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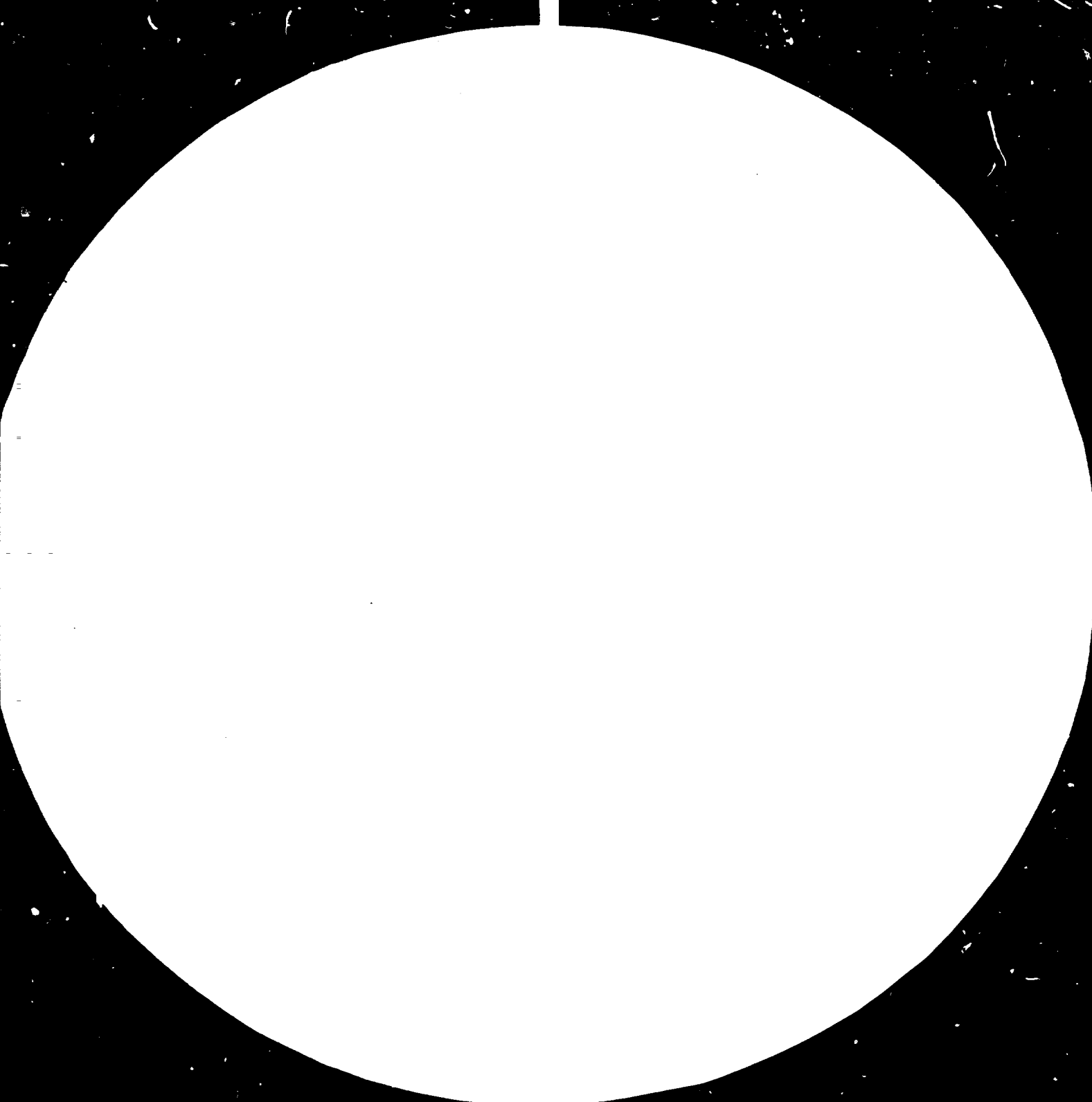

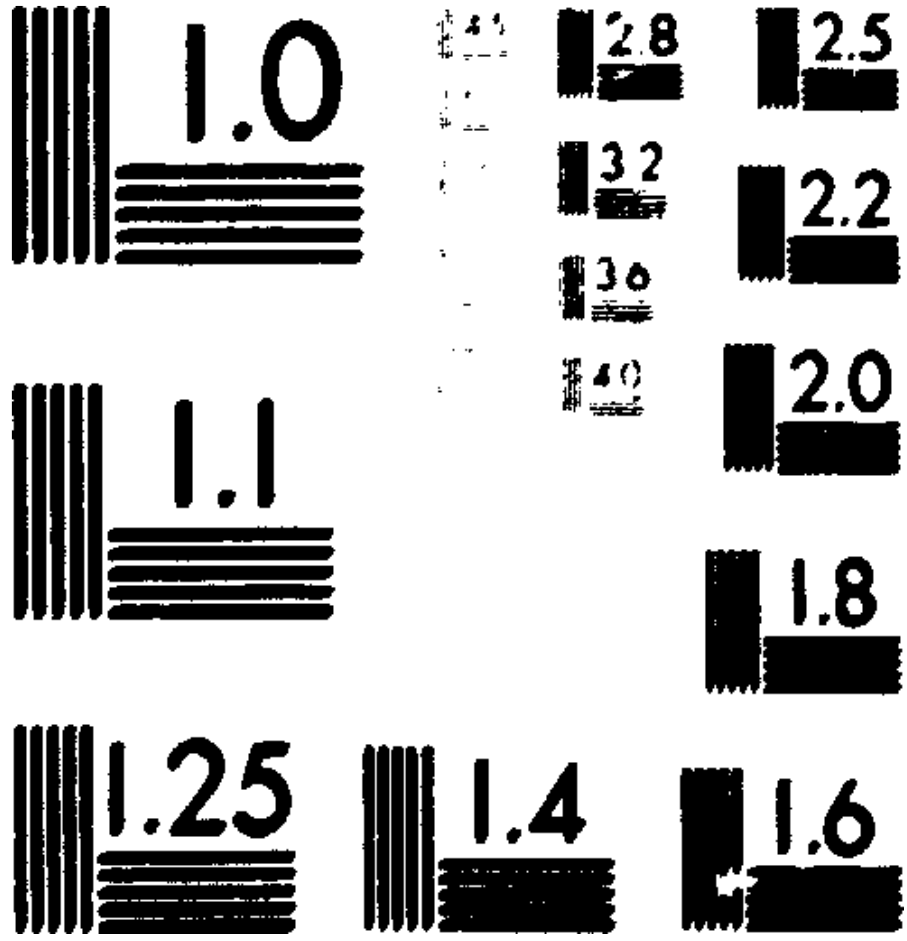

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FOREST INDUSTRY IN JAPAN *

by

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PREFACE

In the year of 1980, Japan consumed a total of 109 million cubic meters of wood including woodchips and was depending substantially on import by 74 million cubic meters of 68% of the total consumption. Through such heavy dependence on import from abroad, Japan is presently attaining to an aim of one of the industrialized countries in wood processing, having 22,241 sawmills, 654 veneer and plywood factories, 6,590 woodchips mills, 21 laminated-wood mills, 14 fibreboard and 21 particle board factories.

The following is an outline of the Japanese wood industry of recent times. (All the figures and data, except specifically noted as otherwise, are quoted from "Demand and Supply of Wood and Wood Products and Contemporary Wood Industry in Japan, 1981" compiled by the Forestry Agency of the Ministry of Agriculture and Forestry.)

1. General Aspects

a. Demand, Supply and Import

(1) Demand and Supply of Forest Products

1980 (estimated figures included) million m^3

demand			supply		
sawmilling	56	(51%)	domestic round logs	34	(31%)
plywood	13	(12%)	imported round logs	42	(38%)
pulp	36	(33%)	imported sawn timber	6	(5%)
others	4	(4%)	imported plywood, veneer and chips	16	(14%)
			imported pulp	8	(7%)
			other imports	3	(2%)
total	109	(100%)		109	(100%)

(volume converted into round log basis)

Share of import volume was record high at 68.3% of the total demand in 1980.

(1-2) Import

Despite of significant increase of import of sawn timber, the total volume of import of wood and wood products decreased in 1980 compared with the previous year due to rockbottom demand for wood products coming from prevailing housing construction cutbacks.

Import in 1980 (actual) thousand m^3

areas	logs	sawn-timber	total	shares logs	shares s.t.	shares total	index to 1979 logs	index to 1979 s.t.	index to 1979 total
U.S. and Canada	10,751	4,114	14,865	25%	10%	35%	84	113	91
Southeast Asia	19,089	567	19,656	44	1	45	84	132	85
U.S.S.R.	6,158	139	6,297	14	-	14	78	104	79
New Zealand	795	340	1,135	2	1	3	80	116	88
Others (*)	717	413	1,130	2	1	3	137	65	98
total	37,510	5,573	43,083	87%	13%	100%	84	109	86

(*) includes Chile pine logs, Korean sawn timber, ~~Korean~~ tung wood (Paulownia species) and African wood.

Estimates for the year of 1981 by the Southeast Asian Lumber Import Association (of Japan) and the North American Lumber Import Association (of Japan) are: -

(thousand m^3)

U.S. and Canada 10,129 (round logs 7,444, sawn timber 2,685) 68% (*)

Southeast Asia 17,035 (round logs 14,728, sawn timber 2,307) 87%

(*) comparison with previous year.

The total volume of import from two supplying areas is estimated to have a sharp downfall while the Southeast Asian sawn timber import increases in a drastic scale.

(1-3) Usage of Imported Wood and Wood Products

In Japan purposes of respective imports are classified to the following categories, and characteristic in recent years, import of the Southeast Asian round logs for sawmilling purpose dwindled significantly in a sharp contrast with increased import of the Southeast Asian sawn timber.

(a) U.S. and Canada square sawn timber and board for house construction

(b) Southeast Asia — plywood and board

(c) U.S.S.R. — board for house construction and pulp

(d) New Zealand — packing crates and boxes

Usages of Southeast Asian round logs — thousand m^3

	1976	1977	1978	1979	1980	1981
plywood	12,868	13,122	13,913	14,431	12,918	11,243
sawn timber	8,734	8,034	7,997	7,467	6,434	4,880
total	21,602	21,156	21,910	21,898	19,352	16,123
plywood	59.6%	62.0%	63.5%	65.9%	66.8%	69.7%
sawn timber	40.4	38.0	36.5	34.1	33.2	30.3
total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The Southeast Asian Lumber Import Association

(2) Sawmilling

(2-1) Sawmills and Production Volume

	number of sawmills		production ($1,000m^3$)		sawn timber import ($1,000m^3$)		housing starts (1,000 units)		number of employees (1,000 men)	
1976	23,482	(100)	39,222	(100)	3,301	(100)	1,524	(100)	216	(100)
1977	23,136	(99)	38,171	(97)	3,575	(108)	1,508	(99)	208	(96)
1978	22,794	(97)	38,846	(99)	3,857	(117)	1,549	(102)	202	(94)
1979	22,541	(96)	39,579	(101)	5,116	(155)	1,493	(98)	198	(92)
1980	22,241	(95)	36,858	(94)	5,573	(169)	1,269	(83)	N.A.	N.A.

(2-2) Round Logs for Sawmilling by Sources

	total	domestic logs			imported logs						volume ($1,000m^3$)
		s.ttl	s.wood	h.wood	s.ttl	Lauan	US	USSR	NZ	Others	
	%	%			%						
1976	100	38.8	32.5	6.3	61.2	13.9	27.3	13.7	1.9	4.4	55,047
1977	100	38.1	31.9	6.2	61.9	13.5	28.2	13.5	2.0	4.7	53,871
1978	100	37.3	31.3	6.0	62.7	13.6	28.1	14.2	2.1	4.7	54,976
1979	100	38.3	32.4	5.9	61.7	12.2	30.0	12.6	2.5	4.4	56,012
1980	100	40.0	34.0	6.0	60.0	11.0	30.0	11.0	3.0	5.0	52,074

Number of sawmills and their employees have been decreasing year by year with consequent decline of production volume in the face of slowdown of housing construction starts and essential setback of use of wooden parts in respective houses.

Consumption trend of round logs for sawmilling purpose is specifically represented by the fact that the Southeast Asian log use is decreasing and this can be attributed to comparative higher cost of the Southeast Asian logs than softwood and revaluation of softwood in view of its anti-insect and antiseptic superiority.

Shares by use of sawn timber in Japan are:

Construction	78%
Civil engineering	3%
Packing crates/boxes	8%
Furnitures and fixtures	7%
Ships and automobiles	1%
Others	3%

As share of construction use being dominant, sawmilling business in Japan is tend to be readily influenced by housing construction trend.

c. Plywood

(1) Plywood mills

Number of Plywood Mills*

	total	mills using S. Asian logs	mills using domestic logs
1977	222	192	30
1978	219	189	30
1979	209	179	30
1980	187	159	28
1981	174	146	28

* mills specializing in veneer and secondary processed plywood production excluded.

Japan Plywood Manufacturers' Association

Japanese plywood industry in recent years reduced a number of its mills, under its marketing behavior being solely domestic-oriented, due to

inbalanced demand and supply situation, sluggish market trend and the industry improvement incentives by the Japanese Government.

(3-2) Plywood Production

Regular Plywood Production

	production (million m^2)	conversion (4mmx3'x6')	shares of plywood by thickness					volume conversion (million m^3)
			less 3mm	3-6mm	6-12mm	over 12mm	total	
			%	%	%	%	%	
1976	1,334	1,784	45.0	30.4	5.3	19.3	100	7.1
1977	1,308	1,869	41.6	30.2	4.9	23.3	100	7.5
1978	1,395	2,010	42.9	28.6	4.4	24.1	100	8.0
1979	1,449	2,133	41.8	28.5	5.0	24.7	100	8.5
1980	1,344	2,002	42.6	26.9	4.9	25.6	100	8.0
1981	1,195	1,786	42.9	26.1	4.9	26.1	100	7.1

Japan Plywood Manufacturers' Association

In 1981, both actual and converted production figures dropped heavily due to the market slump by demand and supply gap and decrease of plywood mills by voluntary close-downs, change of business and bankruptcies.

By thickness, it is typical tendency that both thinner and thicker plywood are gaining their shares, especially percentage of over-12mm plywood is increasing. This stems from the facts that 12mm x 3' x 6' size, formerly used for concrete panelling purpose, began to be used also for flooring base and wall base of houses, and thinner plywood has nowadays smaller profit margins due to difficulty of obtaining required quality round logs.

(3-3) Processed Plywood Production

Production volume

million m^2

	Polyester overlay	PVC overlay	print overlay	printed plywood	Fancy plywood	others	total
1976	26	20	158	35	75	111	425
1977	25	19	165	29	86	97	421
1978	24	18	170	31	86	96	425
1979	23	18	184	32	84	103	444
1980	25	16	158	25	83	87	394

Japan Plywood Manufacturers' Association

Major use of processed plywood is for furnitures and fixtures, but in these years production volume has been declining due to recessed consumers' buying power.

(4) Plywood Import

Plywood import (million m^2)

	plywood	veneer	
1979	13	22	Custom Clearance Statistics by the Ministry of Finance
1980	15	28	
1981	5	29	

Japan predominantly uses 3' x 6' size plywood and import of plywood is consequently small in volume due to difference of sizes.

d. Preservation of Wood and Wood Products

As of February, 1981, there are 72 antiseptic treatment mills in Japan, with their 1980 production being 557,000 cubic meters for main use of railway sleepers, electric poles, pit holes and housing construction bases. These days, antiseptic treatment for housing construction bases is carried out at construction site.

Anti-insect treatment is mainly performed in Japan on Lauan sawn timber among variety of the Southewast Asian species. As of March, 1981 Japan has 95 anti-insect treatment mills and their production in 1980 reached to 275,000 cubic meters level with essential estimate of further development in the near future.

e. Woodchips

Total 6,590 woodchip manufacturers produced in 1980 16 million cubic meters Majority of them are co-operated with sawmills or plywood mills and only 670 mills are specialized woodchip makers.

(5-1) Production

Production by materials

	production (million m^3)	raw materials' shares		
		round logs	factory residuals	forest residuals
		%	%	%
1976	16	52	45	3
1977	16	52	46	2
1978	15	50	48	2
1979	16	49	48	3
1980	16	52	44	4

Among total chip production, softwood chips by 37.2% and hardwood chips by 62.8% in the year of 1980.

(5-2) Demand and Supply

million m^3

	Supply			Demand		
	domestic	import	total	pulp	board	total
1976	16	13	29	29	2	31
1977	16	14	30	29	2	31
1978	15	13	28	28	2	30
1979	16	15	31	31	2	33
1980	16	16	32	32	2	34

Supply of woodchips is depending by half the volume on import.

(6) Particle Board

There are 21 particle board factories in 1980 with a production volume of 85 million square metres which occupies only 7% of the total plywood production volume, but particle board production has so far been developing steadily.

Production	million m^2 (index)
1976	58 (100)
1977	60 (103)
1978	61 (105)
1979	82 (141)
1980	85 (147)

among 21 factories:	
co-operation with plywood	11
co-operation with pulp	2
specialized in particle board	8
(total)	21

Usages of particle board:

rniture and fixtures	49%
electric appliances	27%
construction	19%
others	5%

For construction purpose, water-proof particle board is produced. As production shows steady increase in volume, particle board started to compete with plywood for the same usages.

2. Problems and Measures

Present Japanese wood and wood products industry has various problems, including unmatched demand and supply situation deriving from discouraged housing construction starts, recent drastic change of round log import circumstances, mounting competition with other materials and international competitive power in wood and wood products trade.

(1) Unstable situation of round log import

Japan is relying on import of round logs by 60% for sawn timber production, by 96% for plywood manufacturing and of woodchips by 46% for paper pulp. By continuous introduction of round log export restriction or total ban by producing countries, our forest-based industries are now facing with heavy trial.

To cope with such difficulties and constraints, we have realized the necessity of making further endeavour to utilize domestic wood resources and at the same time, we have to find a way to secure long-term and stable supply sources of round logs overseas through implementation of the following measures:

(a) To deepen pertinent cooperation and partnership with producing countries,

(b) To utilize lesser-known species and make efficient use of forestry resource potentiality,

(c) To promote reforestation and wood rehabilitation

(2) Utilization and Wood Resources

Under background of an apparent tendency of global shortage of wood resources, forestry-industrialized countries have their tasks

to seek more efficient way for wood resource utilization by useful research and studies of:

(a) Full and profitable use of small logs, residuals and wastes
(b) Promotion of production yield
(c) Improvement of durability by antiseptic and anti-insect treatments
(d) Realization of compound products with other materials
(e) Development of resource-saving usages.

(3) International Competition

Wood and wood products are expected in the future to have more value as international commodities and Japanese wood industry is now needed to comply with this upcoming situation in view of the following:

(a) To have competitive power in price and quality of products.
(b) To become competitive in commodity value
(c) To have general competitive power in terms of climate, culture and wood resources
(d) To become competitive against other replacement materials.

For successful attainment of above aims, the wood industry has to tackle with rationalization, development of new products, energy-saving and resource-saving goals.