Working Paper

Market Potential for Russian Forest Products in Japan

Hiroaki Kakizawa

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IIASA International Institute for Applied Systems Analysis □ A-2361 Laxenburg □ Austria
Telephone: +43 2236 807 □ Fax: +43 2236 71313 □ E-Mail: info@iiasa.ac.at

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FOREWORD

The Siberian forest sector is a topic which recently has gained considerable international interest. IIASA, the Russian Academy of Sciences, and the Federal Russian government have signed an agreement to carry out a large-scale study on the Siberian forest sector, called the "Siberian Forest Study". The overall objectives of the study are to identify possible future sustainable development options for the Siberian forest sector and to identify policies for the different options to be implemented by Russian and international agencies. The study deals with five major components, namely forestry, zoology and global change, markets, industry and infrastructure, and socio-economics. For the analysis of the components markets and industry and infrastructure, a number of analyses have to be carried out on potential market areas for Russian wood products.

This paper is focusing on the roundwood market potential for Russian wood in Japan. The report has been produced by Prof. H. Kakizawa at a working stay at IIASA supported by the Japanese NMO of the institute and by IIASA.

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1. Introduction

In 1993, Japan imported 81.3 million cubic meters of wood from various countries, comprising 75 % of the wood supply in Japan. The Japanese economy has largely depended on foreign countries for wood. However, in many of these countries, forest policy has been moving in the direction of limiting wood harvesting and exports due to concern for the environment and degradation of forest resources.

In the United States, the environmental protection movement has become powerful, large areas of forest in Pacific Northwest having become barred from timber harvests to protect the habitat of the Spotted Owl.

The provincial government of British Columbia also faces difficult problems in forest policy. The forest resources in BC have deteriorated from large-scale development, and environmental movements have begun to accuse the forestry industry and the provincial government of destroying forest resources in B.C. The Government of British Columbia is reducing Annual Allowable Cut in order to achieve sustainable management of forest resources. These trends will limit the ability of Canadian timber producers to export wood to Japan.

Japan also has imported large amounts of tropical wood from Southeast Asian countries. However, after a long period of overcutting, the forest resources of these countries have been degraded and sustainable management of these forests is being strongly demanded. Some countries and regions have prohibited log exports in an effort to promote domestic timber industries. Thus, imports from these countries to Japan will continue to decrease, and especially imports of logs will be severely limited.

On the other hand, the forest resources of Russia are still abundant and can be readily developed. The Russian government also hopes to develop forestry and increase exports of forest products to foreign countries, including Japan. However, Russian wood has been replaced by North American wood in the Japanese market since the 1970's. Presently, use of Russian wood is quite limited. Moreover, import of wood from Russia has decreased rapidly since the late 1980's, due to the economic and social disorder in Russia.

The purpose of this paper is to present the history of Russian-Japanese trade in wood, the use of Russian wood in the Japanese market, and to make recommendations for the development of the Russian wood market in Japan.

This report is divided into 4 sections.
(1) History of Russian-Japanese trade in Forest Products.
(2) Use of Russian wood for construction lumber.
(3) Use of Russian wood for plywood production.
(4) Strategy for penetration of Japanese market by Russian producers.

2. History of Russian-Japanese Trade in Forests Products.

With the recovery of the Japanese economy, Japan began to import wood in 1948 from the USA and Southeast Asia, and from USSR in 1954 (Table 1). However, in the 1950's, Japan's most urgent problem was to obtain hard currency for its economic development. Therefore, most of the wood was imported from Southeast Asia, processed into plywood, and exported to USA in order generate export earnings.

In September 1954, one month before the arrival of the first imported Soviet logs to Japan, a strong typhoon hit Hokkaido and destroyed 25.7 million cubic meters of timber. It took 3 years to salvage and sell these logs, resulting in oversupply and disruption in the log market. The import of Soviet wood was especially hard-hit because most of the salvaged wood from Hokkaido were the same species as the Soviet logs, spruce and fir. On the other hand, the sale of wind-damaged timber laid the foundations for the import, processing, and use of Soviet wood. Since the amount of wind damaged timber was so large, Hokkaido market could not absorb it completely. Many of these logs were thus transported to the Japan Sea coastal regions processed and distributed to parts of Japan where there was no tradition of spruce and fir use. As a result, a market developed for spruce and fir, opening the Japanese market to Soviet wood imports.

Demand for forest products increased rapidly with the period of high economic growth beginning in 1955. Wood imports grew dramatically from 1961, due to trade and foreign exchange liberalization. Higher prices for wood increased profit for imports. Although imports of North American logs showed the most marked increase, Soviet imports also rose.

Table 1 Trend in import of wood by originof countries

unit: 1,000 cubic meters

	Tropical logs	Tropical lumber	North American logs	North American lumber	Russian logs	Russian lumber	New Zealand logs	New Zealand lumber
1948	6							
1949	25		14					
1950	98		5					
1951	452		32					
1952	549		54					
1953	1284		325					
1954	1460		399		2			
1955	1850		168		16			
1956	2315		176		71			
1957	2459		288		117			
1958	3303		311		452		26	
1959	4230		457		728		110	
1960	4568		553		921		147	
1961	5549		2211		1315		240	
1962	6373		1748	636	1673		255	
1963	7798		2663	899	1857		229	
1964	7871		3217	896	2363	34	314	
1965	8848		3491	746	2591	45	401	
1966	11101		4458	1040	3539	68	498	
1967	13674		6759	1676	4956	117	645	
1968	14878		9117	2066	5700	161	1350	
1969	17814		8189	1593	6040	111	1596	99
1970	20678		10064	2447	6997	98	1681	77
1971	21689		7758	1574	6369	102	1728	89
1972	21898		10682	1841	7818	104	1793	104
1973	26969		10618	2695	9015	140	1605	103
1974	25512		8917	2552	8176	130	1094	115
1975	17507	121	9540	2085	7769	103	451	83
1976	22205	183	10308	2540	8056	112	825	109
1977	21391	287	10632	2632	8716	117	885	185
1978	22061	303	10637	2797	8834	127	813	222
1979	22650	428	12740	3625	7879	134	995	293
1980	19089	567	10751	4114	6158	139	795	340
1981	15107	386	7725	2953	5647	123	497	258
1982	15261	604	8448	3777	6000	120	421	266
1983	14214	639	8428	3436	6406	129	313	272
1984	13101	631	8393	3266	5786	147	306	181
1985	13245	1157	9193	3566	5565	153	294	155
1986	12143	1114	9769	3925	6306	170	260	117
1987	13516	1656	11601	5159	6125	181	389	132
1988	11821	1955	10690	5801	5800	225	569	125
1989	12632	2224	11912	6669	5248	263	763	106
1990	11380	1649	10851	6512	4865	267	1343	209
1991	10289	1322	9571	6912	4304	247	1609	258
1992	10118	1271	9290	6805	4185	227	1861	249
1993	7656	1450	8189	7774	4973	288	1722	235

Source: Annual Statistics of Forestry, Forest Agency of Japan

The Japanese government and industry foresaw that the demand for raw materials and energy resources would increase rapidly as the economy grew, and that most of these raw materials would have to be imported. Japanese industries also sought new markets for their industrial products. Siberia is rich in natural and energy resources while the Soviet government had a strong desire to develop these resources. The USSR needed Japanese machinery and technology to reach this goal. Japan in turn, was interested in Siberia as a supplier of raw materials and a new market for Japanese industry. Thus, Japan and the Soviet Union shared an interest in developing Siberia.

After exchanging several missions, the Japan-Soviet Economic Committee was established in 1965. At the second meeting of this committee held in 1967 in Moscow, the president of Komatsu Industries proposed a barter trade project in which Japan would export machinery for the development of Siberian forests in return for Soviet wood. Komatsu Industries, primarily a producer of earth-moving equipment, was actively seeking new foreign markets for its products. After a careful study of the project, an agreement was reached in 1968 and the project began operation in 1969. The KS project, named after Kawai, President of Komatsu Industries, and Sedov, Director of the import section of Soviet Ministry of Trade. In this 5-year project, Japan exported 133 million dollars worth of machinery and imported 7.6 million cubic meters of logs. This project contributed to increased imports of logs and exports of machinery. After this project, many joint Siberian development projects were launched by the Japan-Soviet Economic Committee.

Wood imports from USSR reached 9.2 million cubic meters in 1973. However, in the wake of the recession of 1974, wood imports decreased to 7.8 million cubic meters in 1975. The government then enacted measures to stimulate the economy, which combined with a higher yen, led to a recovery in imports beginning in 1976.

With economic overheating in 1973 and recession in 1974, the price of wood fluctuated. The price of Soviet logs (fir and spruce) rose 53 % from 1972 to 1973, then declined 10 % from 1973 to 1975. Prices were fixed annually for imported Soviet timber, but this system could not cope with such large fluctuations in prices in Japan. A quarterly system of price agreements was therefore developed to adjust for price fluctuations.

In 1974, the second KS project was concluded and operations began in 1975. In this project, Japan supplied 16.3 billion dollars in bank credits, exported machinery to the USSR, and imported 17.5 million cubic meters of wood over 5 years. With this project, Japan expanded

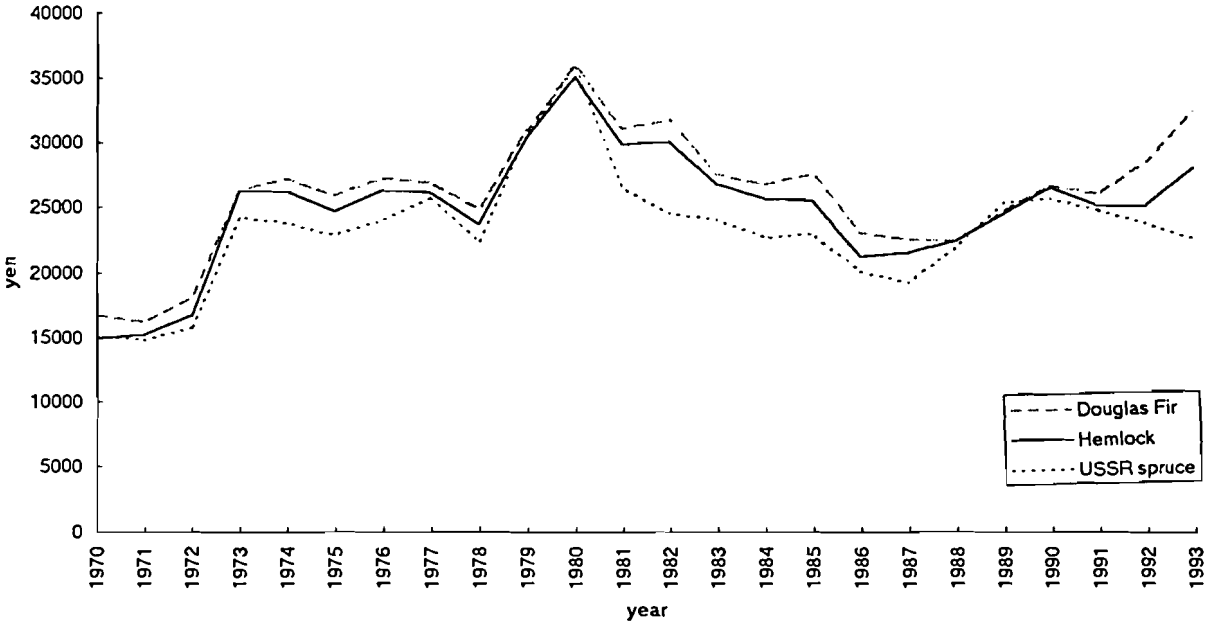
its exports of machinery to the USSR to a great deal, however imports of wood did not exceed the 1973 level, and even began decreasing in 1979.

Wood prices in Japan began to rise from 1978, due to inflation in the USA and restriction on Southeast Asian wood exports. The price of Soviet wood also rose at a rapid pace. Imports from North America began rising in the later half of 1979, but the supply of Soviet wood did not increase during the same period. As a result, the price of Soviet logs continued to increase and reached the same level as American fir and hemlock (Figure 1). Soviet wood initially enjoyed a price advantage in the Japanese market, but with the rapid rise in price caused Soviet wood to become less attractive. Many Japanese sawmills began switching to North American logs in response.

Following the second oil shock, the Japanese economy plunged into recession beginning in 1980, further reducing demand for Soviet logs. The third KS project, which was suspended as part of the economic sanctions against the USSR, was re-started in 1981. The project called for Japan to supply 20 billion yen in bank loans to the USSR, and for Japan to import 12 million cubic meters wood over 5 years. However, this project also failed to increase Soviet wood imports. In addition, the quality of Soviet logs declined remarkably in the early 1980's and yield rates of Soviet logs for the sawmill declined 10 to 15 percentage points. The composition of species of logs imported from the USSR continued to fluctuate, causing disruptions to the market. These problems accelerated the trend away from Soviet logs to those from North American.

Table 2 shows the number of sawmills by origin of timber processed. Clearly, the number of mills sawing Soviet logs decreased dramatically from the late 1970's to the early 1980's. The number of sawmills using North American logs also decreased but at a moderate pace with consolidation in the Japanese sawmilling industry accounting for much of the decrease. Also the use of Soviet logs became limited to certain regions. Table 3 shows Soviet wood imports by region. The number of ports receiving Soviet wood shipments decreased rapidly, especially outside the Sea of Japan coast. In 1992, nearly 80% of Soviet wood were shipped to ports on the Sea of Japan, where proximity to Russia allows for relatively low transportation costs. More than 40 % was imported to Toyama prefecture which specialize in processing Russian wood.

Figure 1 Wholesale price of logs



Source: Report on Demand and Supply of Wood, Ministry of Agriculture, Forestry and Fisheries.

Table 2 Number of sawmills classified by origin of log used

	Total number of sawmills using imported logs	Lauan logs	North American logs	Russian log	New Zealand log	Other logs
1971	15514	8080	11135	7614	1703	1951
1972	15782	8592	11504	7555	2243	1848
1973	16378	9058	12077	7735	1960	2441
1974	16383	9058	11931	7793	1545	2384
1975	16356	8853	12097	7578	1047	2158
1976	16228	8718	12220	7814	992	1855
1977	15902	8289	12202	7437	953	1741
1978	15639	8048	12001	7513	991	1725
1979	15180	7472	12150	6970	954	1815
1980	14685	6767	11899	6397	860	1649
1981	13775	6093	11207	5923	684	1514
1982	13104	5438	10781	5566	531	1411
1983	12518	4630	10377	5171	461	1336
1984	11952	4113	10041	4903	435	1260
1985	11220	3475	9573	4333	385	1266
1986	11019	3093	9629	4103	420	1346
1987	10890	2778	9507	4040	364	1372
1988	10782	2555	9525	3784	375	1303

Source: Report on Supply and Demand of Wood, Ministry of Agriculture, Forestry and Fisheries

Table 3 Amount of wood import classified by region

Region	1975		1985		1992	
	amount of wood import from Russia (m3)	number of port imported Russian wood more than 1,000m3	amount of wood import from Russia (m3)	number of port imported Russian wood more than 1,000m3	amout of wood import from Russia (m3)	number of port imported Russian wood more than 1,000m3
Total	7293829	43	5166811	30	3881127	26
Japan Sea Coast	5143226	19	4000913	17	3021346	16
Toyama prefecture (including Japan Sea Coast)	1353521	3	1537353	3	1570786	3
The other part of Japan	2150603	24	1165898	13	859781	10

Source: Association of Wood Importers of Japan

Japanese traders in Soviet wood expected that the system of exporting wood from USSR, and the quantity and quality of Soviet wood would improve with Perestroika. However, this expectation has not yet been realized. Demand for wood in Japan has increased since 1985 with the recovery of the economy. Imports have also increased. However, because of the economic and social confusion in the USSR, imports from USSR have decreased since 1987. For example, Japanese trading companies contracted to import 6.7 million cubic meters in 1988 with Exportles, but Exportles could supply only 4.5 million cubic meters. The decline in supply caused the price of Soviet wood to rise. The relatively high price of Soviet logs, in turn, prompted conversion to North American logs at many sawmills. Wood imports from North America have increased rapidly, and reached 8.6 million cubic meters in 1989.

The negotiations for a 4th KS project ended in stalemate, because the Soviet side wanted to change most of items imported under the project from forest development facilities to machinery for manufacturing furniture. The Japanese negotiators claimed that this altered the fundamental characteristics of the agreement. Ultimately, USSR conceded and increased its imports of forest development equipment and the agreement was almost concluded in 1991. However, because of the problems in Russia, such as import-export taxes and allocation of hard currency to individual companies, the 4th KS project has yet to begin.

Although Japanese-Russian wood trade has indicated negative trends in recent years, there has been some progress as a result of negotiations between Japan and Russia. Russia is also developing a market economy. The accuracy of sclaing of logs has improved and the problem of underrun is now minor. Prices are now negotiated for each of shipment, reflecting market trends in Japan. However, the fundamental problems of Japanese-Russian wood trade have not been resolved. Supply instability and a failure to sort by species and grade continue to present obstacles to increased use of Russian wood in Japan. Wood imports from Russia increased in 1993 but this was due more to limited supplies and sharply rising prices for North American wood than wood than improvement of Japanese-Russian Wood trade conditions.

3. Use of Russian Wood in Construction in Japan

3.1. Use of Russian Wood for Traditional Construction

Before discussing the use of Russian wood for construction, we should briefly mention the structure of traditional Japanese houses. Figure 2 shows a diagram of traditional post and

beam construction housing. Wood components are divided into three categories: structural, non structural, and fixture. Structural components form the framework of the house and can also be divided into two categories: main structural and sub-structural components. Main structural components consist of posts, beams, sill et ceteras. Substructural components consist of studs, floor joist, rafters and other components. Non-structural components serve to fix a wall or ceiling board to structural component. They consists of furring and ceiling strips et ceteras. Fixtures consist of interior and exterior wood.

Table 4 shows the trend of lumber shipments from Japanese sawmills by origin. In this table, construction lumber is divided into three types according to size. Usually, board is used for fixtures, small square is used for non-structural and sub-structural components, and square is used for structural components. The table illustrates that:

(1) Shipments of lumber produced from Soviet logs have continued to decrease. On the other hand, shipping of lumber produced from North American logs peaked in 1992, making up nearly 70 % of the total shipments of lumber produced from imported logs.
(2) Shipments of lumber produced from Soviet logs have become specialized in strips. In 1975, 38 % of Russian logs were sawed into square lumber. However, in the 1980's, shipments of square lumber has decreased rapidly and strip has become dominant. In 1992, strips comprised 65 % of total lumber shipments produced from Russian logs.
(3) Lumber produced from North American logs has maintained a dominant position in every type of construction lumber. Although shipments produced from North American logs has traditionally been largely square lumber, North American has also enlarged its share in the field of board and strip lumber.
(4) Shipments of lumber produced from New Zealand logs are specialized in packaging: shipments of construction lumber are quite limited.

Until the 1970's a considerable percentage of Soviet logs were sawed into squares used for structural components such as floor joists or common rafters. However, these shipments have been largely superseded by North American lumber. There are three reasons for this trend:

(1) High quality, large diameter logs are the preferred type sawed into square lumber for structural components. However, the quality and average diameter of Soviet logs have decreased rapidly since the late 1970's, while logs imported from North America retain relatively good quality.
(2) The Supply of Soviet logs was unstable and prices fluctuated.
(3) Japanese sawmills could not always get the type of logs they desired because of the lack of sorting by species and grades.

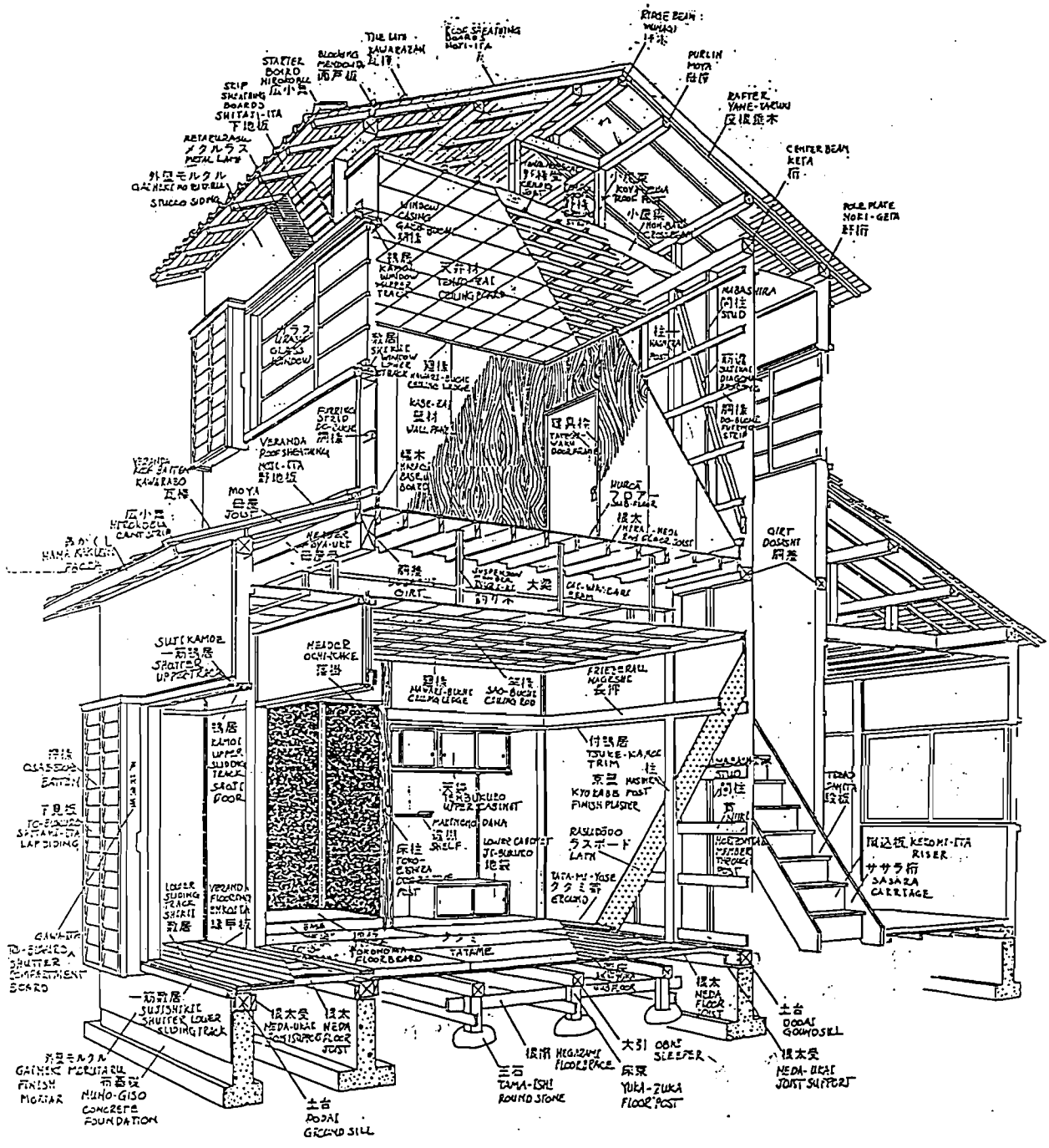


Figure 2. Diagram of traditional post and beam construction housing.

Table 4 Shipping of lumber classified by item and origin of logs

Unit:1,000m3

	Origin of logs	Total	Construction lumber			Civil engineering	Packaging	Furniture	Other
			board	strip	square				
1970	North A	10005	1151	2685	4534	392	442	551	250
	USSR	4781	980	1521	1448	346	311	96	79
1975	NA.	9929	1070	2886	4806	229	323	361	254
	USSR	4879	760	1864	1653	234	251	71	46
	N.Z.	641	67	64	123	41	291	26	29
1980	NA.	11381	1284	3560	5029	289	523	391	305
	USSR	4174	601	1787	1252	207	195	84	48
	N.Z.	970	53	41	81	34	696	22	43
1985	NA.	8969	1032	2860	3579	249	618	380	251
	USSR	3014	375	1405	742	207	187	61	37
	N.Z.	574	19	16	15	22	486	3	13
1990	NA.	12020	1322	4217	4609	388	815	393	276
	USSR	2606	241	1336	599	219	123	50	38
	N.Z	912	18	10	9	50	774	10	41
1992	NA.	11084	1246	4322	4356	379	686	351	244
	USSR	2180	184	1178	476	163	98	47	34
	N.Z	1028	16	38	46	41	832	4	51

Source: Report on Supply and Demand of Timber, Ministry of Agriculture, Forestry and Fisheries

For these reasons, sawmills preferred North American to Soviet logs for square production and Soviet logs thus lost market share.

There is no detailed official data describing production of lumber produced from Russian logs by item. However, the Association of Sawmills using Russian logs sent out questionnaires to member companies in 1992 and received responses from 33 companies. From these questionnaires detailed data concerning lumber produced from Russian logs by item where obtained. The companies surveyed processed one-third of imported Russian logs, and accurately reflect the general conditions of the industry.

Table 5 shows production of lumber from Russian logs by species and item in 1991. From this table, we learn:

(1) 78.4 % of lumber produced from spruce were for ceiling and furring strip, while rail comprised 16.8 %. Spruce was processed in small sectional lumber and was mainly used for non structural components.
(2) Red pine logs were also sawed into small sectional lumber and used for non structural components. However, 7 % of lumber produced from red pine was for fixture and this made a difference from spruce and fir.
(3) Because larch contains a high degree of resin and does not readily rot, it is suitable to use for sills. Thus, square lumber accounts for 41 % of lumber produced from larch; it is primarily used for sill. However, use of larch lumber for sill is limited to the Coast of the Sea of Japan and Nagano prefecture. Many companies pointed out that production has been shifting from square lumber to furring strip due to competition from North American hemlock.

One flaw in the survey was lack of response from sawmills in Hokkaido. The Hokkaido market for Russian wood differs from the rest of Japan. Table 6 shows the shipments of lumber by item in Hokkaido. Clearly, the ratio of square lumber is comparatively high compared with Table 4. Spruce and fir are native species in Hokkaido. They are traditionally processed into structural components for home construction. Soviet spruce has been introduced as a substitute for domestic logs, and sawed into square lumber. This indicates the potential of Russian wood in the Japanese market. However, even in Hokkaido, North American lumber has become dominant in the square lumber market.

Table 5 Production of lumber classified by item produced from Russian logs (1991)

Unit:1000 m3

Species	Total	Ceiling strip	Furring strip	Horizontal member through post	Rail	Fixture	Square	Non structural	Accafolding	other
Spruce	418170	233740	94000	31330	26600	-	-	10110	-	22390
Larch	184080	47480	-	6160	25970	-	75530	6480	7690	14770
Red pine	142630	83600	27750	3600	6010	9930	-	420	-	11320
Total	744880	364820	121750	41090	58580	9930	75530	17010	7690	48480

Source:JAWIC, Inquiries from 33 companies

Table 6 Shipping of lumber classified by item and origin of logs in Hokkaido in 1992

Unit: 1,000 cubic meters

Origin of logs	Total	Construction lumber			Civil engineering	Packaging	Furniture	Other
		board	strip	square				
North A.	461	67	151	173	9	26	25	43
USSR	131	22	41	32	3	3	19	11

Source: Report on Supply and Demand of Timber, Ministry of Agriculture, Forestry and Fisheries

At present, use of Russian lumber in construction is quite limited. Most logs are sawed into small sectional lumber and used for non-structural components, especially ceiling and furring strips. A fairly large number of larch logs is processed into square lumber and used for sills, but the market is limited. North American lumber is also making inroads into this market.

3.2. Competition for Russian Wood

In this section, we will discuss why Russian lumber is preferred for ceiling and furring strip and the Russian lumber producer's competitive position. We will not discuss other products, because their markets are regional or small. Lumber used for ceiling and furring strip should satisfy the following requirements:(1) It must be soft and easy to handle, and (2) easily nailed. Russian lumber, especially spruce, meet these conditions, and it is comparatively inexpensive. Therefore, many housing companies choose Russian lumber for furring. This conclusion is supported by data gathered by the Japanese Wood-products Information and Research Center (JAWIC).

In 1991, JAWIC surveyed 9 housing companies regarding the present status of Russian lumber use. Table 7 presents general information from the survey, including items using Russian lumber and the reason they use it. Most of the housing companies use Russian lumber only for ceiling and furring strips. The reasons that these companies cited for using Russian lumber for ceiling and furring strip are softness and ease of handling, little warping, and low price. Housing companies stated that Russian lumber is superior to lumber processed from other species for use in ceiling and furring strips.

Competitors of Russian lumber in the ceiling and furring strip market are North American spruce, fir and pine, otherwise known as SPF. These woods have similar properties to Russian lumber and are sold at similar prices. Competitors in the structural component market use Douglas-fir and hemlock. However as mentioned above, the use of Russian lumber for structural components has become quite limited. The main competitors for Russian lumber in Japanese market are now SPF lumber.

According to the JAWIC survey, housing companies mentioned SPF as a competitor of Russian lumber. They stated that Russian lumber is more suitable for ceiling and furring strips than North American lumber, but some of the companies also said that the quality of Russian lumber has deteriorated and loosing its quality advantage over SPF.

Table 7 Sample of housing companies using Russian lumber

Company	Location	Housing starts in 1991	Use	Reason given for use
S. Housing	Tokyo	10000	Spruce lumber for ceiling and furring strip	Soft, less warping and torsion than Hemlock, knots are small
K. Construction	Tokyo	3500	Spruce lumber for ceiling and furring strip, and horizontal member through beam	Easy to handle, comparatively low price
C. Housing	Saitama	900	Spruce lumber for ceiling strips	Knots are small, less warping and torsion
G. Construction	Tokyo	200	None	
K. Timber Industry	Aichi Pref.	100	Spruce lumber for ceiling and furring strip	Soft and easy to handle, Comparatively low price
M. Industry	Aichi	50	Spruce lumber for ceiling and furring strip	Commonly distributed
D. Housing	Osaka	1500	Red pine lumber for ceiling and furring strip	Easy to handle, less warping and torsion
K. Housing	Osaka	1300	Larch lumber for ceiling and furring strip	Comparatively low price
A. Construction	Osaka	70	Spruce lumber for ceiling and furring strips	Soft, carpenters are accustomed to use

Source: JAWIC

Table 8 Competing items for Russian lumber - Sample dealers (1991)

Company Name	Trading items of Russian Lumber	Competing items	Trend
K timber, Tokyo branch	Ceiling strips 70%, furring strip 10%	SPF	Since 1990, substitution of SPF has been increasing. At present, SPF acount for 50%: Russian spruce for 50% of the market for furring and ceiling strip
T timber	Ceiling strip 70%	SPF, Domestic spruce	SPF is planed, Domestic spruce is more expensive, higher in quality
G Timber, Tokyo branch	Ceiling strip 60%, furring strip 20%, horizontal member through post 10%, rafter 5%	SPF, Hemlock	Ceiling and furring strip - competitors are SPF, SPF 20: Russian spruce 80 Rafter - competitor is hemlock, Hemlock 80: Russian spruce 20
U Timber	Rail 70%	SPF	Import of rough sawn SPF has been increasing, SPF comprises 20 % of furring and ceiling strip
I Trading	Ceiling and furring strip	SPF	
TA Timber	Ceiling strips 55%, furring strip 40%, horizontal member through post 5%	SPF	Russian lumber is preferred because of the low price. Price increasing have reduced this advantage.
M Timber	Ceiling strip 90%, furring strip 10%	SPF	

Source: JAWIC

JAWIC also carried out research for dealers of Russian lumber in 1991. According to this research, dealers also mentioned SPF as a competitor of Russian lumber (Table 8). They stated that they formerly dealt to a large extent with Russian lumber for common rafters, but recently they have been switching from Russian lumber to North American hemlock, because of its higher quality. Dealers also cited supply stability and uniform quality as reasons for using North American lumber. Significantly, dealers have begun to switch to SPF from Russian lumber for use in ceiling and furring strip. There are several reasons for this:

(1) Beginning in the late 1980's, the price of Russian lumber rose, exceeding that of SPF,
(2) Quality of Russian lumber deteriorated, due to the decreasing average diameter of imported Russian logs,
(3) Producers of North American SPF lumber provide better service. SPF lumber is artificially dried and planed, and comes in many grades.

The ceiling and furring strip market is being encroached upon by North American SPF. Moreover, in 1993, Japan began importing Scandinavian wood. Scandinavian imports are not expected to increase rapidly. However, these products represent a potentially strong competitor to Russian wood.

Nevertheless, opportunities remain for Russian lumber producers to increase their market share. For example, in 1993, sharp price increases in North American wood encouraged many sawmills to switch to Russian logs. As North America restricts imports of wood because of environmental worries, Japanese lumber producers expect to increase imports from Russia. In the next section we discuss the future Russian wood products in construction lumber in the Japanese market.

3.3. Future Use of Russian Wood

First, we outline measures necessary to sustain the Russian share of the ceiling and furring strip lumber market. Because Russian lumber is highly regarded, survival in this market is critical for the Russian lumber industry. To survive competition from SPF, the following steps are needed:

(1) Quality control: Dealers complain that the quality of Russian lumber varies even within a single shipment and that quality has been declining. Quality control is needed to produce products of a more uniform standard. Artificial drying and planing is also needed so that Russian lumber can compete with SPF.

(2) Supply stability: Because the supply of Russian lumber has been fluctuating, lumber producers have been unable to meet consumers demand in a timely fashion, especially for large orders. Fluctuation in the price of Russian wood have been greater than that of other imports. Therefore, stable supplies and quick response to market demand is essential to insure competitiveness.

Before discussing the future use of Russian Wood in the Japanese lumber market, we need to examine trends in the Japanese housing market. Table 9 shows the trend in construction of wooden houses by type. Although prefabricated and so-called 2x4 houses currently make up a small share of the total market, their number is increasing. Fewer skilled carpenters will be available in the future and Japanese traditional house construction will be limited by the lack of these carpenters. Consumers are seeking for lower costs. As a result, demand for prefabricated and 2x4 homes will continue to rise.

Table 9 Housing starts classified by type of construction

unit: 1,000

	Total Housing starts	Wooden housing starts		
		total	prefabricated	2x4
1984	1207	600	17	20
1985	1251	590	19	24
1986	1400	649	21	32
1987	1729	755	28	40
1988	1663	691	30	42
1989	1673	722	32	48
1990	1665	707	35	51
1991	1343	629	33	45
1992	1420	674	37	53

Source: Forest Agency

Table 10 Amount of lumber used for each of components of traditional housing

Unit: 10^{-3} m^3/m^2

Year	Total	Including		
		structural	non structural	fixtures
1977	185	123	26	36
1985	179	129	17	34

Source: JAWIC

Components of prefabricated homes are produced in large quantities. Thus lumber for these components must be available in large quantities of uniform quality, precisely measured. Ceiling and furring strips are no exception. North American lumber is presently the only lumber that satisfies these conditions. It dominates in the market. Russian lumber will have to satisfy the above requirements if it is to compete effectively with North American products.

Table 10 presents the amount of lumber used for each component of traditional housing. Clearly, the amount of lumber that is used for non-structural components has decreased. This trend continues because of the rationalization of the construction industry. Therefore, unless new markets are developed, Russian lumber use will continue to fall, even if producers succeed in defending the ceiling and furring market. Thus, Russian lumber must also create new markets for products.

Potential use of Russian lumber in home construction and its competition is shown in Table 11.

(1) *Spruce lumber*: To recapture the common rafter market may prove relatively easy. It is also possible to increase market share in other sub-structural components such as floor joists, studs, horizontal member through post. Competitors in this market are hemlock, Douglas-fir, and domestic cedar. As mentioned before, Russian spruce is used for structural components in Hokkaido, but builders in other parts of Japan are reluctant to use Russian lumber for structural components. If lumber producers can overcome this resistance, Russian lumber will have a new market. However, this market is dominated by North American lumber. In addition, a growing Japanese plantation forestry is also seeking this market. Increasing competition in this market will become the rule.

2) *Larch lumber*: Larch lumber is suited for sills, but use of larch lumber is limited to certain regions. The use of Russian lumber could be expanded. Competition in this market are hemlock, domestic cypress and cedar.

3) *Red pine lumber*: It is relatively simple to expand the use of Russian red pine for substructural components and fixtures. Domestic red pine is commonly used for beams, so it would also be possible to use Russian red pine. Competitors in this market are hemlock, domestic pine and cedar.

The major barrier to increased use of Russian wood is the idea that it is suitable only for strips. Thus consumers resistance must be overcome if Russian wood products are to reach their potential in the Japanese market.

Table 11 Use and Competitors of Russian Wood

Components		Amount of use m3/m2	Competitor	Spruce	Larch	Led pine
Structural	Ground Sill	0.0085	Hemlock Domestic Cypress Domestic Ceder		B	
	Floor Joist	0.0036	Hemlock Douglas Fir Domestic Ceder	C		
	Post	0.022	Hemlock Domestic Ceder Domestic Cypress	C		
	Stud	0.0086	Douglus Fir Hemlock Domestic ceder	B		
	Rafter	0.0089	Hemlock Douglas Fir Domestic Ceder	B		B
	Horizontal Member Through Post	0.0046	Hemlock Douglas Fir Domestic ceder Pine	B	C	C
	Diagonal bracing	0.0039	Douglas Fir Domestic ceder	B		C
	Beam	0.03	Hemlock Pine Domestic Ceder			C
Non Structural	Ceiling Strip	0.0051	SPF Hemlock Domestic Ceder	A	B	A
	Furring Strip	0.0063	SPF Hemlock Domestic Ceder	A	B	A
	Veranda Roof Sheathing	0.0024	Domestic Ceder	B		
	Skip Seathing Board	0.0118	Domestic Ceder	B		
Fixture			Domestic Ceder Hemlock Tropical	C		B

Note: A - Current use, B - Current use but minor, C - Potential

4. Use of Russian Wood for Plywood

4.1. Trends in the Supply and Demand of Plywood

In Japan, plywood predominates wood panel production. Production of fiberboard and particle board has remained low.

Table 12 shows the trend of plywood production and imports. Domestic production of plywood has decreased, while imports have risen. Indonesia has been the main plywood exporter to the Japanese market. The reason for this change is restrictions on log exports from Southeast Asian countries due to the deterioration of forests and changing forest policy in those countries. Forest resources of Southeast Asian countries have been depleted by overcutting. Many of these countries have prohibited or restricted the export of logs. For example, log exports have been prohibited in the Philippines since 1986, and in the Malaysian state of Sabah since 1993. Indonesia banned the exportation of logs in 1986, and has since promoted domestic production and export of plywood.

The Japanese plywood industry has traditionally used tropical logs because high quality tropical logs (mainly lauan) were easily obtainable. These Southeast Asian logs are large in diameter and have no knots. Consumers also prefer plywood produced from tropical logs over softwood because of its high quality. Nearly 50 % of plywood is used as a forming material for concrete structures (Table 13), and plywood produced from tropical wood is especially sought after in this market because it is free of knots and rings. If there are knots or rings on the surface of forming material used in the construction of concrete structures, they will be imprinted on the surface of the concrete. Construction companies, who demand high quality for their clients, are unwilling to use plywood produced from softwood.

However, the situation has been changing. As previously mentioned, the imports of logs from Southeast Asia has decreased and will continue to decrease. Moreover, Japan has been accused as the largest consumer of tropical wood. Therefore, the Japanese plywood industry has been attempting to substitute softwood for tropical logs in the production of plywood.

Table 12 Production and volume of pulpwood imports

Unit:1,000m2

Year	Domestic production	Total import	Import from Indonesia	Total supply
1988	1128934	262317	254992	1391251
1989	1042075	459083	450748	1501158
1990	997693	411964	402347	1400040
1991	960209	442876	429249	1403173
1992	879725	437608	419339	1317333

Source: Trends of Supply and Demand of Wood and Forest Industry of Japan, Forest Agency

Table 13 Use of plywood

unit:%

Construction (mainly used as a material for concrete structure)	Civil engineering	Furniture	Fittings	Decoration	Other
53.0	1.8	25.8	6.5	1.8	11.1

Source: Report on Supply and Demand of Timber, Ministry of Agriculture, Forestry and Fisheries

4.2. Use of Russian Logs for Plywood Production

Use of Russian logs in the Japanese plywood industry began in 1984, when Hayashi Plywood Industry Co. introduced machinery specialized in processing Russian larch. Since then, Japanese plywood industry has begun to increase its use of Russian and other softwood. There are some technical problems for using softwood in plywood production, for example, it has a smaller diameter than tropical logs, the large number of knots, resin contamination, and so on. However, these problems are being gradually resolved.

There is no official data that describes the use of Russian and other softwood in plywood production, but the Union of Plywood Industries estimates that 6 % of domestic plywood was produced from imported softwood in 1993, and will increase to 9 % in 1994 (Table 14).

The All Japan Russian Log Dealers Association also investigated the use of Russian logs in the plywood industry in 1993. The association sent questionnaires to the Union of Plywood Industries and received responses from one third of member companies. Tables 15 and 16 show the results of the questionnaires. From these tables, we see:

Table 14 Estimate of the amount of logs used in plywood production classified by species

Unit: 1,000m2

Origin	Species	1993		1994	
		amount of logs used	production	amount of logs used	production
Import	Non-conif.	7120	4400	6600	4090
	Coniferous	600	300	880	440
Domestic	Non-conif.	250	125	240	120
	Coniferous	20	10	20	10
Total		7990	4835	7740	4660

Source: Union of Plywood Industries

Table 15 Use of Russian logs in plywood production

unit: 1,000m3

Year	Total	Tropical logs	Softwood	Russian logs			
				sub total	larch	spruce	red pine
1992	4065	3793.4	272.4	155.8	139.8	9.0	7.0
1993*	3816	3405.9	410.2	228.3	207.8	10.5	10.0
1994*	3756	3204.0	552.5	304.9	284.4	10.0	10.0

Note: * estimated
Source: All Japan Russian Logs Dealing Association, inquiries from 39 companies

Table 16 Use of Russian logs in plywood production classified by region (1992)

unit:1,000m3

Region	Total	Tropical	Softwood	Russian Log			
				sub total	larch	spruce	red pine
Hokkaido	132	132	2	-	-	-	-
Tohoku	1013	927	85	19	-	-	-
Tokyo	465	441	24	-	-	-	-
Tokai	814	814	14	3	3	-	-
Japan Sea coast	935	787	148	133	117	9	7
Chugoku & Kyushu	690	690	0	-	-	-	-

Source: All Japan Russian Dealers Association, inquiries for 39 companies

(1) In 1992, nearly 7 % of materials used for plywood production were softwood, and more than half of that softwood was Russian larch. If we include spruce and red pine, Russian softwood comprises nearly 60% of total softwood used.
(2) The Use of softwood for plywood production will continue to increase, but the percentage Russian softwood will slightly decrease. However, in 1994 it is estimated that Russian larch will still comprise more than 50% of the softwood.
(3) Use of Russian softwood is limited to the Japan Sea coast.

At the moment, Russian softwood is the dominant softwood used in Japanese domestic plywood production, but the use of Russian wood is limited to the Japan Sea Coast because it is not well-sorted by species and grade. Plywood factories located far from ports handling Russian wood find it unfeasible to use logs suitable only for plywood.

4.3. Competitors and the Future Use of Russian Wood

Although Russian wood, especially larch, has been widely used for plywood production, competition with other softwoods is intensifying. At present, Douglas-fir and radiata pine are also used for plywood production. Table 17 presents the result of performance tests of plywood produced from softwood. Larch showed the highest strength, but Douglas-fir and radiata pine also performed well. Table 18 shows the results of a questionnaire for wholesalers of plywood, concerning their preferences in plywood produced from softwood. According to these inquiries, Douglas-fir, radiata pine and Russian larch were roughly equally preferred. suggesting that competing productsto Russian larch are radiata pine and Douglas-fir.

Before discussing future use of Russian wood for plywood production, we will examine the trend in demand for softwood plywood. Production of softwood plywood has been increasing but the consumers are reluctant to use it at present. As mentioned in Section 4.1, consumers are accustomed to high quality plywood produced from tropical logs, and do not wish to switch to plywood produced from softwood. Consumers' preference for hardwood plywood is especially strong in the market of forming materials for concrete structures. For example, in the first quarter of 1994, plywood produced from softwood constituted 65.5% of total plywood production for structural materials in home construction, but only 18.7% in the field of forming materials of construction concrete structure in Eastern Japan. Consumers maintain that improvements are needed for processing softwood for plywood. On the other hand, some local governments and large housing companies have begun to substitute plywood produced from softwood for plywood produced from tropical logs to show the importance they attach to environmental conservation.

Table 17 Result of performance tests of plywood

Species of log processed	weight(kg)	Modulus of rupture (kgf/cm2)	Modulus of elasticity (tf/cm2)	Bonding strength (kgf/cm2)
Lauan	9.8	552	75	33
Douglas fir	10.3	398	73	24
Russian larch	12.9	705	104	51
Radiata pine	-	529	70	39

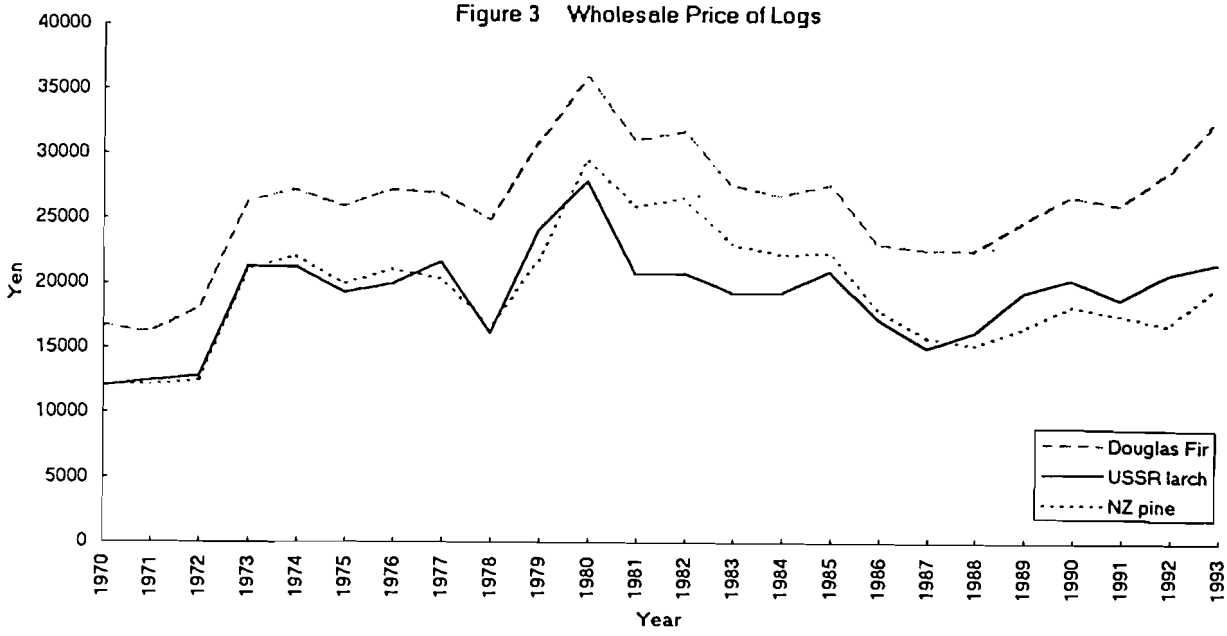
Source: Association of Plywood Industries in Tokyo

Table 18 Wholesaler's Preferences in species used in plywood production

Species	Douglas fir	Hemlock	Radiata Pine	Russian Larch	Domestic Larch	No preference	Total
Number of companies	18	2	23	19	6	8	76

Source: All Japan Russian Logs Dealing Association, Inquiries from 253 companies

Figure 3 Wholesale Price of Logs



Source: Report on Demand and Supply of Wood, Ministry of Agriculture, Forestry and Fisheries.

Import of tropical logs from Southeast Asian countries will continue to decrease, and import duties for plywood will fall 50 % in 5 years. The domestic plywood industry must increase its use of softwood and compete with imported plywood in order to survive. Companies must better inform consumers about plywood produced from softwood and improve production technology.

There are several advantages and disadvantages of using Russian wood for plywood. The advantages include abundant resources, the quality of larch and comparatively low cost (Figure 3), while price instability, small log diameter and regional limitation of imports are the primary drawbacks.

Some of these problems such as that of log diameter can be solved by technical advances by Japanese industry. However, problems in supply will have to be resolved by Russian producers. In the next section we will discuss strategy for penetration of the Japanese market by Russian producers.

5. Strategy for Penetration of the Japanese Market by Russian Producers

We have identified 5 major problem areas, which have to be further penetrated.

Problem 1. Degradation of wood quality

The main cause of the decline of Russian lumber is lower quality of logs. However, with more careful sorting of logs by grade and species in Russia, it will be possible to improve the quality of lumber produced from Russian logs. At present, logs are not well sorted in Russia. Russian logs are sorted in Japanese landing yards, but there are limitations to these facilities and often sawmills can not obtain the desired logs. Russian exporters are currently unwilling to accept the requirements of Japanese consumers. Under these conditions, it is very difficult for Japanese sawmills to ensure the quality of lumber produced from Russian logs. Consumers also complain that lumber produced from Russian logs is not homogeneous, and home builders requiring large amounts of homogeneous lumber are unwilling to use Russian lumber. If sawmills are able to obtain the specific species and grades of logs they required, quality control will become easier and the quality of products will improve.

Russian producers must sort logs according to the needs of Japanese importers and consumers. Sorting requires time, facilities and labor, but if Russian exporters sort well, they can obtain higher prices and enlarge their market share. Inspection by the Japanese importers will insure adequate sorting and grading.

Recommendations:

1. Sort logs by species and grades in Russia; Improve Russian port facilities.
2. Introduce inspection by Japanese traders in Russia.

Problem 2. Regional use limitation

Because Russian logs are not well sorted, traders and dealers must sort logs on the landing place and distribute products to many users. It is difficult to import Russian logs in areas where such a system does not exist. For example, if a plywood plant located far from a port importing Russian logs wished to use them, the plywood plant would have to cover the cost of transportation, making the product too expensive. If a plywood plant imports logs from Russia, it must sell logs which are unsuitable for plywood; this is a difficult task where no distribution system for Russian wood is in place. If Russian logs are well sorted, the market for Russian wood will expand.

Recommendations:

1. Sort logs by species and grade in Russia.
2. Unload logs at more than 2 ports, per delivery to meet small demand in various regions.

Problem 3. Supply instability and inflexible response to market trends

Unstable supplies and inflexible responses to market trends has caused the price of Russian wood to fluctuate. Unstable supplies and price fluctuation have prompted sawmills to substitute Russian logs by North American logs. The pricing system between Japan and Russia has improved, and price is determined for each of shiploads. However, without a stable supply and quick responses to market trends, the price of Russian wood will continue to fluctuate. Moreover, as the Japanese housing market becomes dominated by large companies, large supply of homogeneous lumber is needed.

Transportation infrastructure should be improved, but this requires significant investments of capital and will take time. Improvement of port facilities, will bring quicker results. Japanese trading companies also want improvement of ports in order to improve loading and sorting. These companies are a potential source of capital for these investments.

Communications between exporters and logging companies are also necessary. Exporters should collect market information in Japan and distribute it to the logging companies.

Recommendations:

1. Improve transportation and loading facilities in Russia
2. Improve the communication system in Russia, in order to provide market information for logging companies.

Problem 4. Unreliability of Russian exporters

Japanese traders often complain that Russian exporters do not fulfill their agreements. However, if the recommendations for problem 1 to 3 are implemented, this problem will also be resolved.

Recommendation:

1. Implement recommendations for problem 1 to 3.

Problem 5. Japanese consumers resist change

Use of Russian wood in Japanese market is currently quite limited. Many consumers think Russian wood is poor in quality and cannot be used for the structural component in housing. Japanese consumers are also accustomed to plywood produced from high quality tropical logs and are unwilling to switch to plywood produced from Russian logs. Russian producers should research the market and better publicize their products. Given the current situation, producers should know more about wood market in Japan and Japanese consumer

preferences. They must develop the ability to meet these preferences. Canadian producers responded to this challenge in the 1970's and established a marketing office in Tokyo. Russian producers should undertake similar measures.

To date, Japanese traders have been dissatisfied with the quality of logs and the export system in Russia. Cooperation with Russian producers has therefore been hampered. Cooperation with Japanese traders, dealers and forest industries is important, because they best understand the Japanese wood market, and since Japanese business is largely dependent on personal relationships. Russian producers should actively seek these links.

Japanese consumers have preconceptions about the quality of Russian lumber and forest products, assuming them to be poor. However, many Russian-Japanese joint sawmills have been established in Russia recently, and they have begun to export high quality lumber to Japan. Exporting more value-added products will help develop the Russian economy. These joint ventures are a valuable resources in terms of improving Russian manufacturing techniques over the long term.

Recommendations:

1. Establish a Russian marketing office in Japan to promote use of Russian wood. Hold exhibitions showing how Russian wood can be used for a variety of products.
2. Cooperate with Japanese traders, dealers and forest industries to increase the market share in Japan.

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