will be moderate. Importing countries' difficulties in making these adjustments arise because of the significant number of small-scale firms who face adjustment problems. In this context, a freer trade policy cannot be realized without assistance from governments. Increased supply security, too, will be essential to removing protectionist measures. The growing number of joint ventures in fisheries and wood processing will work as a counterweight to protectionist pressure in importing countries.

As new technology, both in fisheries and forestry, has been encouraged and undertaken by many governments, the future of government-to-government technical cooperation is promising. Such cooperation should not be limited to fishing and wood milling but should include cultured fish farming and conservation techniques. Especially with regard to forestry, all the Northeast-Asian economies share the benefits of increased cooperation. In fisheries, the intraregional market is large. For example, Japan is a major net importer and South Korea, a large net exporter. Development of the South Korean economy; it appears, will make the industry less competitive with Japan, and Korean fishing companies, too, will begin to establish joint ventures in ASEAN countries. Development of the fishing industry in Asia will benefit not only traders in the region but each nation by increasing its fish-protein intake.

Price fluctuation is a matter of serious concern for producers and consumers. In the lumber trade, private buffer stocks (Beigic and Hager 1974) with government support will be the principal method of improving the situation, although the effectiveness largely depends on how the cost of storing can be reduced by technical progress.

One factor makes trade in lumber dominant at a certain stage of processing. Industrial standards and building standards vary among countries. Thus, producers face increased risks if they manufacture lumber for specific uses, as the products will not sell in other markets. Furthermore, the further downstream the processing, the more important is local taste, as in the case of furniture. Downstream industries survive in importing countries regardless of tariffs. Information exchange and consultation in establishing international standards will remove some of the risks for developing countries moving to higher stages of manufacturing. The governments in the Pacific basin countries must work together in this endeavour, for, although social and cultural factors do differentiate building standards among countries, the potential for cooperation should be explored.

**Discussion**

*Helen Hughes:* Professor Sekiguchi has analyzed the principal renewable resource issues from the resource-poor countries' point of view with his usual perspicacity and thoroughness. He has indicated the special characteristics of renewable resources, the trade and location of process-