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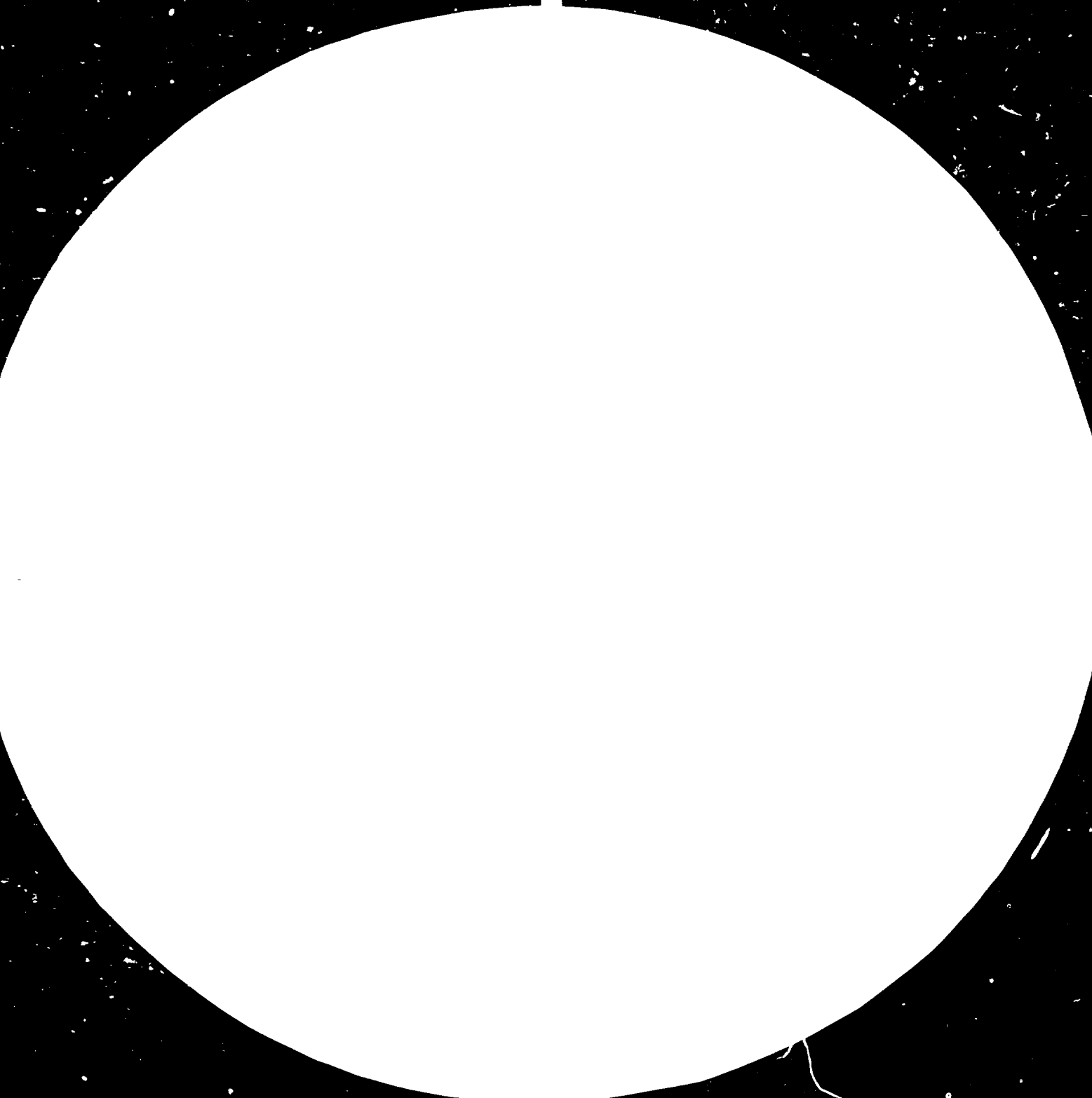
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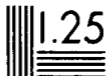
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3.6



Resolution test targets are available from the National Bureau of Standards, Gaithersburg, MD 20899. For more information, contact the author.



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SOME ASPECTS OF THE WOODWORKING INDUSTRY IN THAILAND*

by

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* The views expressed in this paper are those of the author and do not necessarily reflect the views of the secretariat of UNIDO. This document has been reproduced without formal editing.

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1. Background

Thailand is an agricultural-based country situated in Southeast Asia between the 5th and 21st north latitudes and the 97th and 106th east longitudes. The country is in the central direction of the South-West Monsoon wind which brings much rainfall yearly.

The Thai population is estimated to be well over 46 million persons in 1980 with the growth rate of 2.5 percent per annum. So that demand of housing and office facilities are steadily increasing as a result.

According to climactic conditions of warm and wet, and to the availability of convertible lumber supply, most of the Thai people prefer to live in wooden houses and to use wooden furniture. Thus, they have been well acquainted with wooden utensils and furniture for many hundreds of years.

Plywood and other wood-based products were introduced into the country after the second world war. In 1957, then, the first wood-based panel industries were established to produce plywood, fancy veneer and flush-door production replacing those imported products.

Since that time the Thai woodworking industries has changed and been embellished to suit the local need.

It is obvious that this sector plays an important part in the overall well-being of our people. It also contributes greatly to the economic growth and social development of the entire country.

The only one factor that may retard the growth of this sector is, in fact, that the supply of logs is becoming a problem.

2. Forest Resources.

Thailand has approximately 514,000 square kilometres of land area about which 150,000 square kilometres are covered with forest area.

Forests are classified into 2 broad types, the evergreen and the deciduous. The evergreen forest is divided into 4 types, namely:

(1) The tropical evergreen forest:

This type of forest is typified by the density of the stand, the size and height of the trees which often reach 30 metres or more. The undergrowth is heavy with ferns, vines, bamboo and palms. The most extensive of these forests are found in the southern region and in the east coast.

The dominant species are belonging to Diptero-carps such as Dipterocarpus alatus, D. Costatus, D. Grandiflorus, Hopea Odorata, H. ferrea, Anisoptera graba, etc.

(2) Hill evergreen forest:

This type of forest is found in limited areas of the higher elevation from 1,000 metres upwards, in the northern region. Quercus and Castanopsis species constitute the major species in this forest covering.

(3) The coniferous forest:

This type of forest is found in the northern and the north-eastern region at the elevation from 600 metres upward. At the higher elevation the forest is almost free from broad-leaved trees. The only 2 species of pines are found in this type of forest. They are Pinus merkusii which occupied the lower elevation and Pinus Khasya which occupied the higher elevations.

(4) The mangrove forest:

This type of forest occurs on alluvial land bordering on the sea and ascends along the rivers that close to the sea, especially in the area approached to the gulf of Thailand. The important species consist of Rhizophora mucro-nata, R. conjugata, Bruguiera cylindrica etc.

The deciduous forest is the typical forest of the drier region which occupies the plains and hills. It is generally found in the

north and northeastern region.

Main species are Shorea obtusa and Pentacme siamensis, Terminalia tomentosa, Pterocarpus macrocarpus, Xylia Kerrii, and Tectona grandis (teak).

Teak, of course, is the most important of all commercial species found in Thailand. It is one of the most durable woods of the world, immune to termite and insect attack. It is suitable for every purpose.

Yang (Dipterocarpus alatus) is the second most popular specie next to teak. It is very large and tall tree with a straight clear bole. Some yang logs are wider than 2 metres in diameter. This wood is used for construction purposes as well as for wood-based panel industries.

3. Primary wood processing industries

Conversion lumbers and plywoods are the most common wooden materials to be used in construction and furniture industries.

The saw mill is the first and biggest among all the woodworking industries in Thailand. In the previous decade there were nearly 500 sawmills all over the country. Most of them were old circular saw type mills with low efficiency. Presently, however, there are some 450 sawmills and using the new machinery and equipment many of these have become far more advanced. Saw mills, therefore, consume nearly 95 per cent of the logs produced in the country each year. (A shortage of logs is the main problem behind sawmilling).

Second to the sawmill is the plywood and other wood-based panel production plants such as particleboard, fibreboard with the total production capacity at approximately 120,000 cm per year.

Plywood, particleboard and fibreboard are used for partition and ceiling purposes besides cabinets and furniture.

The typical plywood or particleboard plant in Thailand uses machines and equipment made in Europe and America, especially that produced in the Federal Republic of Germany.

As always, spare parts for these imported machines are hard to come by, however, we are beginning to use more Japanese made equipment and machinery and for these the spare parts are less difficult to find.

4. Secondary wood processing industries

Besides using sawn wood for construction; plywood, particleboard and hardboards are used for radio and television cabinets, kitchen cabinets and the furniture industries in general. Colour and figures of wood are factors involved in the selection of wood to be used.

Furniture industries in Thailand, though, are still very small. Most of them are cottage industries and so produce made-to-order pieces. Product design and technical know-how are rather limited.

Few medium-scale furniture industries do, however, exist and were set up in order to manufacture export pieces.

5. Institutional Infrastructure

5.1 The Sawmills Association

This association plays an important roll in stimulating the authorities concerned to turn down the restrictions issued long ago which now hamper the growth of modern sawmills (i.e. to increase recovery percentage as well as to maximize profits). The association in co-operation with the Forest Research Division hopes to set up the saw doctoring centre to train persons from every sawmill in this skill.

5.2 The Veneer and Plywood Manufacturing Association

This association tries to help its members by solving problems regarding the plywood and veneer industry such as the shortage of good quality logs, the fluctuation of prices of each product and the product standard maintenance.

5.3 The National Industrial Standards

This institute assists directly the woodworking industries in producing the right quality products for the consumer. The institute set up the following national industrial standards for woodworking industries:

- (1) Standard for Plywood (equivalent to B.S. 1455 - 1963)
- (2) Standard for Hardboard (equivalent to B.S. 1142 - 1961)

- (3) Standard for Wooden Flush door (equivalent to B.S. 459 - 1962)
- (4) Standard for polyvinylacetate emulsion adhesive for wood (equivalent to I.S. 4835 - 1968)

5.4 Specialized institutes

The Division of Forest Products Research of the Royal Forest Department and the Department of Wood Technology School of Forestry, Kasetsart University are the main technical advisory institutes for the woodworking industries.

Some companies such as the Thai Plywood Co., Ltd. runs the research projects in co-operation with the Department of Wood Technology.

Besides these there are many technical training centres located both in Bangkok Metropolis and in the provinces outside of Bangkok in order to advise and train employees of the wood industry.

6. Labour

The wood industries are not so complex, of yet, and so do not require highly skilled labourers. Most of our wood industries are the so called "labour intensive type". So that Thailand has no problems with the shortage of skilled labour in the woodworking industries sector.

Vocational schools and technical colleges are sufficient for the education and training of students after they have passed the elementary levels.

Only one factor that sometimes presents itself as a serious problem for some woodworking firms is that of the labour union.

7. Machine and equipment used in woodworking industries

Most of sawmill machinery and equipment are locally made except for the big head-rail band saw mills that import from "Fuji" out of Japan. Veneer, plywood and other wood-based panel machines and equipment is made in Europe and the Scandinavian countries. Many firms have switched from European made machines to Japanese machines, however, as mentioned earlier, since these seem to be more reliable.

The reasoning behind this switch-over is the following:

The Japanese manufacturers offer:

- (1) Advanced engineering technology;
- (2) They use less operators and require less attention than the Western types;
- (3) They are more attractive;
- (4) Spare parts, although, still sometimes a problem, are easier to obtain for these machines than for the Western types;
- (5) It is common practice for the Japanese machine manufacturers to send their service engineers along with the salesmen to visit and advise their customers regularly (free of charge). At the same time they recommend the new techniques and newer machinery and equipment available and so manage to sell the newer models.

8. Conclusion

The potential for establishing new woodworking industries and/or improving the existing facilities in Thailand is still not well defined. We have the available factors needed for a modern and well established wood processing industry however we need to draw more attention from foreign industrialized countries and to bring their specialists to Suriname in order for us to truly develop this sector. We have begun to do this with the Japanese and hope to see continuing positive results in the future because of it.

NUMBER OF PRIVATE HOUSEHOLDS BY TYPE OF CONSTRUCTION MATERIAL
 (for the whole of Suriname in 1976)

	<u>Number</u>	<u>Percent</u>
Cement or brick	254,990	3.72
Wood and cement or brick	194,140	2.83
Wood	4,400,780	64.12
Local materials	1,699,490	24.76
Reused material	252,740	3.68
Unknown	61,120	0.89
TOTAL	6,863,260	100.00

