CINTRAFOR

Working Paper 81

Survey of International Opportunities for Alaska Softwood Producers

Ivan Eastin
Rosemarie Braden

September 2001

CENTER FOR INTERNATIONAL TRADE IN FOREST PRODUCTS
UNIVERSITY OF WASHINGTON
COLLEGE OF FOREST RESOURCES
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Prepared for the Alaska Department of Community and Economic Development through its membership in the Softwood Export Council and in cooperation with the USDA Foreign Agricultural Service, Market Access program.

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EXECUTIVE SUMMARY

The export segment of Alaska's forest products industry is characterized by its supply of high-quality Sitka spruce, western hemlock, western red cedar, and Alaska (yellow) cedar, all highly valued in domestic and export markets. The industry, however, is also characterized by its limited in-state and out-of-state transportation infrastructure, low economies of scale at most processing facilities, and harvest regulations that threaten the consistent supply of timber.

Alaska firms have clearly been dependent upon exporting primary wood products, deriving over $660 million in revenue in 1993, the industry's peak. However, by 1998 export revenue had dropped below $200 million. This sharp decline is due to a variety of factors including the Asian economic crisis, declining international timber prices, lower cost competitors, changes in forest harvest regulations that led to a decline in Alaska's timber harvest, rising domestic processing costs, and expensive and time consuming shipping logistics to export markets.

Alaska producers must confront several challenges in order to survive and expand their role as a competitor in the international timber market. An important aspect of succeeding in an increasingly competitive market is product differentiation. Alaska suppliers must identify what products are in high demand in which markets and effectively match their production capabilities with specific product/market opportunities. This report describes some market opportunities for Alaska wood products and evaluates the ability of Alaska firms to compete in these product markets. The markets examined were: 1) Japan, 2) Korea, 3) China, and 4) Western Europe.

JAPANESE MARKET

Market opportunities exist for Alaska producers in supplying both structural and non-structural wood products into Japan. The Japanese market is experiencing a period of transition due to regulatory changes and new construction technologies. With regard to structural lumber, the Japanese market is transitioning from a green lumber market towards kiln-dried lumber. Taking advantage of this transition will require a substantial investment in kiln drying facilities on the part of Alaska sawmill operators. In particular, Alaska producers should be able to take advantage of the preference for Sitka spruce in Hokkaido to supply kiln dried dimension lumber for the 2x4 market and kiln dried baby squares for the post and beam market (90mm, 105mm, 120mm, 130mm, and 150mm squares). Two other products that should be of interest to Alaska sawmillers are non-structural studs (mabashira) and sill plates (dodai) for post and beam homes. The precut industry provides an opportunity for Alaska sawmillers to export kiln dried lamstock to precut component manufacturers.

Perhaps the greatest market opportunity for Alaska softwood lumber exists in the market for non-structural lumber products. Japanese shoji manufacturers have a long history of utilizing Alaska Sitka spruce, western red cedar, and Alaska (yellow) cedar in the manufacture of a wide variety of products. Clearly there is already a strong market for logs and waney cants in the shoji industry. However, the opportunity exists to supply both green and kiln dried lumber to shoji manufacturers. Shoji manufacturers have already shifted towards using white spruce in their products, and they indicated that price is an important consideration.

KOREAN MARKET

The market for Sitka spruce logs and lumber is the most promising market for Alaska suppliers in Korea. Korea imports more Sitka spruce lumber from the US than any other softwood species. Exports have been variable during the past eight years that export data are available, and exports plummeted in 1998 as the Asian recession slowed production and consumption in Korea. However, 1999 statistics show that Sitka spruce lumber export volume has doubled since 1998. Since other species cannot rival the suitability of Sitka spruce as a superior wood for musical instruments, and Alaska has the largest supply of Sitka spruce in the world, Alaska suppliers have a comparative advantage in the Korean wooden musical industry.

Korea also has a growing market for dimension lumber for 2x4 construction, although this market is still small and faces several obstacles related to 2x4 technology transfer and building codes, which currently limit the widespread adoption of 2x4 housing. Rather than focus on Korea for higher processed wood products, such as lumber, it may be more appropriate for Alaska producers to focus on maintaining their share of the Korean market for pulp logs and Sitka spruce logs or non-commodity specialty wood products, such as wood for musical instrument manufacturing. Since the price for premium Sitka spruce is higher than the price for dimension lumber or wood that is used in plywood manufacturing, the musical instrument makes more sense for Alaska firms.

WESTERN EUROPEAN MARKET FOR NATURALLY DECAY RESISTANT ALASKA SPECIES

While there are markets in the EU for naturally decay resistant wood products, Alaska species such as western red cedar and Alaska (yellow) cedar face five basic obstacles: 1) the niche markets where they could be used are very small, 2) The end-uses for these species are dominated by lower cost domestic species, 3) in high-end niche markets where Alaska species could be used, tropical species dominate, 4) the cost of transporting products from the Western US to Europe is high 5) the US dollar has been strong and exchange rates have fluctuated, making prices for US products less competitive and stable compared to European wood products. The markets where naturally decay resistant species could be used include the decking market in the UK and the siding market in Denmark, which utilize western red cedar and lesser amounts of Alaska (yellow) cedar. However, Alaska species encounter formidable competition from lower cost European redwood and European whitewood and tropical hardwoods. The UK decking market is dominated by lower priced domestic redwood and whitewood, and tropical wood dominates the high-end decking market.

Another promising market for western red cedar products may be the US Pacific Northwest where red cedar is used for exterior decking and siding. Current estimates indicate that over 6.5 million decks are constructed on U.S residential structures on an annual basis at a cost of $1.9 to $3 billion. Slightly over 47.4 of new home decks were found to be constructed with pressure treated lumber, followed by western red cedar, concrete, and redwood representing 18.5, 14.1, and 11.1 percent of the market, respectively (Shook and Eastin 2000). Increasingly strict harvest regulations about allowable harvest areas in the US PNW coupled with the increasing demand for western red cedar decking and siding may present an opportunity for Alaska suppliers. Harvest volumes in British Columbia are also declining. Finally, the logistics of servicing a regional as opposed to international market are numerous. Regional markets are easier to access because there are no differences in language or consumer preferences, and they are closer, making shipping, establishing contracts, and providing after sales service easier. The PNW market is particularly suited to Alaska western red cedar producers because products often go through Seattle en-route to international destinations and therefore the distribution channels have already been established.

TABLE OF CONTENTS

LIST OF TABLES

Page

LIST OF FIGURES

LIST OF PHOTOS

INTRODUCTION

Approximately 100 commercial sawmills and secondary-manufacturing firms operate in the State of Alaska. Most of these mills produce primary wood products including cants, flitches, dimension lumber, shop lumber, railway ties, shakes and shingles, components for musical instruments, and a variety of specialty products. A limited number of firms produce secondary wood products such as millwork, furniture, and prefabricated buildings. To some degree, Alaska firms have differentiated themselves from other producers by manufacturing products from high-quality old growth western hemlock, Sitka spruce, Alaska (yellow) cedar, and western red cedar (Alaska Division of Trade and Development 1999).

While Alaska producers appear to be able to command a high price for high quality logs, several factors have severely limited the competitiveness of Alaska's timber industry. First, Southeast Alaska's only pulp mills closed in 1993 and 1997. Second, there are several factors related to Alaska's infrastructure and unique location, including higher costs for transporting goods out of the state and higher manufacturing costs due to low economy of scale. Third, the Tongass Land Use Management Plan (TLMP), adopted in 1997 and revised with further reductions in April 1999, significantly limited harvest volumes in federal forests. Finally, the Asian economic crisis caused a substantial decline in the demand for forest products in Asian countries, previously Alaska's primary export market (Alaska Division of Trade and Development 1999).

Alaska firms have clearly been dependent upon exporting primary wood products, deriving over $660 million in revenue in 1993, the industry's peak. However, by 1998, export revenue had dropped below $200 million. This sharp decline is due to a variety of factors including the Asian economic crisis, declining international timber prices, lower cost competitors, changes in forest harvest regulations that led to a decline in Alaska's timber harvest, rising domestic processing costs, and expensive and time consuming shipping to export markets.

Alaska producers must confront several challenges in order to survive and expand their role as a competitor in the international timber market. The first challenge involves establishing a consistent raw material supply. The second challenge lies in the ability of Alaska producers to remain competitive with other low cost producers in supplying Pacific Rim markets. Logistical issues such as a limited infrastructure to transport raw materials within the state and to foreign markets, inadequate economies of scale, and high production costs, have an adverse impact on the competitiveness of Alaska's forest products exports. This report will analyze the competitive issues confronting Alaska's forest products industry, analyze specific market segments that may be of interest to the forest products industry, and evaluate Alaska's competitive position in these markets.

THE ALASKA FOREST RESOURCE

ALASKA'S COMMERCIAL SPECIES

There are two distinct forest types in Alaska: coastal and interior. The interior forest covers 115 million and is comprised of 61% softwood and 39% hardwood species (Table 1). Alaska's interior forests contain approximately 23% of Alaska's total timber inventory, 34 billion board feet of which is hardwood species, mainly brush alder, birch, aspen, and cottonwood. Greater volumes of white spruce logs were harvested from the interior forests during the 1980s and 1990s when demand and prices were high. However, since overall demand for timber in Asia has waned following the 1997 economic crisis, demand for white spruce from the interior forests also declined. Overall, since the interior forest resource is dispersed over a large area, it is less important as a commercial timber resource than the forest area in Southeast Alaska. The coastal forest, located primarily in Southeast Alaska, covers just 14 million acres but contains 77% of Alaska's timber inventory, making it the dominant source of supply for the state's timber industry. This area has been the primary source of timber for Alaska's forest industry, including solid wood and the state's now defunct pulp mills. The coastal forest is predominately comprised of softwood species (99%), with minor amounts of hardwoods.

Sitka spruce (*Picea sitchensis*) and western hemlock (*Tsuga heterophylla)* are the dominant timber species in Alaska, representing 26% and 34% of the statewide timber inventory, respectively. Western red cedar (*Thuja plicata*) and yellow cedar (*Chamaecyparis nootkatensis)* have high market values but low stumpage volumes (1% of total inventory), preventing them from being major commercial species.

Table 1. Alaska's Forest Inventory by Region and Forest Type.

	Softwood (MMBF)	Softwood Percentage	Hardwood (MMBF)	Hardwood Percentage	Regional Total	Regional Percentage
Coastal Region	287,422	99%	3,580	1%	291,002	77%
Interior Region	53,344	61%	34,048	39%	87,392	23%
Total (AK)	**340,766**	**90%**	**37,628**	**10%**	**378,394**	**100%**

Source: Van Hees 1999.

Alaska is the world's leading supplier of Sitka spruce lumber, exporting 215 million board feet annually (Warren 1997). However, British Columbia (BC) and the US Pacific Northwest (PNW) are also within the growing range of most Alaska specie. This places Alaska forest products in direct competition with BC and the PNW in commodity markets.

FOREST OWNERSHIP PATTERNS IN ALASKA

Forest ownership in Alaska can be divided into four categories: federal, state owned forests (including boroughs and municipalities), state owned lands for "general-use" or forestry, and private (including native corporations). Approximately 77 million acres are federally owned, 22 million acres are owned by the state, and 30 million acres are privately owned. A variety of factors, however (including set-asides, harvest regulations, and poor accessibility), severely limit the forest area that is designated as commercial. There have also been significant reductions in available timber harvest volume due to the declining quality of the standing timber, stand density as well as issues related to accessibility and politics. Out of 77 million acres of federal forests, just 576,000 acres are available for commercial activities. Similarly, in Southeast Alaska just 66,800 acres and 522,090 acres of state and private forests, respectively, are regarded as commercial forests.

The various forest ownerships are subject to different harvest restrictions, which influences timber use and the resulting mix of wood products. Although the Alaska Division of Forestry cannot outright ban the export of logs from state owned forests, it is the policy of the administration to focus on sales for Alaska mills (Johnson 2000). Federal timber harvest regulations restrict the export of logs harvested from federal forests. Private forest owners, who are exempt from this restriction, concentrate on exporting high value logs. As a result, the wood used by secondary processors is largely limited to timber harvested from state and federal forests.

Federal Timberland

The Tongass National Forest (Tongass), located in Southeast Alaska, contains 46% of the state's timberland, and represents the largest single forest ownership in the state. The Tongass consists of 16.9 million acres, of which 676,000 acres (4% of the land) have been made available for commercial harvest. The Tongass has been a major supplier of timber to local sawmills and, as a result, the forest products industry in Alaska is primarily concentrated in Southeast Alaska.

Recent changes to the Tongass Land Management Plan (TLMP) have severely reduced the volume of timber available for harvest. Four regulatory changes threaten to severely reduce the availability and access to the forest resource. First, one of the most important changes to the plan was a change enacted in 1999 to remove 100,000 acres from the harvestable timber base, reducing it to 576,000 acres. Second, the allowable harvest rotation age was doubled to 200 years, making it harder to develop an industry based on second growth timber. Third, open road density in the forest was reduced from 1 mile to 0.7 miles per square mile of forested land, compounding access issues already inherent in the forest. Finally, average allowable sale quantity (ASQ) was cut from 267 million board feet to 187 million board feet, placing an overall limit on the annual production of the forest (Golnick 1999).

The species mixture on the Tongass includes 51% #2 and better grade Sitka spruce, hemlock, and western red cedar, 42% # 3 and utility grade, and 2% cedar (Figure 1). The loss of the pulp mills means that the low-grade material must find another outlet. Utilizing or disposing of this timber efficiently will be important to the future competitiveness of the industry (Morse 1998). The second largest federally owned forest is the Chugach National Forest on the Kenai Peninsula, which encompasses Prince William Sound and much of the surrounding area. Although it is the second largest National Forest with 5.3 million acres, it supplied just 0.3% of Alaska's total harvest in 1997.

State Timberland

The State of Alaska has 24.9 million acres of forestland. Of this total, 4.3 million acres are considered commercial forests and are capable of growing 20 cubic feet per acre per year. These figures include both state public domain land, which is available for multiple-use including forest management, and designated state forestlands. The two designated state forests contain just over 2 million acres of the state's forested lands. The 247,000-acre Haines State Forest, established by the legislature in 1982, covers the Chilkoot, Chilkat, and Ferebee drainages in the northern portion of Southeast Alaska. The 1.8 million acre Tanana Valley State Forest that stretches from Manley to Tok in Interior Alaska was created one year later (DCED 2000).

Approximately 2% of state forests in the Haines State Forest and the Tanana Valley State Forest are considered harvestable (Alaska DNR 1998). Within these two forests 66,800 acres are considered suitable for commercial harvesting (Alaska Department of Forestry 1995; The Southeast Regional Timber Industry Task Force 1997). The inventory of standing timber in state forests (Haines and Tanana Valley) is approximately 3.4 billion board feet, and approximately 57 million board feet is available annually for harvest. State forests, which are under multiple use management plans, must allow timber harvest for commercial and private use. Timber harvests over the past five years have totaled 11 million board feet in the Haines State Forest and 35 million board feet in the Tanana State Forest (Phelps 1997). These harvest figures are governed by constitutional sustained yield considerations, the state public land planning process, and budgetary concerns. Some relatively large salvage sales in the past few years have temporarily elevated annual sale totals. Sales are offered to prospective buyers by competitive bid, negotiated contract and personal use. With its extensive use of negotiated sales, the sale program emphasizes sales for local, value-added wood processing and most timber from state land is processed in state (DCED 2000).

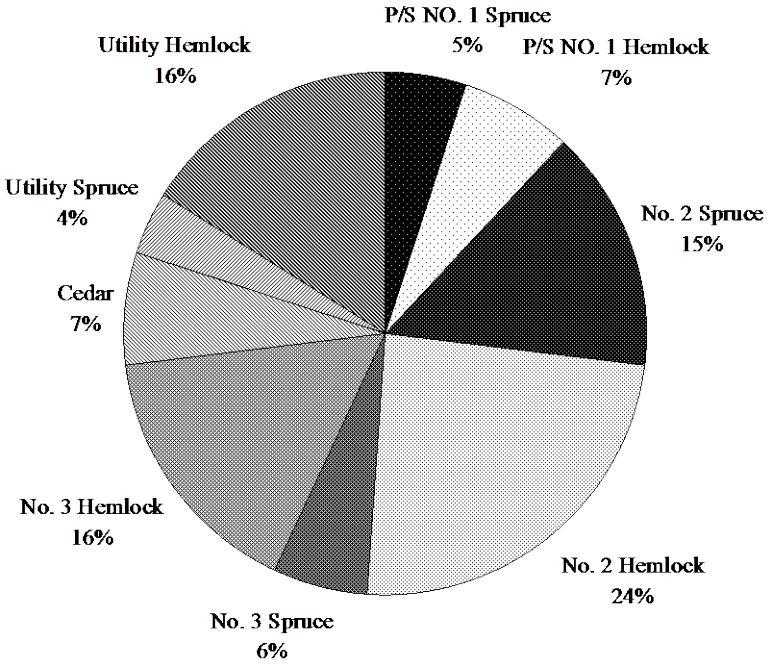

Figure 1. Inventory Results of the Log Grades in the Tongass National Forest
Source: The Southeast Regional Timber Industry Task Force 1997.

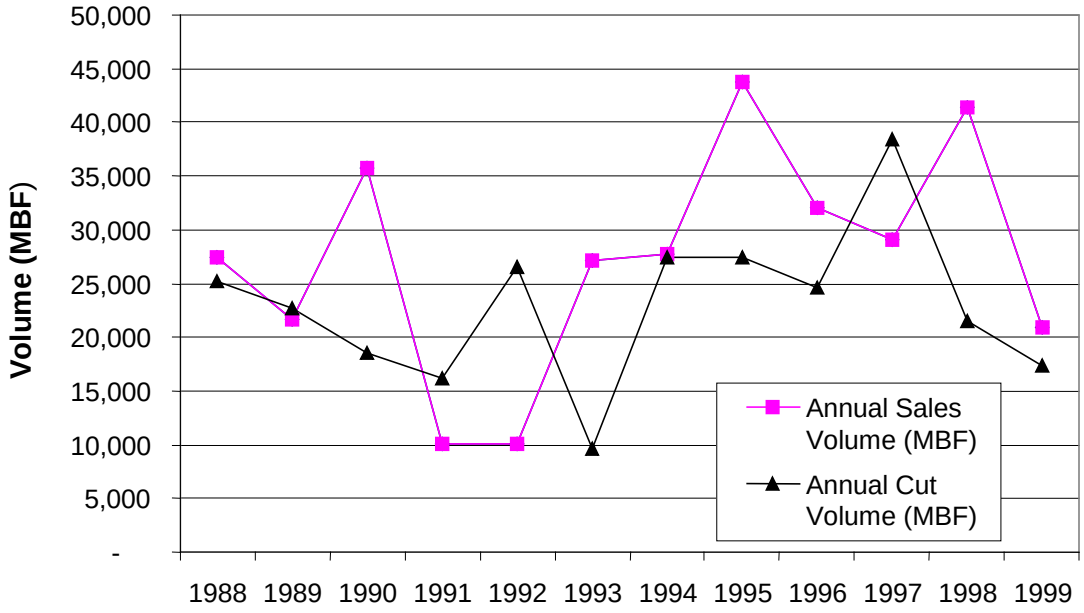

Figure 2. Annual Timber Sales and Harvest Volume for State Lands (State Forests and Lands for General Use), 1988-1999
Source: Alaska Department of Natural Resources, Division of Forestry, unpublished data.

Figure 2 illustrates annual timber sales and harvest levels on total state lands. These volumes have varied widely the 12-year period shown, yet recent sales harvest volumes are almost equal to levels in 1988. Variation is due to a variety of factors such as a decline or increase in the volume of salvage harvests. State, private, and municipal forests are subject to the Forest Resources and Practices Act (FRPA). The Act, which requires that harvested forest land "be reforested to the fullest extent practicable", is intended to protect the forest, water quality, and fish habitat. Provisions for harvesting on state and municipal forests mandate that landowners must have data showing that reforestation activities will lead to the sustainable production of forest products (Alaska DNR 1998b). Alaska management practices usually rely on natural regeneration and in Southeast Alaska natural regeneration following harvest activities is generally prolific. This prolific regeneration often leads to overstocking of second growth stands and contributes to problems associated with stand stagnation, small diameter timber, and poor timber quality. Federal forests are not covered by the FRPA, but the management standards on federal land either meet or exceed the FRPA standards.

The Alaska Department of Natural Resources, Division of Forestry (DOF) has leeway in making small sales to meet the needs of local processors. For example, the DOF can authorize timber sales of up to 500,000 board feet on state lands. If unemployment is high and mill capacity grossly underutilized, the DOF can make larger sales for terms up to 25 years. Timber sales of up to 10 million board feet can be negotiated provided the timber is used in local value-added manufacturing operations (Phelps 1997). From fiscal year 1997 to fiscal year 1999, the DOF has offered an average of 75 sales per year, averaging 42 million board feet of timber annually, a program that has been well received by local logging contractors and forest products companies (Alaska DNR 1998c). The authority of the state to make timber sales under these conditions can help nurture the secondary wood processing industry. However, regulations may also restrict the development of the processing industry by raising log prices.

Private Timberland

Alaska's commercially viable private forests comprise 30 million acres and are concentrated in the Southeast and South central regions of the state. Native Corporations own 98% of the region's private forestland (Alaska DNR 1998). Regulations governing private forestland tend to be less restrictive than the regulations applied on federal forests. While the Forest Practices Act does apply to private lands, it has been noted that it is only loosely enforced with a focus on protecting the spawning beds of anadromous fish (USDA Forest Service 1999). Access to much of the private forestland is limited by an inadequate road infrastructure and the physical characteristics of the terrain that significantly increase the cost of timber extraction. Of the 550,000 acres of private timberland in Southeast Alaska, only about 391,000 acres are considered commercial and available for harvest (The Southeast Regional Timber Industry Task Force 1997).

Timberland ownership patterns and government harvest regulations have several impacts on the industry. The ban on log exports from federal forests reduces the stumpage value of federal timber. The residual stumpage or timber value (market price less processing cost) of processed lumber in Alaska is generally lower than that of export logs, and is reflected in the lower stumpage price of federal timber which cannot be exported. The lucrative export market for logs attracts almost all of the high-quality logs harvested from private forests. Producing cants for the export market is often the most profitable operation for a sawmill that relies on federal timber. This strategy circumvents the log export ban while requiring only minimal processing. Cants are often shipped to Japan where they are re-sawn.

Primary and secondary processing operations are severely impacted by the log export ban. Since virtually all logs from private forests are exported, local sawmills are almost completely dependent upon federal timber for their raw materials. These sawmills cannot compete with the export market for private logs and are confronted with declining harvest volumes from state and federal forests. Without an adequate and reliable supply of raw material, establishing a primary or secondary wood processing industry of an economic scale will be problematic.

TIMBER HARVEST TRENDS IN ALASKA

Annual harvest volumes in Alaska have been declining over the past several years, dropping to 740 million board feet in 1997, a 30% decline from 1990. This decline can be primarily attributed to declining timber harvests in the National Forests. Alaska's National Forests, particularly the Tongass, supplied 46%, or almost 409 million board feet of Alaska's timber in 1990. However, timber harvest restrictions and regulations have reduced federal harvest levels to 125 million board feet in 1997, 69% below 1990 levels. While timber harvest volumes in private forests have been fairly stable since 1990, their share of the total timber harvest has increased from 53% in 1990 to 81% in 1997 (Warren 1999). Alaska forest products companies tend to rely on high value old-growth Sitka spruce and hemlock to increase their competitiveness relative to other suppliers. Table 2 shows the distribution of the species and log grades harvested in 1995. The bulk of the Sitka spruce harvest was premium and sawlog grade logs that captured premiums in the Japanese market.

FACTORS RESTRICTING TIMBER HARVEST IN ALASKA

There are several federal regulations that constitute the basis for managing federal forests and establish the pattern for state regulations, including: the National Environmental Policy Act, the National Forest Management Act, the Sustained Yield Act, and the Endangered Species Act (Alaska DNR 1998). In addition, legal challenges to proposed state and federal timber sales further call into question the ability of these forests to support an internationally competitive timber processing industry.

The reduced allowable sale quantity (ASQ) and high access costs could substantially restrict Alaska's ability to become a prominent value-added wood product manufacturer and supplier in the international market. International customers place a high value on stable supplier relationships throughout fluctuating business cycles. The trend towards declining harvest levels, increasingly restrictive harvest regulations, and court challenges to many public timber sales have raised questions as to the ability of Alaska to provide a reliable supply of forest products in the future.

Table 2. Distribution of 1995 Harvest by Species and Grade for Southeast Alaska.

	Premium Sawlog	Sawlog	Low-Grade Sawlog	Utility Grade	Species Share of Total
Sitka spruce	17.4%	52.7%	11.3%	18.6%	23.8%
Hemlock	7.2%	41.2%	24.8%	26.8%	58.3%

Source: Robertson and Brooks, *unpublished report.* Region 10 Log Scale Ticket database, and COFI Vancouver Log Market reports.

Note: SEA log classes are translated as follows: Premium Sawlog = No. 1 sawlog, select and special mill. Sawlog = No. 2 sawlog. Low-Grade Sawlog = No. 3 and No. 4 sawlogs. Utility = utility.

FUTURE HARVEST TRENDS IN ALASKA

The sawmill industry is adjusting to increased timber harvest restrictions in the Tongass National Forest, and the future viability of the forest products industry depends to a large degree on a reliable and predictable supply of timber from public forests. While timber harvests from the Tongass are necessary to supply a competitive forest products industry in Alaska, this alone is not sufficient to provide a competitive forest products industry. While other factors can affect industry competitiveness (including processing efficiency, labor costs, and an adequate transportation infrastructure) and are equally as important as a reliable timber supply, this section will focus solely on a discussion of the projected timber supply based on two models that incorporate supply and demand scenarios. Despite the inherent uncertainty associated with timber supply projections, these models provide a framework for understanding the role that timber supply will have on the forest products industry in Alaska.

A model developed by Brooks and Haynes (1997) estimates future timber harvest volumes based on market demand. By varying the demand conditions and analyzing the impact on the processing industry, high, medium, and low demand scenarios for timber harvests were produced (Figure 2). Under the medium demand scenario model, the projections indicate that total harvest levels will continue to decline and stabilize after the year 2000. Based on the medium demand scenario, harvest levels on Alaska's National Forests are projected to gradually increase through 2010 while the reduction in the overall timber harvest can be attributed to the declining harvest on private lands. Projections estimate that production on private lands will fall below the harvest level on National Forests between 2000 and 2005 due to the declining timber inventory (Brooks and Haynes 1997).

A second model, incorporating high, medium, and low demand projections, was developed specifically for the Tongass National Forest (Morse 1998). The high demand scenario is based on the assumption that an efficient and competitive industry will be able to utilize most of the timber harvest. In the low demand scenario, market share will continue to decline as international competition and demand increase, and mills may utilize only the small but high valued segment of the resource (Figure 3). The medium demand scenario is closer to the low demand scenario. While market share and lumber recovery increase, producers are relegated to niche markets for old growth products, limiting overall growth and potential.

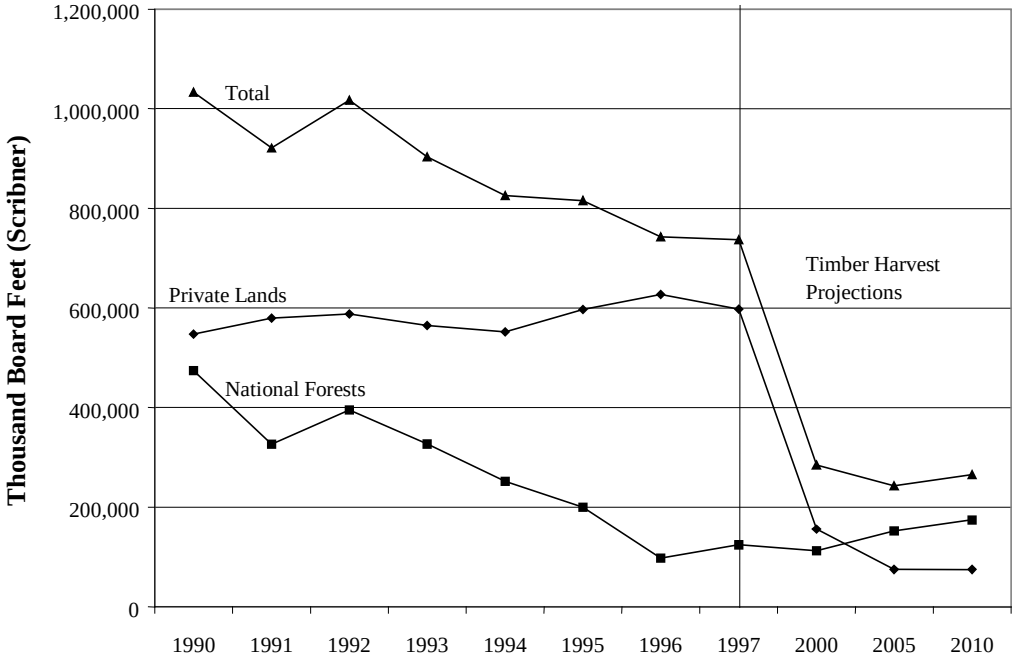

Figure 2. Alaska Timber Harvest Volumes and Projections by Ownership under the Medium Demand Scenario, 1990-2010
Source: Brooks and Haynes 1997.

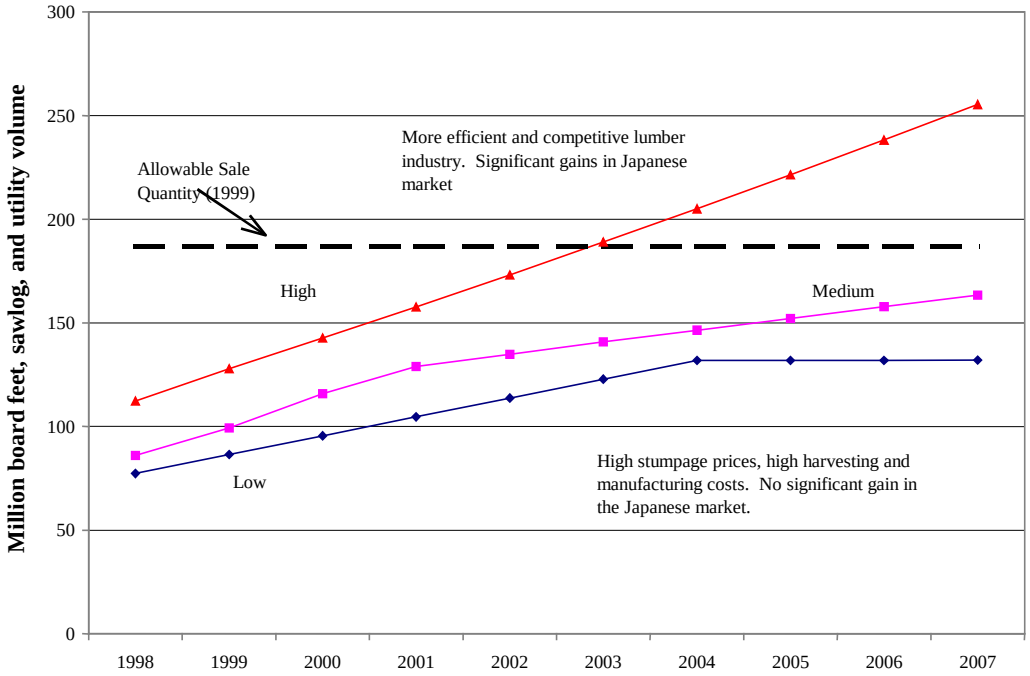

Figure 3. Timber Harvest Volumes for the Tongass under Various Demand Scenarios
Source: Morse 1998.

While these projections are only estimates based on different assumptions, they provide a perspective for evaluating future conditions. For example, if the market for wood products increases rapidly, it stands to reason that larger facilities might be developed to capitalize on the increased demand. However, with allowable sale quantities setting a maximum limit to the supply, the industries overall scale will be limited by the ASQ, and to gains in efficiency and lumber recovery. Within the time frame of the projections, only the high demand scenario for Tongass timber exceeds the ASQ. The low and medium demand trends indicate that the ASQ will not act as a supply constraint to the industry as cost competitiveness is insufficient to use the available resources.

It is important to note that to a high degree demand for Alaska timber is dependent upon supply constraints in other supply regions. The reduced harvests in Washington, Oregon, and neighboring states have impacted the demand for Alaska timber. For investment purposes, these projections can be influential to decision making. One conclusion is that the ASQ will, in effect, cap investment levels regardless of higher demand and product price. The limit will ensure that once demand reaches the ASQ, there will be increased competition for the available supply. This may keep investments low because of the risk of poor returns on investment and contribute to the eventual lack of growth within the industry.

The ASQ may also stimulate some investment. To achieve anything approximating an economy of scale, firms will have to make efforts to get as large a share of the ASQ as possible. If the ASQ is reached and excess sawmill capacity still exists, increased competitiveness in the sawmill industry will primarily be achieved by attrition of less efficient facilities.

CHARACTERIZATION OF ALASKA'S MILLS

The sawmill industry has experienced substantial change related to a variety of supply, infrastructure, and efficiency factors. Concurrent with reduced federal timber supply, sawmill production capacity declined from 370 million board feet in 1990 to 220 million board feet in 1997 (Figure 4). During this period, only 52% of installed capacity was employed. Since 1993, the total sawmill production capacity has exceeded the federal timber supply. This is the result of new mills with large production capacities and modern processing equipment being opened at the same time as timber harvests were declining in the Tongass. It can be expected that, in the future, sawmill production capacity will decline further as older, less efficient sawmills are shut down due to continued timber supply restrictions.

Alaska sawmill demographics and productivity information was compiled by Hill (1998) for the Alaska DCED through a survey of sawmills in 1995. Of 112 sawmills surveyed, 46 returned completed surveys, providing a 41.1% response rate. The results of the survey suggest that the sawmill industry is dominated by small firms with low production volumes, and limited processing capability. Of the mills responding to the survey, 50% employed less than 4 people, 90% employed fewer than 25 people, and only two required more than 40 people to operate at full capacity. Many of the smaller mills may be part time or seasonal operations that do not operate when market demand is low. Survey results indicate that 86% of Alaska’s lumber production and 100% of the export lumber production occurs in Southeast Alaska. Dimension lumber comprises 69% of the total domestic production, while cants/flitches are 56% of total export production. Statewide, the maximum production capacity of the sawmills surveyed for an eight-hour shift is 593 million board feet Southeast Alaska contains 78% of the state's sawmill capacity with a capacity of 462,000 board feet per eight-hour shift.

Sawmills in competing regions such as the PNW typically produce 100 million board feet of lumber per year and employ 100 or more workers. Alaska's harvest restrictions and expansive geography cannot support mills of this size, and according to a study by Robertson and Brooks (unpublished report), their production costs are higher than in other regions. Thus, to be competitive on such a small scale, Alaska mills must be customized to serve niche markets. Alaska processors will need to make investments in their wood processing facilities in order to increase their competitiveness. In Alaska, the most common headrig is a circular saw, followed by bandsaw headrigs (Hill 1998). The often remote location of sawmills influences the style of headrig used. While less efficient, circular saws are often preferred in these locations because they require less technical support and they are easier to repair and maintain. However, the use of circular saws substantially reduces lumber recovery and increases production costs. The changing timber resource in Alaska will almost certainly require sawmills to re-tool to process smaller diameter second growth logs. Installing more efficient processing equipment could also allow sawmills to upgrade their operations and manufacture competitive products targeted at niche markets.

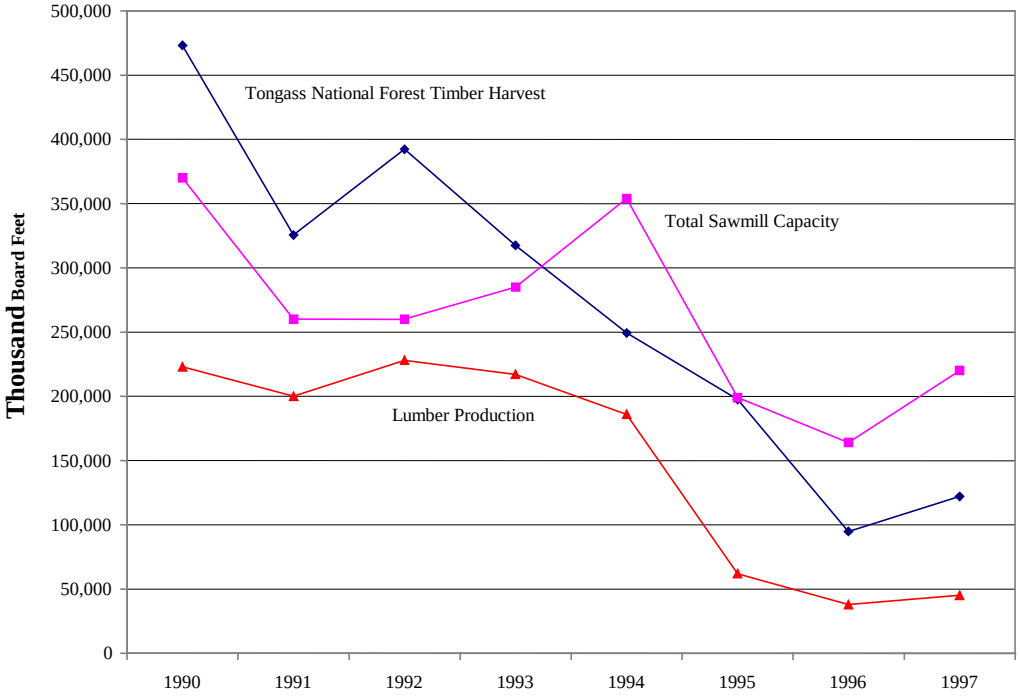

Figure 4. Sawmill Production Capacity, Lumber Production and the Tongass Timber Supply for Southeast Alaska
Source: Morse, 1998.

The lack of kiln drying facilities also precludes Alaska from many segments of the export and domestic markets. Of the sawmills surveyed, 16 reported some capacity for air-drying their lumber, three had dehumidification kilns, and only two operated dry kilns. While several sawmills in Southeast Alaska have indicated plans to improve or install dry-kiln capacity, dry kilns and storage sheds will be necessary to remain competitive in the export market, particularly in Japan.

LABOR, HARVESTING, AND MANUFACTURING COSTS IN THE TIMBER SECTOR

To assess Alaska's competitive position as a timber supplier, the costs associated with timber harvest and processing are compared to BC and the PNW (Washington and Oregon). Costs associated with the extraction of timber are largely allocated to stumpage, labor, fuel, and transportation while other factors, such as the cost of road building, capital, and technology, have been excluded from the assessment.

Labor Costs

Labor costs in Alaska can be higher than labor costs in the PNW, depending on occupation, which adds to the final product price. For example, as shown in Table 3, wood machinists in Washington earn $5.35 per hour less than wood machinists in Alaska. Saw machine operators in Alaska also earn 89 cents per hour more than machine operators in Washington. However, occupations such as logging tractor operators and log handing equipment handlers in Alaska pay less than in Washington. As shown in Table 3, logging tractor operators and logging equipment operators in Alaska earn 80 cents and $1.04 less, respectively, than workers in the same occupations in Washington. While Alaska wages are lower in some occupations, these wage differentials can still hinder the growth of some sectors of Alaska's forest products industry. Wage rates for loggers are somewhat comparable between Washington and Alaska for loggers, which alone (not including transportation costs) should theoretically help lower the cost of primary wood products from Alaska. However, the pay for occupations related to secondary processing activities such as machinists and sawing machine operators are higher, which could raise the cost of secondary processed, or value-added wood products produced in Alaska. Again, the cost of transporting wood products within and out of Alaska could negate any wage advantages that Alaska may have.

Harvesting Costs

On a comparative basis, the harvesting costs for Alaska, the PNW, and BC show that BC is the high cost producer of logs (Figure 5). Notably, BC has shown an increasing trend in harvest costs, while the PNW and Southeast Alaska have remained fairly stable despite some variability over the short-term. These trends are likely caused by the influenced of declining acreage, harvest volume, and labor intensity, on harvest costs. It should be noted however, that these harvest cost estimates exclude road-building costs, which would inflate the overall logging costs in Southeast Alaska. A large volume of timber in the PNW is harvested from plantations, substantially reducing the cost of road construction, while timber from many public forests is located near established roads. The limited road infrastructure in Alaska necessitates construction of roads in needed to access the timber resource and, as a result, logging costs in Alaska may be higher than costs in BC.

Table 3. Labor costs in the Logging and Sawmill Sectors in Alaska and the PNW 1998.

Occupation Code	Occupation	Average Washington Wage/hr.	Average Alaska Wage/hr
73011	Logging Tractor Ops.	$16.41	$15.61
73008	Log Handling Equipment Ops.	$17.85	$16.81
89308	Wood Machinists	$10.57	$15.92
92308	Sawing Machine Ops.	$12.23	$13.12

Source: Alaska Department of Labor and Workforce Development, 1998 and Washington State Employment Security Department, 1999.

Manufacturing Costs

According to research by Robertson and Brooks (unpublished report), Southeast Alaska has the highest manufacturing costs per thousand board feet of lumber produced (Figure 6). The large discrepancy between Alaska and the other regions can be partially attributed to smaller economies of scale. There are larger sawmills with more efficient processing technology and large market presence in BC and the PNW. The declining costs in BC and the PNW are the result of increased gains through production efficiency, capital investments in processing technology and infrastructure. Rising costs in Alaska are largely attributed to the pulp mill closures where the low quality logs that previously fed the pulp mills have been re-directed to the sawmills. These smaller-diameter, lower quality logs result in lower yields, higher handling costs, and an overall decline in production efficiency.

Lower acreage can eliminate the advantage of economies of scale in harvesting operations and lower volumes per acre reduce efficiency of logging efforts (Robertson and Brooks *unpublished report*). These factors are indicative of marginal or second growth stands being harvested and reflects the dwindling availability of prime stands in Alaska. There is no evidence that this trend will reverse. The PNW has large holdings of privately owned second growth timber that can be more easily accessed with more uniform characteristics that keep logging costs relatively stable. High prices in Pacific Rim markets resulting from declining harvests in the PNW after 1990 temporarily reduced the impact of high log costs in Alaska. The Asian recession resulted in an overall market decline in 1997-1998, making cost competitiveness much more critical.

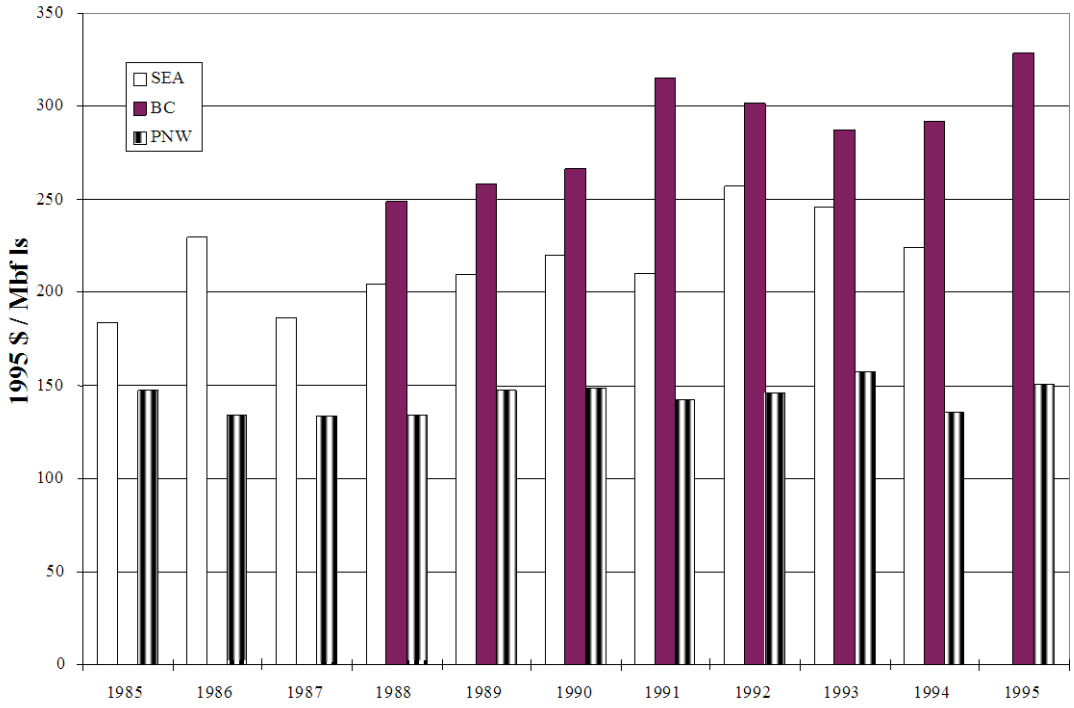

Figure 5. Harvest Costs in Southeast Alaska, British Columbia, and the Pacific Northwest, 1985-1995
Source: Robertson and Brooks unpublished report).

Source: R10 Sale Appraisals, RISI Note: All estimates exclude permanent roading costs

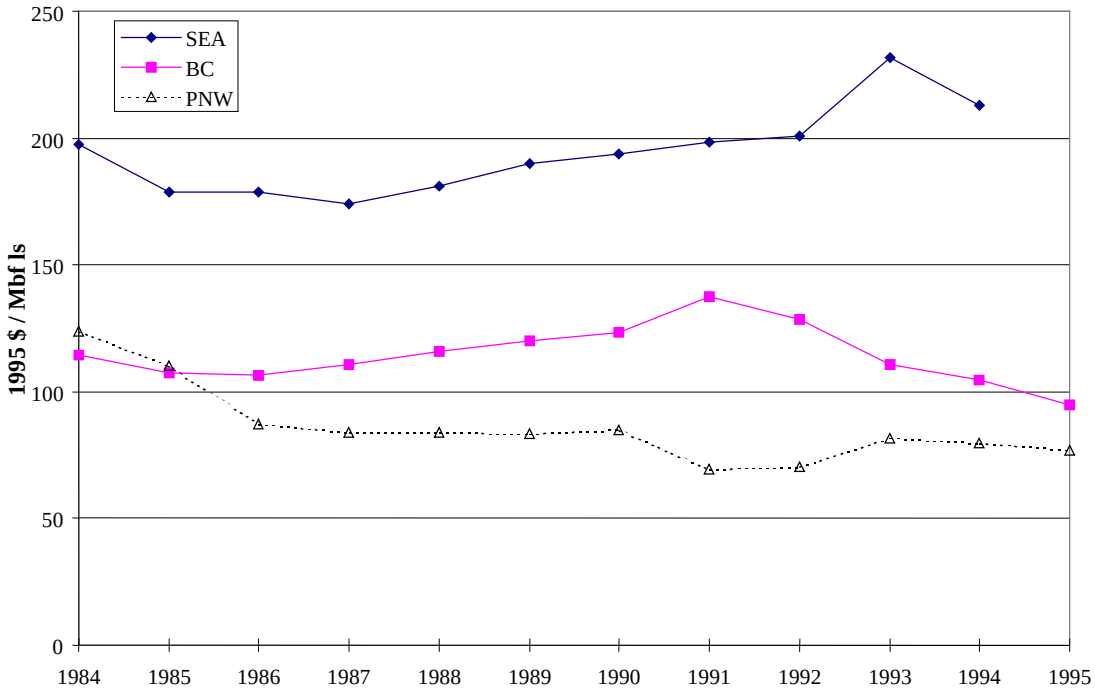

Figure 6. Manufacturing Costs in Southeast Alaska, British Columbia, and the PNW, 1985-1995.
Source: Robertson and Brooks unpublished report.

Total Costs

On a total cost basis, Southeast Alaska emerges as the high cost producer and the PNW as the low cost producer of softwood lumber (Figure 7). British Columbia's resource base has fairly similar physical and resource characteristics to Alaska and costs in both BC and Southeast Alaska are increasing at a rate of 2% per year, while costs in the PNW are falling at a rate of 2% per year. Between 1985 and 1995, it cost an average of $370 to produce one thousand board feet of softwood lumber in Alaska while in the PNW the average production cost was just $170 per thousand board feet. The production cost in British Columbia was closer to Alaska, averaging $345 per thousand board feet. Since the Alaska share of lumber is heavy to cants, which theoretically should reduce production costs, these averages likely understate the true disparity in total costs between the three regions.

Figure 8 provides a snapshot of the cost structure of sawmills in the three regions in 1994. This analysis highlights the competitive advantage in harvesting and manufacturing that exists in the PNW. While BC has higher harvesting costs than Southeast Alaska, Figure 8 clearly displays their lower processing cost. Stumpage prices in 1994 in the PNW and BC were 58% and 14% of total lumber production costs, respectively, while Southeast Alaska's stumpage prices were just 9% of their total production costs. While Southeast Alaska does have the lowest stumpage prices, their high harvesting and processing costs, which result in Alaska being the high cost lumber producer, outweigh this advantage.

Stumpage prices are generally residual values. In other words, the amount one can afford to pay for logs after subtracting processing and harvesting costs. Even with low stumpage prices, Alaska appears to be the high cost producer, although some of this difference may reflect higher average quality. Since lumber production costs are so high in Alaska and stumpage is so low, there is not much opportunity to aggressively manage the forest for higher growth. Under the current situation, the returns to forest management are too low for all but minimal regeneration efforts.

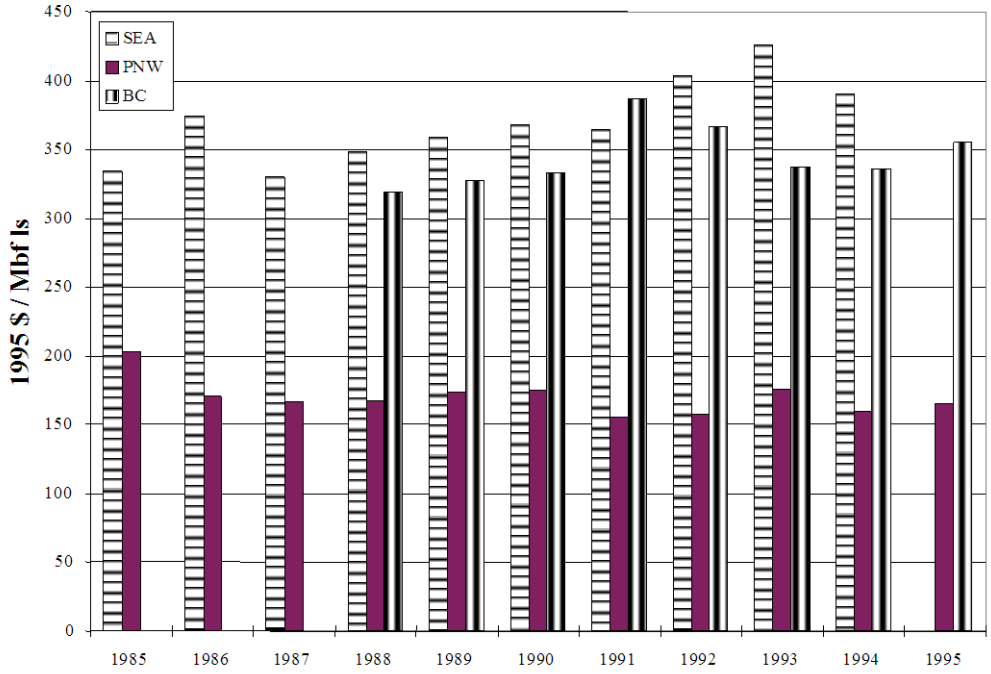

Figure 7. Total Lumber Production Costs (Labor and Production) in Southeast Alaska, British Columbia, and the Pacific Northwest, 1985-1995
Source: Robertson and Brooks unpublished report.

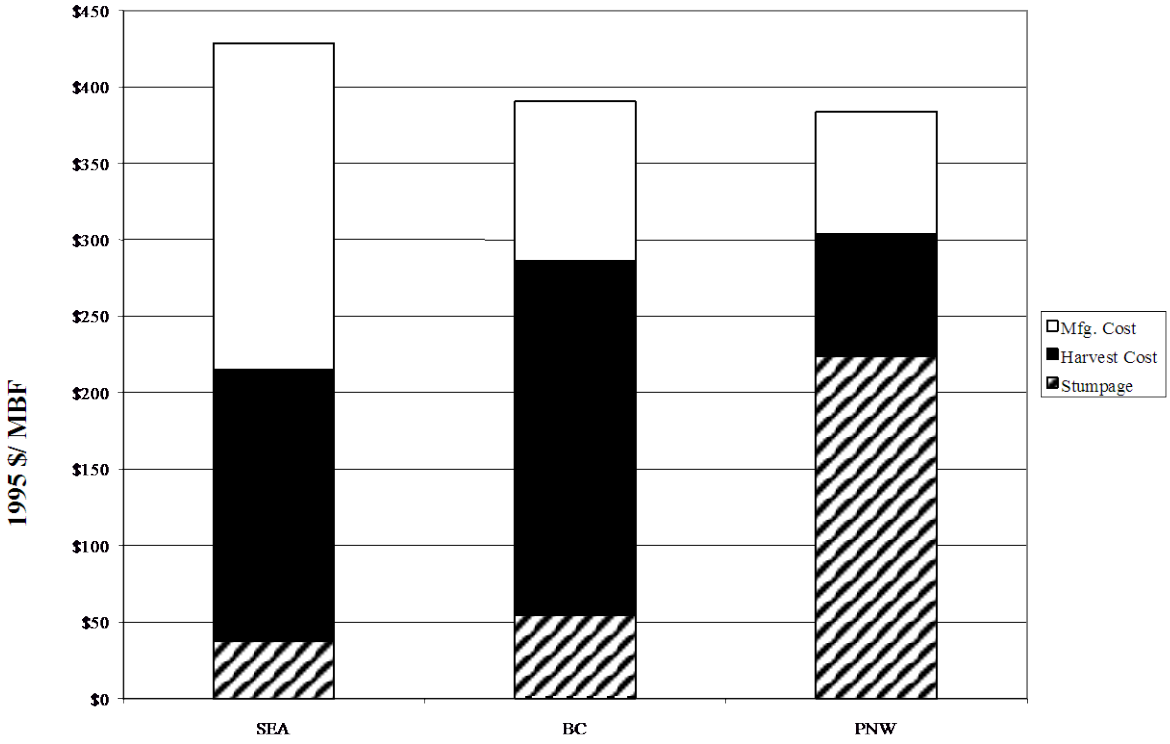

Figure 8. Total costs of Lumber Production (with Stumpage) in Southeast Alaska, British Columbia, and the Pacific Northwest, 1994
Source: Robertson and Brooks unpublished report.

TRANSPORTATION

Alaska's remoteness from its major markets increases transportation costs and reduces the competitiveness of lumber manufacturers. Wood products are commonly shipped by barge to Washington, and the limited availability of barges can further increase costs. One Alaska sawmill estimates that shipping adds $45 to the cost of producing one thousand board feet of lumber since lumber exported to Japan must be shipped through Seattle. Most US carriers of wood products shipped from Southeast Alaska first bring their cargo to Seattle, before reloading the shipment onto new carriers, even if the final destination is another port in Alaska or Asia. The exception to this is large corporations such as Sealaska who charter their own barges and ship logs directly to Asia.

Transportation within Alaska is also restricted by distance, poor road infrastructure, lack of roads, seasonality, and physical geography. These factors limit the movement of timber from the forest to mills, from mills to ports, and of finished goods to other regions of the state and to export markets, and contribute to added costs to the final product.

The type of product being transported can also impact the types of transportation vessels used. Logs are commonly loaded onto barges where they can be left exposed to the elements. Processed wood products, such as lumber and veneer, which require protection from the elements, are generally loaded into containers which further increases the cost and time of transporting these products from Southeast Alaska.

ENERGY COSTS

Energy costs vary dramatically throughout Alaska, regardless of the method of generation. Southeast Alaska utilities averaged 9.8 cents/kWh for commercial/industrial customers in 1995, while Washington utilities averaged 3.25 cents/kWh in 1995 (Washington Energy Policy Group 1999). However, one sawmill, generating electricity from diesel generators, reported that their cost of energy was 37 cents/kWh (Alaska Electric Power Statistics 1996). Officials in the Alaska Division of Energy cite the possible installation of hydroelectric dams in Southeast Alaska as one strategy to help reduce energy costs. Some hydroelectric dams have a surplus of energy but whether that energy will be made available to industrial users at competitive prices remains to be seen. Efforts to procure special sale arrangements with the power companies may be worth pursuing. However, the importance of salmon to the region and the potential threats to salmon habitat that are related to dams should be thoroughly considered before implementing any hydroelectric projects. However it is accomplished, in order to develop competitive dry kiln industry in Alaska, firms will need access to energy at rates that are comparable to those of their competitors in other regions.

ALASKA FOREST PRODUCT EXPORTS

Softwood logs comprise the bulk of Alaska's forest product exports, followed by softwood lumber and chips (Figure 9). Revenues from log exports remained relatively steady during 1989-1997 with the exception of a spike in revenue in 1993, largely the result of the strong Japanese housing market and harvest constraints in the PNW. Weak demand as a result of the Asian economic crisis caused Alaska exports of wood products to plummet in 1998.

Export data in Figure 10 show that while log export revenues declined after 1993, export volume remained fairly constant, signaling a decline in the price of Alaska logs. With the log shortage created by reduced harvests in the PNW and Alaska, Japan has begun using radiata pine as a substitute in low-grade applications and European whitewoods in high-grade applications. The gap between log export revenue and volume from Alaska has narrowed since late 1993, an indication that Alaska suppliers are deriving less value from the logs they sell in the international timber market. Since the downturn in the Japanese market, the Japanese are increasingly substituting domestic logs and lumber for imported logs and they have become much more price sensitive.

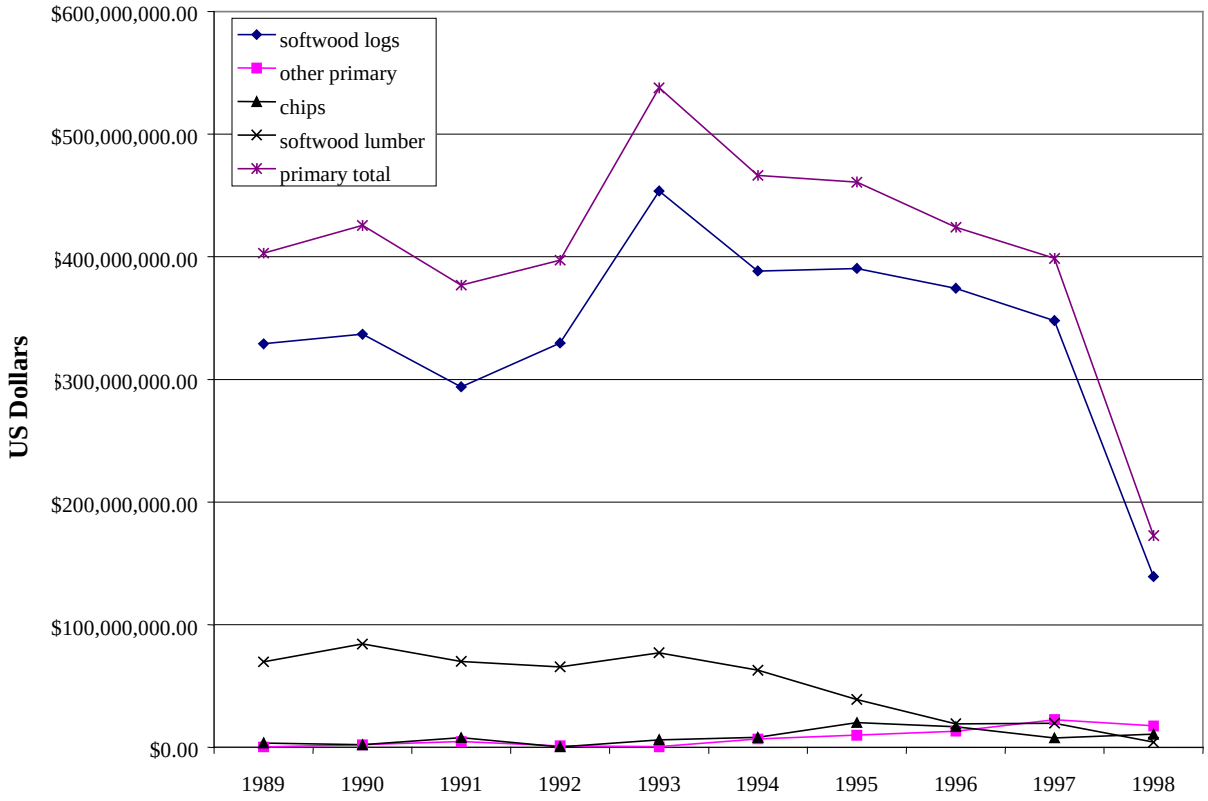

Figure 9. Leading Primary Processed Wood Products from Alaska to all Destinations, 1989-1998*
Source: U.S. Department of Commerce 1999.

*Commerce data may include some products that "pass through" Alaska ports and do not originate in the state.

Chips, produced from lower grade logs, have been an important source of export revenue for Alaska, although revenue from chip exports has been very erratic during the past ten years. Chip exports increased from 1989 to 1995, before dropping from over $20 million in 1995 to less than $11 million in 1998. Historically, Alaska's pulp mills provided an outlet for chip sales. Since the pulp mill closures, the volume of low-grade logs harvested have increased without a domestic market.

Softwood lumber has traditionally been an important component of Alaska's export mix. Export revenue from lumber, however, has experienced a dramatic decline during recent years as well. Since 1989, lumber exports have declined from a high of over $84 million in 1990, to just over $4 million in 1998. While some of the decline in lumber exports can be attributed to changes in demand in Japan, increased competition from the PNW and BC has also contributed to the decline as well as harvest restrictions on USFS lands.

As revenue from primary wood products has been declining, export revenue from secondary wood products has been increasing. Even during 1997-1998, a period when value-added wood exports from the US declined an average of 40% due to the Asian economic crisis, Alaska exports of secondary processed wood products increased slightly (Figure 11). The leading secondary wood product exports from Alaska include wood or wood frame seats, pallets and packing cases, wooden furniture, and wooden doors and frames. Note however, that exports of secondary manufactured products generate a fraction of the revenue derived from primary wood products. In 1998, Alaska exported $172 million in primary products and just $2.7 million in secondary processed products.

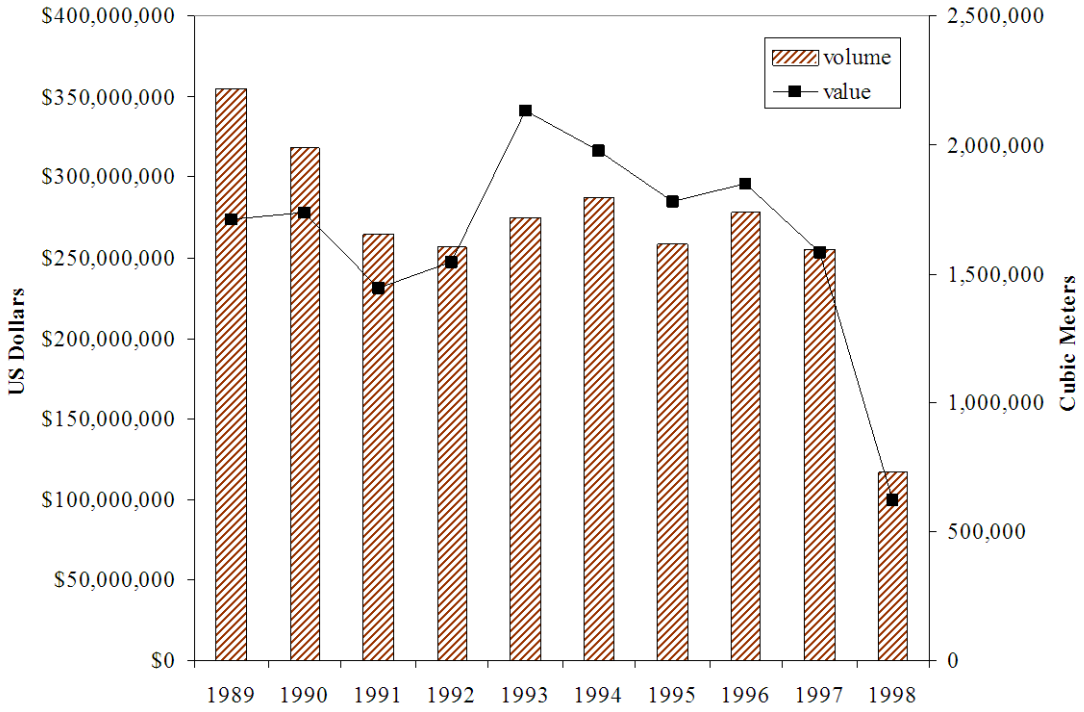

Figure 10. Softwood Log Export Volume and Revenue Exports from Alaska, 1986-1998
Source: U.S. Department of Commerce 1999.

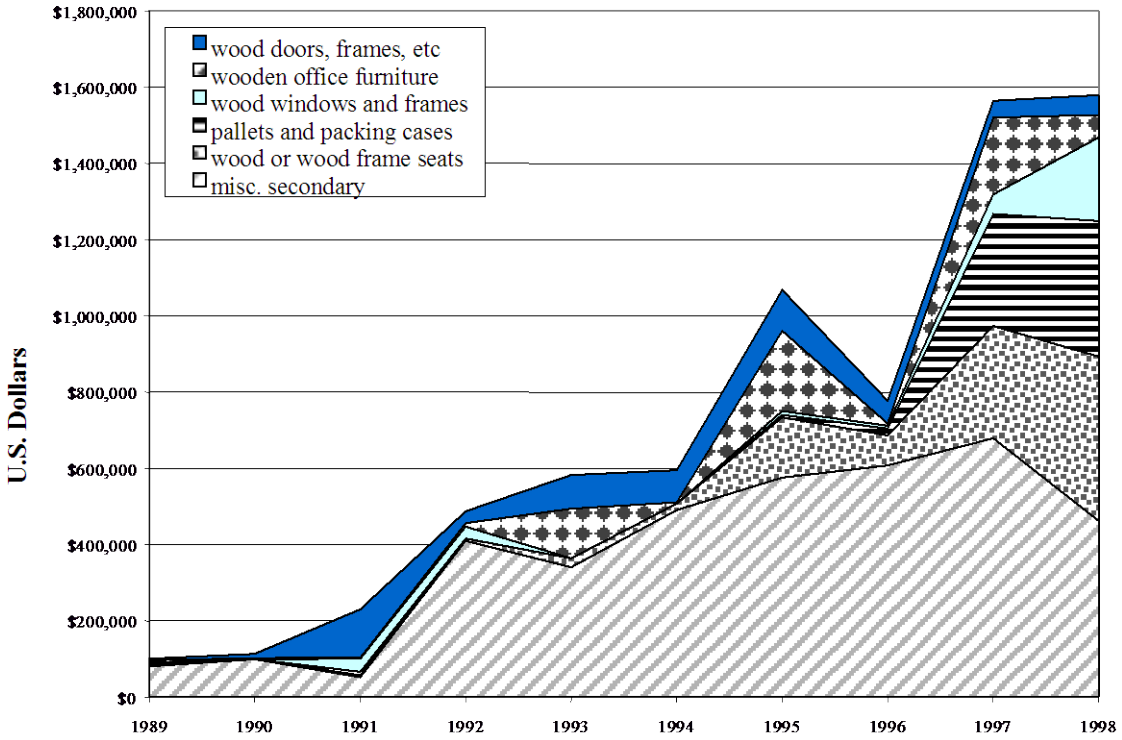

Figure 11. Leading Secondary Processed Wood Product Exports from Alaska to all Destinations, 1989-1998
Source: U.S. Department of Commerce 1999.

ASIAN MARKETS FOR ALASKA LOGS AND LUMBER - JAPAN

OVERVIEW OF THE JAPANESE HOUSING MARKET

The greatest single end use for imported wood in Japan is the housing industry (JAWIC undated). In 1992, it was determined that 79% of lumber shipments went into housing construction (Gaston 1997). Japan's residential housing market has consistently been one of the largest and most dynamic in the world. Since 1987, Japan's housing starts have been approximately equal to those in the United States even though Japan has only 46.9% of the population and 3.9% of the landmass of the US (Table 4). Another way of viewing Japan is to place half the US population into an area the size of California. Obviously, population densities are very high in Japan and the high population densities have an impact on the type of housing built, especially in the cities.

In 1997, housing starts in the US and Japan totaled 1.5 million and 1.4 million units respectively (Figure 12). The US and Japanese housing starts follow world economic trends and exhibit differences based on domestic trends as well. Both countries experienced rapid economic growth in the early 1970s as indicated by the high level of housing starts until 1973 when the OPEC oil crisis contributed to a decline in the number of new housing starts in both countries. Both countries also experienced housing slumps in the early 1980s and 1991 during the recession and the Persian Gulf War, respectively.

In Japan, housing starts were very high during the late 1980s and 1996. 1996 was the first time since 1987 during the Bubble Economy when housing starts increased by double-digit increases over the previous year (Figure 12). The high volume of housing starts in 1996 was caused in part by the rebuilding activity following the Hanshin Earthquake in Kobe, which occurred in 1995. The earthquake damaged 147,600 houses (Japan Lumber Reports 1995) and displaced 400,000 households (Pacific Rim Wood Market Report 1996). In 1996, housing starts were also high because homeowners rushed to purchase houses before the Ministry of Finance increased the national consumption tax from 3 to 5% on April 1, 1997. The consumption tax applied is to housing, and consumers wanted to avoid paying hundreds of thousands of yen in extra taxes.

The dramatic decrease in housing starts in 1997 can be attributed to four factors: an increase in the consumption tax from 3% to 5%; an increase in the cost of living due to the removal of income tax reduction, an increase in the cost of medical care, which was expected to total 9 trillion yen; and a lack of funds for large public works by the government due to the anxiety over the troubled banking system; and an overall slump in the economy (Japan Lumber Reports 1998a). The government's implementation of various fiscal policies was expected to knock a full point off private spending in 1997 (Bremner and Takahashi 1996). Late 1997 was also the time of currency devaluations and economic instability throughout Asia.

A combination of factors in Japan have historically supported high levels of housing starts including: active construction of rental housing, low mortgage interest rates, active government support for providing inexpensive housing, sustained growth of per capita income, population growth, rapid turnover of existing housing stock, large migration to urban centers, large volumes of existing low quality housing in need of overhaul, improved tax benefits for housing, and stable land prices (JETRO 1995; Robertson and Waggener 1995). For example, since 1950 the population in Japan has increased by 50% while household size has fallen from 5.02 to 3.01, suggesting a trend from the traditional extended family to a smaller nuclear family (Robertson and Waggener 1995). The increase in population and the number of nuclear family households have increased the demand for housing.

Table 4. Comparison of Key Demographic Factors between Japan and US.

	Japan	US
Total area (sq. km)	377,835	9,629,091
Population (1997 estimate)	125,732,794	267,954,764
Housing starts (1999)	1,214,601	1,667,000

Source: Japan Lumber Journal 1998a; and Stat-USA 1998

Currently, Japanese houses are typically replaced every 20-25 years and most new housing starts are on building sites on which homes have been demolished (Eastin 1994; Jahraus and Cohen 1997). Given the poor quality of most post-war housing, it is more cost-effective and efficient to demolish these older homes rather than repair or remodel them (Eastin 1994).

Although there are many ways to classify residential housing in Japan, all houses must meet the requirements of the Building Standards Act (JETRO 1993). These building codes cover all aspects of the construction industry in Japan. The BSA ensures that the building site and structure are constructed in a manner that does not endanger the occupant's life, health, and property from preventable disasters. All housing must also meet the strict fire prevention and flammability guidelines of the Fire Laws. Fire prevention requirements are strict because of a past history of devastating fires in Japan's residential areas. Major fires burned down many houses during the Great Kanto Earthquake in 1923, which was centered in Tokyo, and the 1995 Hanshin Earthquake in Kobe. Fires in urban areas have historically caused many fatalities and, in response, the Japanese government implemented strict guidelines regarding the construction of fire-resistant houses to prevent the spread of fire to adjacent buildings. In addition, residential lots are small in size in urban areas and the footprint of the house covers most of the lot, resulting in houses being very close together, a factor that contributes to the necessity of fire resistant housing.

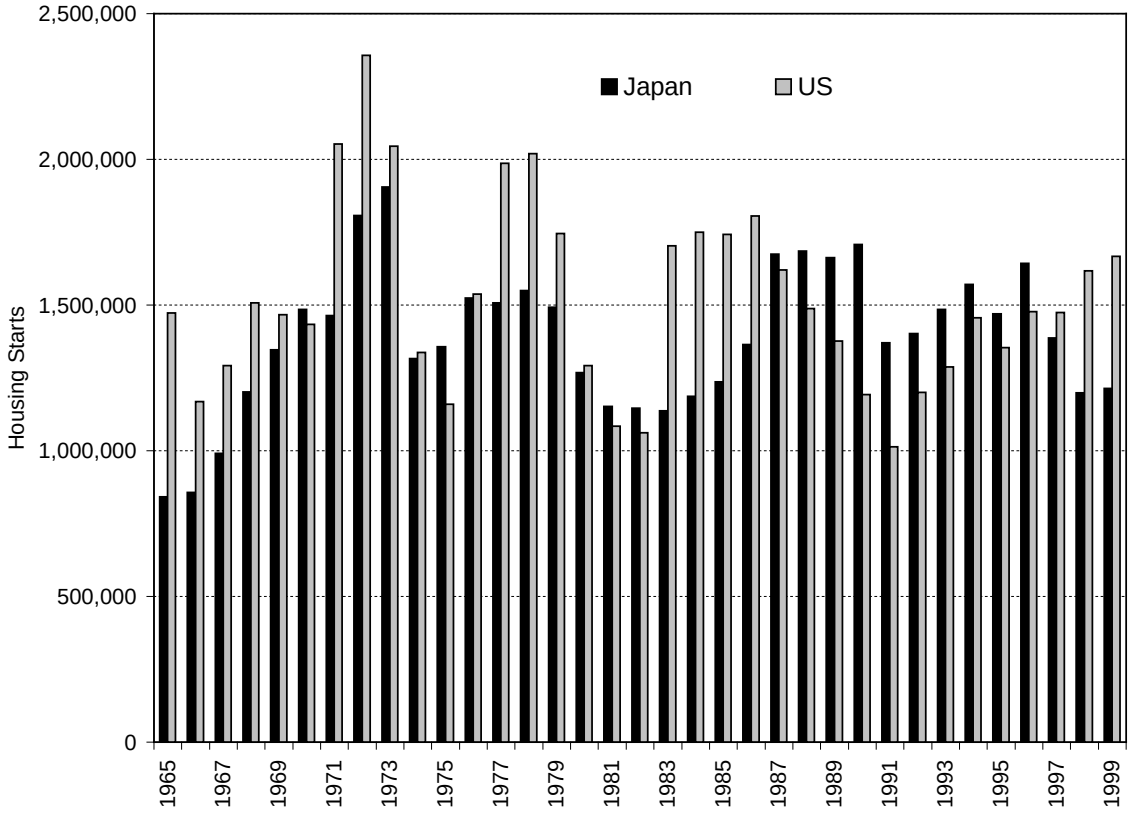

Figure 12. Comparison of US and Japan Housing Starts, 1965-1999.

Residential Housing Types

One way that residential housing can be classified is by occupancy type: single-family detached versus multiple-family collective housing residences (including apartments and Nagoya style townhouses) (JETRO 1996a). In 1999 multiple-family residences made up the majority of total housing starts at 50.7%, down from 53.6% of the total in 1998. Despite this drop, there is a clear trend towards building multiple-family residences to house the dense population, particularly in the large urban areas. In Tokyo for example, 65.3% of all residences are multiple-family units. Throughout all of Japan however, multi-family units comprise only 41.8% of the stock of housing.

JETRO (1996a) and the Japan Lumber Journal (1998a) also divides total housing starts based on whether the houses are constructed from wood or non-wood materials, such as concrete and steel (Figure 13). There are two main types of wooden housing built in Japan: traditional Japanese post-and-beam houses and North American style 2x4 houses. The 2x4 housing industry has experienced healthy growth within the wooden house segment.

Wood has always been an important part of Japanese culture and trees were thought to be the places where the native gods first descended to earth. As a result, wood has traditionally had strong religious meaning and most temples and shrines are constructed with wood framing. The Japanese people are deeply drawn to the aesthetic beauty, strength, and aroma of wood. Wood's attractiveness is also demonstrated by how Japanese consumers place a high value on wood in their homes. A survey conducted by the Japanese Prime Minister's Office showed that, if given a choice, nearly 80% of respondents would prefer to live in a wooden house (Coaldrake 1990).

Residential housing was dominated by wooden housing well into the mid-1970s, accounting for almost two-thirds of all housing in 1976. However, the continued growth in multi-family housing and prefabricated single family housing has contributed to the declining share of wooden housing and in 1999 wooden housing represented just 46.6% of all housing starts in Japan.

The type of financing used for new houses is another way in which government and industry associations have segmented the residential housing industry (Japan Lumber Journal 1998a; Pesonen 1993). The two sources of financing are private and public (Figure 14). The majority of all house financing in Japan is through private sources at 55.7% in 1999. The remaining mortgage financing is through public mortgage lenders, in particular the Government Home Loan Corporation (GHLC), which provided 37.5% of all mortgage funding in 1999. The GHLC was established by the government in 1950 in order to provide middle-class homebuyers with low interest loans (JETRO 1995). The interest rate for GHLC mortgage loans is well below market interest rates and in April 2000, the GHLC interest rate was 2.85% (Japan Lumber Journal 2000). The GHLC has strict rules regarding eligibility criteria for potential borrowers and house size. In 1993, the income ceiling was raised to ¥13.225 million to allow a larger proportion of the population to qualify for the mortgage loans. Financing was also expanded to houses up to 2,580 ft^2 floorspace from 2,370 ft^2. This resulted in a record 667,118 mortgages being granted by GHLC in 1994, whereas in 1999 GHLC loans totaled 454,984 houses.

Residential Housing Industry Structure

Housing is mainly constructed through two methods: subdivision sales and owner constructed housing (JETRO 1996a). Subdivision sales are like sales in the US where a developer sells both the new house and land in a new residential development. These developments are sometimes referred to as *new towns*. The companies involved in large subdivision developments do most of the development. They redevelop land tracts, sell the houses, and usually design and construct the house. Other companies acquire small tracts of land to develop and sell houses. These are the *tateuri* (build and sell) or *mansion* (condominium) companies. Incidentally, in Japan, the term *mansion* is commonly used to refer to high-rise apartments or condominiums, even though they usually have a smaller floor area than detached single-family houses.

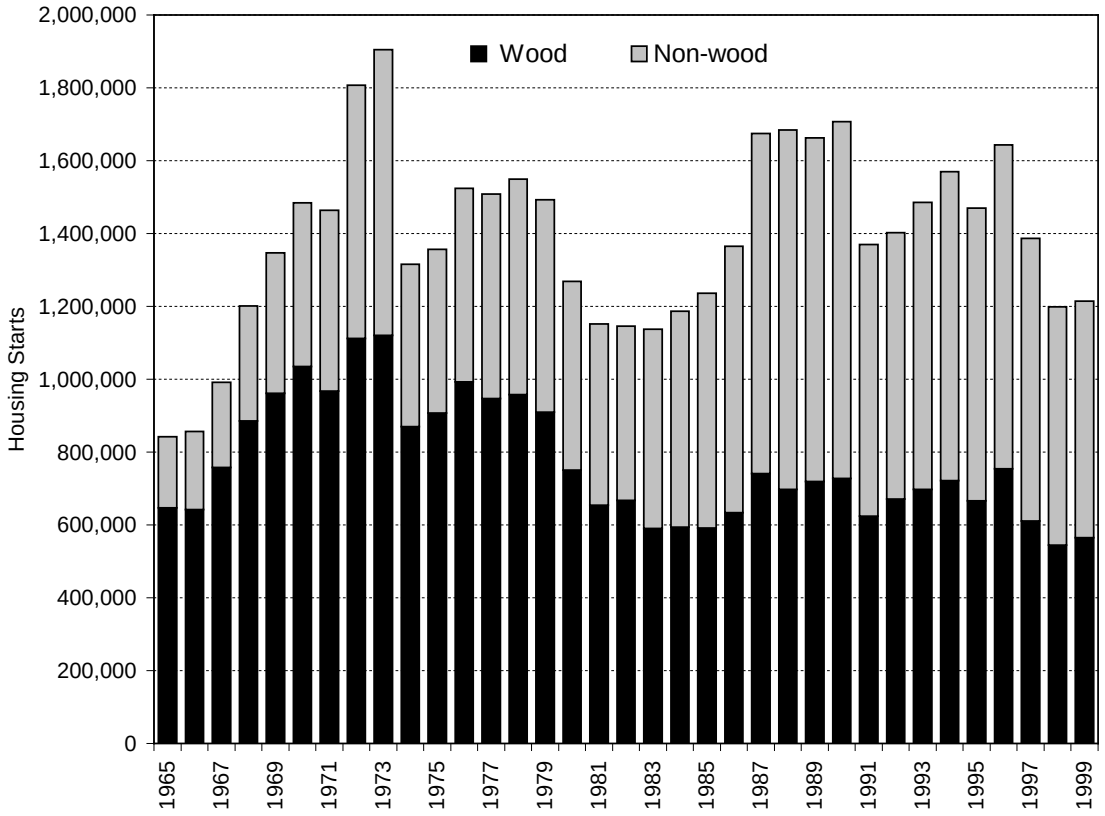

Figure 13. Japanese Housing Starts Since 1965 Based on Structural Material used
Source: Derived from data provided in Japan Lumber Journal.

Owner constructed housing consists of construction of a new house for personal dwelling. In many cases, the landowner tears down an older house and builds a new house in its place. These types of houses are mostly custom built to fit the shape and size of the lot (McKellar 1995). The owner has very strict specifications for their new house and their input is constantly solicited throughout the design and construction process. As suggested by Leonard Guss Associates, Inc. (1992), homes with a unique appearance are desired and "cookie-cutter" houses do not do well in this market segment.

JETRO (1996a) describes the three main groups of Japanese single-family house builders as: 1) large, national housing manufacturers, 2) medium-sized, regional housing companies, and 3) small, local homebuilders (*kohmuten*) and/or carpenters. The large housing manufacturers have powerful nation-wide sales networks. In fiscal 1999, there were eight large housing manufacturers who each had annual sales of approximately 10,000 units or more. The eight largest homebuilders in Japan include: Sekisui House (63,300 homes built in 1999), Daiwa House (38,000), Misawa Homes (34,000), Sekisui Chemical (24,180), National House Industries (18,300), Asahi Chemical Industries (15,800), Sumitomo Forestry (10,550), and Mitsui Home (9,600). These firms often supply building materials manufactured in their own factories even though the actual construction is subcontracted out to smaller companies. The regional housing companies are based in the local communities and they provide design, sales, and construction services. The medium-sized companies typically build approximately 50 houses annually. These companies see high potential growth because they construct most of the 2x4 houses whose sales are expected to grow rapidly (Pacific Rim Wood Market Report 1996). On many occasions, the actual construction is subcontracted to smaller companies.

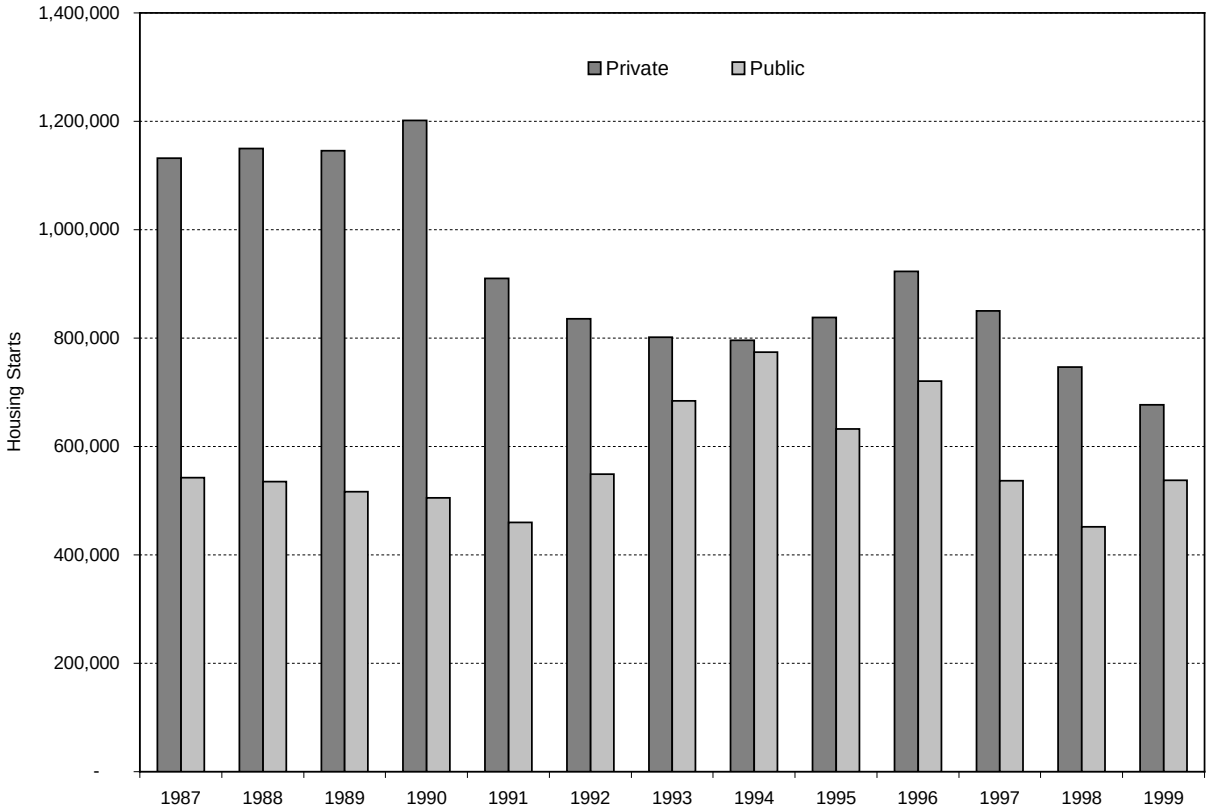

Figure 14. Number of Total Housing Starts, by Source of Mortgage Funding
Source: JETRO 1993; Japan Lumber Journal 1998a.

The smallest housing companies do most of the actual construction of houses for both themselves and for the larger companies. The small companies include self-employed carpenters who work as labor subcontractors. The small companies build roughly three to five houses annually. Historically, small companies have controlled the largest market share within the housing industry. The Japan 2x4 Homebuilders Association describes how most of the North American 2x4 houses are constructed by small and medium sized companies (Roos and Eastin 1998). The large companies primarily construct Japanese-style 2x4 houses (based on a 3x6 module). The large national companies have seen their market share increase to roughly 20 to 30% of the single-family housing market, partly because they also construct steel and concrete multiple-family units whose market share has been growing.

Pesonen (1993) describes five main types of house builders and building contractors: large building contractors, local builders and carpenters, post-and-beam precutters, prefabricated housing companies, and platform-frame construction companies. The large building contractors consist of 6-8 major contractors who account for 15% of total residential construction. These companies deal primarily with concrete and steel-based multi-family residences. The local builders and carpenters include approximately 50,000 small companies who account for about 60% of total residential construction. These companies are primarily involved in the construction of wooden post-and-beam houses. The post-and-beam precutters are comprised of about 240 companies. These companies have "industrialized" the production of building components and construct about 60,000 units annually. The prefabricated housing industry is capital-intensive and oligopolistic. The 10 largest companies produce over 90% of the total units built. The platform-frame or 2x4 construction companies are comprised of 750 companies with the five largest accounting for over 50% of total 2x4 housing units.

A survey by the Management and Coordination agency found there were 92,500 companies directly involved in wooden house construction in Japan (JETRO 1996a). In addition, there were about 62,000 firms operating mainly as carpentry subcontractors. The average number of employees per housing company was 5.1, while it was 2.9 per carpentry business. These figures illustrate the fact that the majority of companies in the residential construction industry are small operations.

When a large housing company gets an order to build a house, it typically will subcontract the work to a construction company that in turn, subcontracts work to companies that specialize in various jobs such as foundation, framing, roofing and electrical work. After this level of subcontractors, there is usually another layer of subcontractors that do the construction. Levy (1990) has suggested there are potentially seven layers of subcontractors between the consumer and the actual workers who construct the house. This complex system is referred to as the "multi-layered" or "multi-tiered" subcontracting structure (JETRO 1996a). This system makes building a house in Japan more complex and expensive than in the US. In addition, constructing a house in Japan is also different than in the US because it is a common practice to include labor costs when invoicing material costs. This practice is called the *total material and labor* system (JETRO 1996a). This system makes it difficult to calculate the construction cost of a house.

Changing Nature of the Residential Housing Market

Historically, post-and-beam housing had dominated the residential housing market. In 1963, 86.2% of all residential housing starts utilized the traditional post-and-beam construction method (Coaldrake 1990). However, in 1996, they represented only 39.3% of all new residential housing starts (JETRO 1996a). Great inroads have been made mostly by the steel and ferro-concrete construction industry. Since 1968, the share of multiple-family housing units has increased 16.6%. Multiple-family housing units are characterized by high-rise, high-density condominium or "mansion" buildings where steel and concrete are used for structural integrity as specified in the building codes. In large cities such as Tokyo and Osaka, they are an absolute requirement to house the enormous population. Japan is already one of the most densely populated countries in the world at 857.1 people per square mile. However, the population density increases to 2,571.3 people per square mile because only 33% of Japan is habitable. The other 67% is made up of mountainous and uninhabitable terrain. In addition, for many people, mansions are more affordable than a detached single-family house (WWPA 1994). The only drawback to mansions is that their floor space is usually smaller than the average single-family residence. On average, the floor space for a single-family residence is 2.7 times greater than for a multiple-family residence (JETRO 1996a).

Inroads by prefabricated houses and 2x4 houses have further taken market share away from post-and-beam houses. Prefabricated units constructed of all materials comprised about 8.7% of residential housing starts in 1999 (Japan Lumber Journal 1998a). In addition, 2x4 units comprised about 6.2% of residential housing starts in 1999. Post-and-beam housing construction has also decreased because of an aging labor force. Many young people dislike entering the construction workforce because of the harsh and dirty work involved. The construction industry is not viewed as a favorable place to work because of a poor industry safety record in past years. It also takes seven years of apprenticeship training to become a post-and-beam carpenter-another factor, which discourages entrance into this profession (Cohen *et al.* 1996). As a result, the average age of a carpenter is almost 53 years old and it is estimated that the number of construction workers will decrease by 45% by the year 2000 (Pesonen 1993).

Japan has traditionally been a culture that shuns outside ideas and people. Consumers in Japan, however, are increasingly preferring the look of western style houses (JETRO, 1996a). This is especially true with the younger generation. A greater proportion of the population has lived or traveled overseas. The strong yen and the bubble economy of the 1980s and early 1990s allowed many Japanese to travel overseas and experience other cultures and lifestyles. In addition, there are significant numbers of Japanese who have lived overseas as a result of business transfers within a multinational corporation, overseas study, and homestays. These Japanese have seen the quality of housing in other cultures and are now demanding this same high quality for their own houses in Japan.

Most Japanese are very dissatisfied with their houses. A 1993 MOC survey showed that 49.4% of households are not satisfied with the condition or quality of their housing condition. Among the more commonly cited reasons are an inadequacy of space, inferior layout of rooms and facilities, poor noise and inadequate thermal insulation, and general wear and tear of their houses (JETRO, 1996a). There is great interest in matching the quality of their housing with their wealth and consumer spending power.

The Impact of the Economic Recession and Changes in the Japanese Housing Construction Laws and Regulations

Despite the gradual decline in wooden housing, the Japanese market represents a tremendous opportunity for US wooden building materials. Not only have exports of primary wood products experienced strong growth due to Japanese demand, but the Japanese demand has extended into secondary wood products as well. While not approaching the level of primary wood products, secondary wood product exports to Japan experienced phenomenal growth over the period 1989-1996, increasing by 245% to reach a level of $388 million.

However, since 1997 the economic recession in Japan has had a devastating impact on the Japanese housing industry, sending thousands of contractors out of business and reducing housing starts from 1.66 million units in 1996 to just 1.21 million units in 1999 (and the outlook for 2000 is approximately 1.25 million units). Not surprisingly, the decline in housing starts has had an adverse effect on US wood product exports to Japan, with exports of primary wood products declining by 52% and secondary wood products declining by 44% from 1996 to 1998. Similarly, Alaska primary and secondary wood product exports to Japan declined by 65%.

Compounding the impact of the economic recession and the decline in housing starts has been the surprising strength of the yen and the relative weakness of the Canadian dollar and the Euro. The impact of these currency changes has been to reduce the competitiveness of US wood products at a time when Japanese homebuilders are looking to increase their imports of wooden building materials. As a result, European exports of softwood lumber to Japan have increased dramatically, largely at the expense of US hemlock exports. Since 1989, the US market share for softwood lumber has declined from 48.3% to 10.7%, while the European market share has increased from 0% to 16.4% and the Canadian market share has increased from 50.9% to 59% (Figure 2).

As US manufacturers and exporters of wood products struggle to adjust to changes in the competitive environment in Japan, they are now being confronted with two regulatory changes that directly affect the Japanese residential construction industry. The revised Building Standard Law of Japan and the Housing Quality Assurance Law will significantly impact the structure of the residential construction industry in Japan, the mix of products that builders will use, and the range of services that they will require from suppliers in the future. In the following paragraphs, we will describe these regulatory changes and endeavor to explain their implications and the impact that they might have on the competitiveness of US manufacturers and exporters of wooden building materials.

Regulatory Changes in Japan

In May 1998, the Building Standard Law of Japan (BSL) received its first major revision since 1950. The major actions of the BSL now: (1) specify interim and final building inspections and (2) transform the BSL from a specification-based building code to a performance-based building code. The first revision of the BSL requires that all residential housing units receive an interim and final inspection. Further, completion of the interim inspection is required before a building is eligible to receive its final inspection. Since there are only approximately 1,800 building inspectors in Japan, the BSL revisions will enable private construction inspection firms to be established. To provide guidance to the private inspection firms, a qualification system and standards has been established within the revised BSL. In the future, contractors will be allowed to obtain a construction inspection from either a private construction inspector or an inspector from the local government agency. Although the BSL revisions went into effect in May 1999, given the shortage of inspectors in Japan, and the fact that many municipalities have not yet adopted the new inspection procedures, it is anticipated that the full implementation of this revision will take some time before it is fully phased in.

The second revision transformed the BSL from a specification-based standard to a performance-based standard. In the future, it is expected that any material that meets the performance standards can be used in residential construction. However, there is no mention about whether there will be reciprocity on test standards. Reciprocity would allow US firms to use the results of product tests conducted in the US in order to meet the performance standards in Japan to gain acceptance of their products. In addition, it is unclear how this change in the BSL will impact firms that have already gained code approval for their products under the previous version of the BSL.

In addition to revising the BSL, the Housing Quality Assurance Law (HQAL) was also promulgated to provide homebuyers with specific safeguards in resolving disputes with building contractors. The four objectives of the HQAL are to: (1) improve the quality and performance of residential homes, (2) provide homebuyers with a mechanism for resolving disputes with building contractors, (3) establish a set of "Housing Performance Indication Standards" against which specific houses can be compared, and (4) establish a housing completion guarantee system. The HQAL, which went into effect in April 2000, will significantly change the nature and structure of the residential construction industry in Japan, including the specification and use of domestic and imported wooden building materials. A more detailed assessment of the individual components of the HQAL is presented below.

The first objective of the HQAL is aimed at improving the quality and performance of new homes by requiring homebuilders to provide homebuyers with a ten-year warranty against structural defects and low durability (e.g., water infiltration into the structure). Under the guidelines of the HQAL, homebuyers may make claims against homebuilders if the structural performance or durability of a home is judged to be sub-standard relative to a specific set of judgment criteria (which have yet to be published). These judgment criteria, which are expected to be published soon as a set of "Judgment Standards for Defects," will be prescriptive in nature and likely very detailed. For example, it is expected that a floor found to have a slope exceeding 6/1000 would require the contractor to take action to level the floor.

Since 1982, the Organization for Housing Warranty (affiliated with the Ministry of Construction) has provided ten-year warranties for registered builders. Builders wishing to become registered with OHW simply pay a modest registration fee. As members of OHW, builders are required to cover all warranty costs during the first two years of the warranty period. However, during the remaining eight years of the warranty the builder is responsible for only a set amount of a warranty claim, with the remaining amount being covered by OHW. In the future it has been speculated that the two-year exemption period may be removed given the fact that OHW has only paid out approximately ¥50 million while taking in registration fees in excess of ¥12 billion. With the ten-year housing warranty guarantee now being mandatory, it will be interesting to see if OHW continues to provide registrations to all builders, regardless of size, financial stability, or qualifications.

There are a number of implications associated with this first component of the HQAL that are important to US manufacturers and exporters of wooden building materials. First, many small homebuilders will not be able to provide the requisite ten year warranty and they will be forced to either go out of business or become subcontractors for larger more financially stable firms. Second, most builders will look to use higher quality materials in their homes. This trend is already reflected in the fact that the use of dimensionally stable kiln-dried lumber in home construction has increased dramatically as has the volume of dry kiln capacity in Japan. Similarly, the use of glulam posts and beams has increased significantly and provided a tremendous market opportunity for European lamstock. Finally, homebuilders will look to the manufacturers and exporters of wooden building materials to provide extended warranty coverage for their products and in essence try to push the warranty responsibility back down the distribution channel back to the export consolidators and manufacturers.

The second objective of the HQAL is to establish a mechanism for resolving disputes between homebuyers and builders. To accomplish this objective, the HQAL mandates the establishment of Alternative Dispute Resolution (ADR) bodies in each prefecture in Japan. Each ADR will be staffed by a lawyer who will work to reconcile disagreements between builders and their customers during the ten-year warranty period. Using the "Judgment Standards for Defects" as a guide, the lawyer will judge the severity of the defect against the standard to determine if a defect exceeds the allowable guidelines. If a defect is judged to be in excess of the allowable standard, then the builder will be required to correct the defect or compensate the homeowner.

The third objective of the HQAL is to establish a voluntary set of "Housing Performance Indication Standards" against which the performance of individual houses can be compared. The specific types of performance characteristics contained in this provision of the HQAL include: (1) structural performance, (2) fire safety, (3) durability, (4) ease of maintenance and management, (5) energy efficiency, (6) air quality, (7) ratio of exterior openings to total wall area, (8) noise transmission, and (9) barrier free design. The performance of individual houses will be judged by a "Designated Evaluation Body" using the criteria established in the "Japanese Housing Performance Indication Standards". These evaluation bodies will be responsible for not only approving the architectural design of the house but they will also perform inspections of the home during the construction process including the foundation process, structural framing process, and interior finishing phases of the project. Houses that are judged to meet or exceed the performance indication standards will receive certification as a "Performance Recognized House", thus providing the builder with a way to differentiate their home from those of their competitors.

In addition, this section of the HQAL also makes provision for manufacturers of building components that meet the performance standards to become certified as "Authorized Manufacturers of Performance Components" thus providing them with some advantage in supplying their products to builders. While the performance indication system is voluntary, it is expected that once the Performance Indication Standards have been published, prospective homebuyers will begin to insist that builders show how their homes compare to the performance standards and in this way it may become an informal requirement of the marketplace. To the extent that domestic manufacturers have an advantage over foreign manufacturers in gaining recognition as "Authorized Manufacturers of Performance Components", this system has the potential to exclude foreign manufacturers and their products from a growing segment of the market.

Finally, the HQAL includes a provision for a Completion Guarantee System to protect homebuyers against default by, or the bankruptcy of, their contractor prior to the completion of the home. This provision of the HQAL was made necessary for two reasons. It is typical in Japan for the homebuyer to provide up front financing to the contractor during the construction process. For example, it is not unusual for the homebuyer to pay the contractor one-third of the price of the home before construction begins, with an additional third due after the house has been framed in and the remaining funds due upon completion of the house. This system may have worked well in the past but, given the current economic recession in Japan, a large number of contractors have recently gone bankrupt, leaving homebuyers with partially completed homes and outstanding payments due on building materials. The aim of the Completion Guarantee System is to provide homebuyers with a form of insurance so that, in the event their builder goes bankrupt, funds will be available to complete the construction of their house.

To date, two organizations have been established to provide completion assurance guarantees. The first organization, Jutaku Anshin Assurance Company, is a privately funded effort between 52 national building material retailers (each of whom contributed ¥5 million) with substantial support from a consortium of four major Japanese insurance companies. The second organization, known as the Organization for Housing Warranty, is a publicly funded organization that will also provide completion guarantees to homebuyers.

In order for a homebuilder to become a member of either of these organizations, they must submit a financial statement of their company for examination. Builders that are judged to be financially unstable will be unable to join either organization and therefore will be unable to provide their customers with a completion guarantee. It is estimated that there are approximately 160,000 contractors in Japan and less than 50,000 of them build more than ten homes per year while the remaining contractors tend to be very small firms who build just 1 or 2 homes per year. Given this industry structure, it is widely expected that many of these small firms will not have the financial resources to join one of the Completion Assurance systems. Obviously this will place these builders in an extremely weak position when they try to establish contracts with new customers. In fact, there is strong speculation that any new home construction being financed with a GHLC mortgage will be required to have a completion assurance guarantee issued prior to signing the construction contract.

This system of providing homebuyers with completion assurance guarantees, particularly the privately funded Jutaku Anshin Assurance Company, has significant implications for manufacturers and exporters of wooden building materials. It can be expected that Jutaku Anshin will focus on recruiting the larger, more financially stable, builders into their program. To the extent that this relationship encourages member builders to purchase their products through member building material retailers, while discouraging relationships with non-member retailers or direct purchases from US manufacturers and consolidators, it will effectively restrict market access for US firms. The direct relationship between Japanese builders and US manufacturers and consolidators, which in the past had become an increasingly important distribution channel, could be phased out in favor of keiretsu-like relationships within the assurance group.

In summary, several factors have contributed to a substantial restructuring of the building code and regulations that affect the residential construction industry in Japan. The primary objective of the changes has been to increase the quality, performance, and durability of residential homes while providing homebuyers with increased protection. However, a number of these changes have the potential to reduce the competitiveness of imported wooden building materials in Japan and severely restrict the ability of US manufacturers and exporters to sell directly to Japanese homebuilders. In addition, there is a strong likelihood that Japanese homebuilders (and wholesalers) will work to require that US manufacturers and/or exporters of wooden building materials provide extended warranties for their products that extend over the ten-year warranty period. All of these factors are matters of concern for US manufacturers and exporters of wooden building materials who could see their position in the Japanese market undermined by the new building code revisions and regulations.

ALASKA WOOD PRODUCT EXPORTS TO JAPAN

Japan is Alaska's most important export market. Not only has Japan consistently comprised approximately two-thirds of Alaska's revenue from wood product exports, but Japan also purchases almost all of Alaska's old growth Sitka spruce logs and cants. In terms of sales revenue, the second leading export destination is Canada, followed by South Korea. Like other PNW timber suppliers, Alaska has been heavily impacted by the Asian recession. Although export revenue from sales to Japan had been declining steadily since 1989, the impact of the decline in the housing market in Japan, which started during the fourth quarter of 1996, has had the most significant impact on revenues. Between 1996 and 1998, export revenue from Japan declined 65%, the greatest decline in Alaska's exporting history (Table 4). Alaska wood products performed similarly in the other Asian markets and forest products exports to South Korea declined 62%, while exports to Mainland China declined 83%.

Almost 95% of Alaska's wood products' export revenue is generated by softwood logs, lumber, and chips (Figure 15). Over 70% of Alaska's wood products are exported in the log form, with over 51% of log sales shipped to Japan. Other leading markets for Alaska logs include Canada, Korea, and China (Table 5). It should be noted that these export numbers may include limited volumes of pass through products, which are products that pass through Alaska ports en-route to international markets. Softwood log export volumes declined significantly between 1989 and 1998, largely due to declines in Japan, Korea, and China. Export revenues remained somewhat more stable as softwood log prices increased following supply constraints in the PNW, only to fall as a result of the Asian economic crisis.

While South Korea and China have been major consumers of Alaska logs, these markets are much more price sensitive than Japan. They also have different uses for imported logs, and prefer lower quality and lower priced timber. To a large extent, South Korea and China have substituted lower cost radiata pine for hemlock and Douglas fir as log prices in the US have increased.

Table 5. Alaska's Total Solid Wood Product Exports by Destination (US $ millions).

Destination	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Change 1996-'98
Japan	$436.4	$433.4	$374.7	$371.6	$482.9	$409.5	$375.9	$355.5	$301.8	$126.2	-65%
Canada	$9.5	$3.7	$9.1	$3.7	$1.9	$8.2	$36.3	$17.6	$26.6	$26.6	51%
South Korea	$44.2	$53.3	$37.8	$49.6	$77.5	$53.0	$58.2	$65.5	$72.0	$24.7	-62%
Hong Kong	$0.2	$0.5	$1.0	$6.1	$1.9	$1.9	$2.6	$3.9	$4.7	$5.9	51%
China	$25.4	$23.0	$30.0	$32.0	$22.3	$26.8	$18.0	$14.9	$9.4	$2.5	-83%
Other	$1.2	$1.2	$1.2	$1.2	$1.1	$1.2	$1.2	$1.2	$1.1	$1.0	-59%
Total	**$623.4**	**$620.5**	**$544.3**	**$574.4**	**$662.8**	**$579.7**	**$603.8**	**$528.7**	**$448.3**	**$192.7**	**-64%**

Source: U.S. Department of Commerce 1999

Table 6. Alaska's Softwood Log Export Volume by Destination (1,000 cubic meters).

Destination	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Japan	2,216	1,990	1,653	1,605	1,718	1,795	1,617	1,735	1,592	731
South Korea	2,903	2,204	2,019	1,354	755	500	570	336	271	51
China	2,096	1,539	1,456	915	433	274	63	54	64	55
Canada	137	128	132	31	13	38	607	181	50	68
Hong Kong	0	0	0	20	0	0	0	0	0	0
Other	9,020	7,767	6,257	5,958	4,817	4,514	4,413	4,502	2,744	2,953
Total	**16,372**	**13,628**	**11,517**	**9,883**	**7,736**	**7,121**	**7,270**	**6,808**	**4,721**	**3,858**

Source: U.S. Department of Commerce 1999

1 cubic meter equals 423 board feet

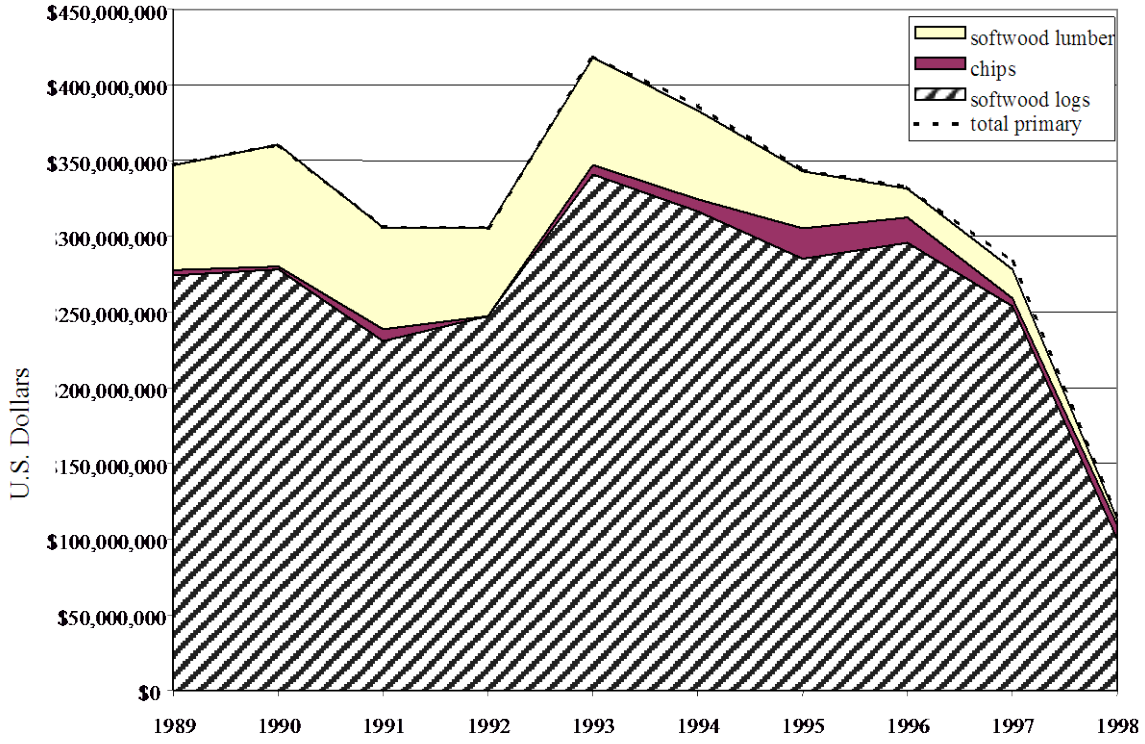

Figure 15. Leading Primary Processed Wood Product Exports from Alaska to Japan, 1989-1998
Source: U.S. Department of Commerce 1999.

Figure 16 shows average prices for comparative quality and diameter softwood logs in Japan, China and Korea. The log grades indicated represent standard log grades specified by the country destination, followed by the log diameter in inches. Pricing data indicate that hemlock logs 12" or more in diameter exported to Japan are consistently higher priced than logs of the same diameter, but of lower quality than logs exported to the Chinese market. While hemlock logs exported to Korea are 8" in diameter compared to the 12" diameter logs exported to China, they consistently command a similar price. Log sorts for each country are uniquely tailored to the specifications of that country.

US export statistics show that there are clear differences in export revenues by species. Figure 17 shows that Sitka spruce has maintained a relatively consistent price premium over other Alaska species. Sitka spruce is also the leading log species exported from Alaska to Japan (Figure 18). Over the past seven years, Alaska mills have exported approximately 200 million board feet of Sitka spruce to Japan annually, an average of 55% of total log export volume. The popularity of Sitka spruce may stem from the fact that it is commonly used in Japanese post and beam homes as a substitute for sugi, a domestically grown Japanese species. Hemlock is the lowest priced species, largely because it competes directly with hemlock supplied by lower cost producers in BC and the PNW and has been displaced by European and New Zealand pine in many markets.

A yen-based price index for major North American log species in Japan indicates price movement by species. Sitka spruce prices stabilized after 1993 and demonstrated an upward trend, indicating that spruce occupied a high quality niche relative to hemlock until mid 1997 (Figure 19). Sitka spruce prices also displayed more stability than hemlock or Douglas fir prices. Western hemlock and Douglas fir are imported in larger volumes than Sitka spruce and are therefore more susceptible to substitution by other species, especially within lower grade categories (Robertson and Brooks *unpublished report*). Alaska hemlock value has declined steadily since 1989. Western red cedar export volumes are low but appear to be filling a niche as prices rise.

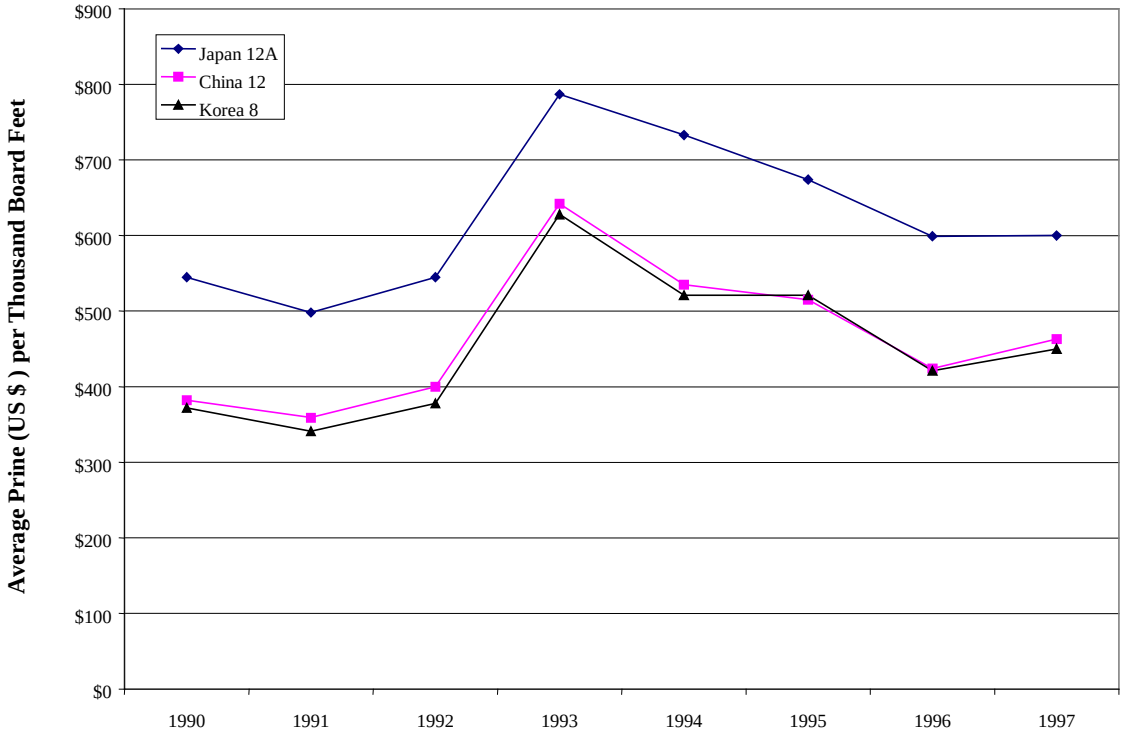

Figure 16. Average Price for Hemlock Export Logs by Grade (Source: Log Lines 1999).

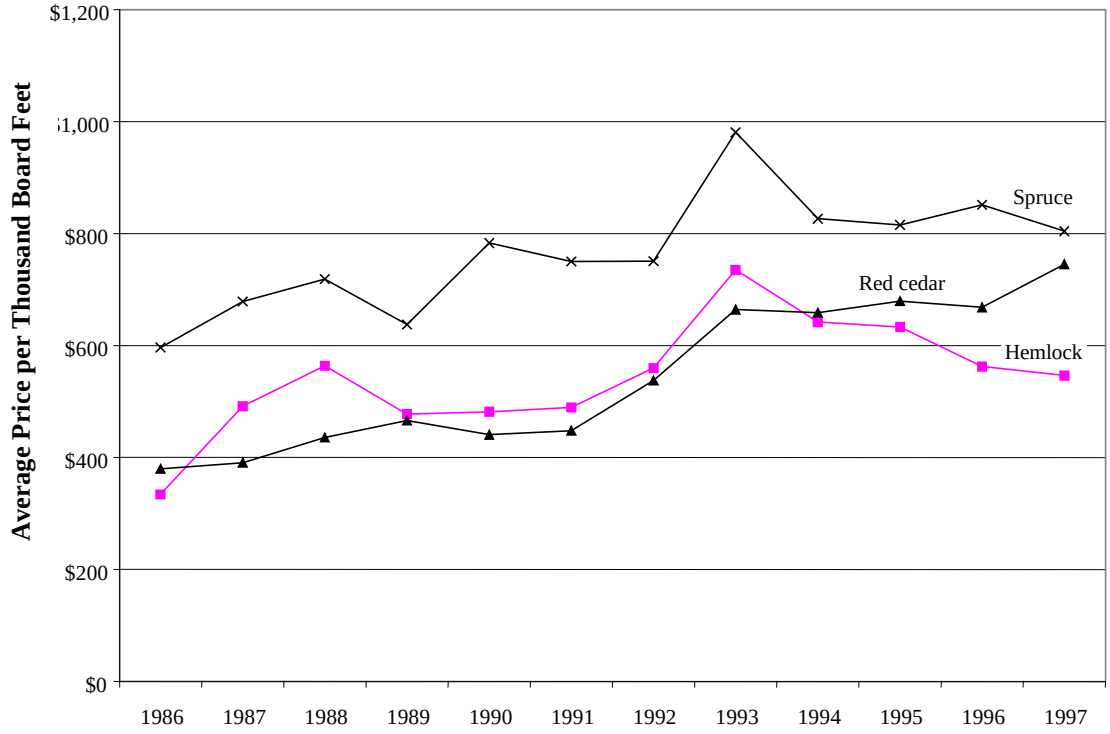

Figure 17. Average Value for Alaska Log Exports to all Destinations by Species (Source: Warren 1998).

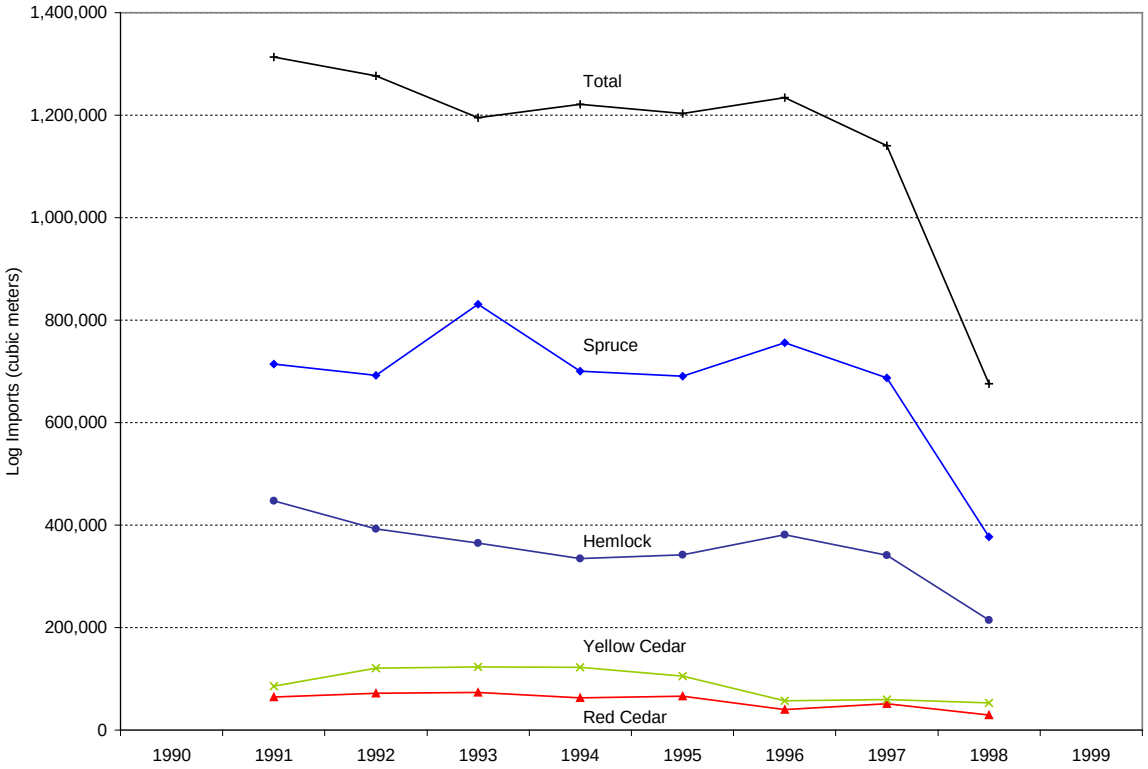

Figure 18. Alaska Softwood Log Export Volume to Japan by Species, 1991-1998
Source: JLIA 1999. 1 cubic meter equals 423 board feet

The impact of the harvest constraints on Alaska's competitiveness in Japan is evident when looking at Japan's softwood log imports by source (Figure 19). Alaska has a significantly smaller share of the Japanese imported softwood log market than Russian, US, or radiata pine suppliers. However, Alaska has maintained a much more consistent share of the Japanese market than suppliers in the continental US, who have lost market share to lower cost Russian, European, and radiata suppliers since harvest levels were reduced (Figures 20 and 21). PNW hemlock sold at high prices during the early period of harvest reductions in the PNW, but has since trended downward with Alaska hemlock. Douglas fir's structural characteristics, which are highly valued in Japan, have resulted in prices almost as high as spruce. The Sitka spruce/fir premium over other species remains at high levels even after the general decline in Asian market prices.

The volume of hemlock and Sitka spruce products has not only declined substantially over the past ten years but it has change in terms of the product mix (Table 7). The majority of spruce and hemlock products exported to Japan in 1998 were waney cants whereas in 1991 there was a substantial volume of squares and baby squares being exported. The decline in volume and the shift to waney cants is further evidence that Alaska sawmills have shifted to a strategy of minimum processing.

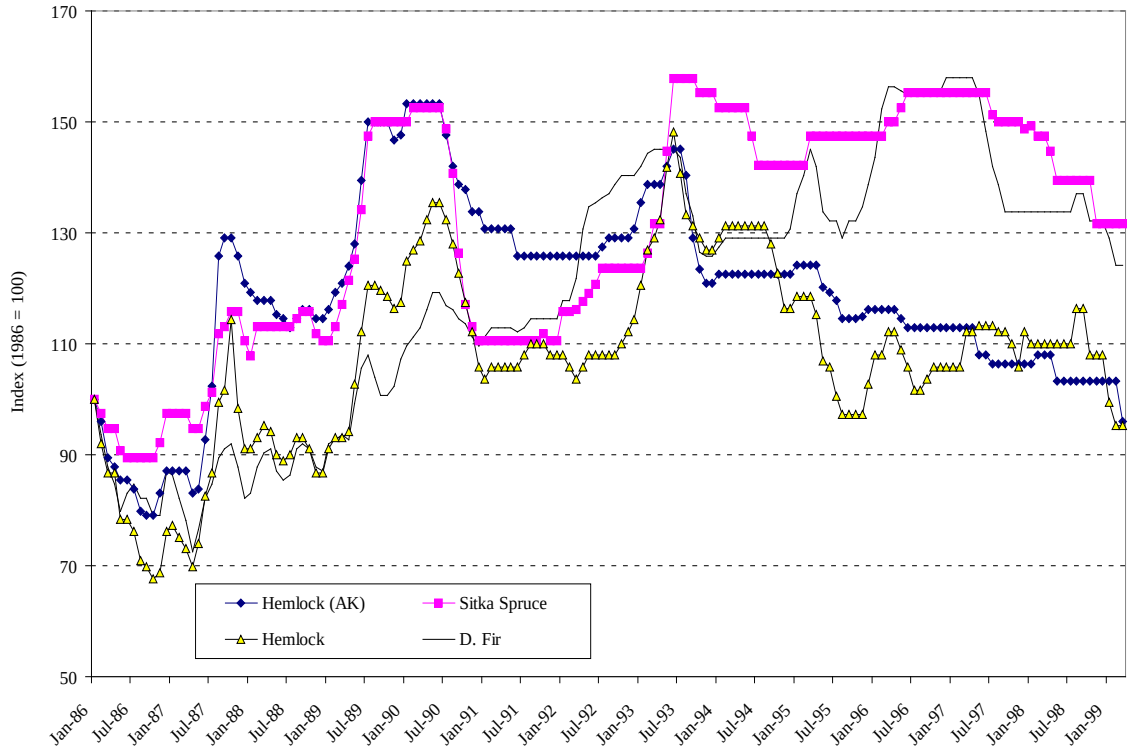

Figure 19. Japanese Wholesale Log Prices (Yen Price Index, Jan 1998 = 100)
Source: Japan Lumber Journal 2000b.

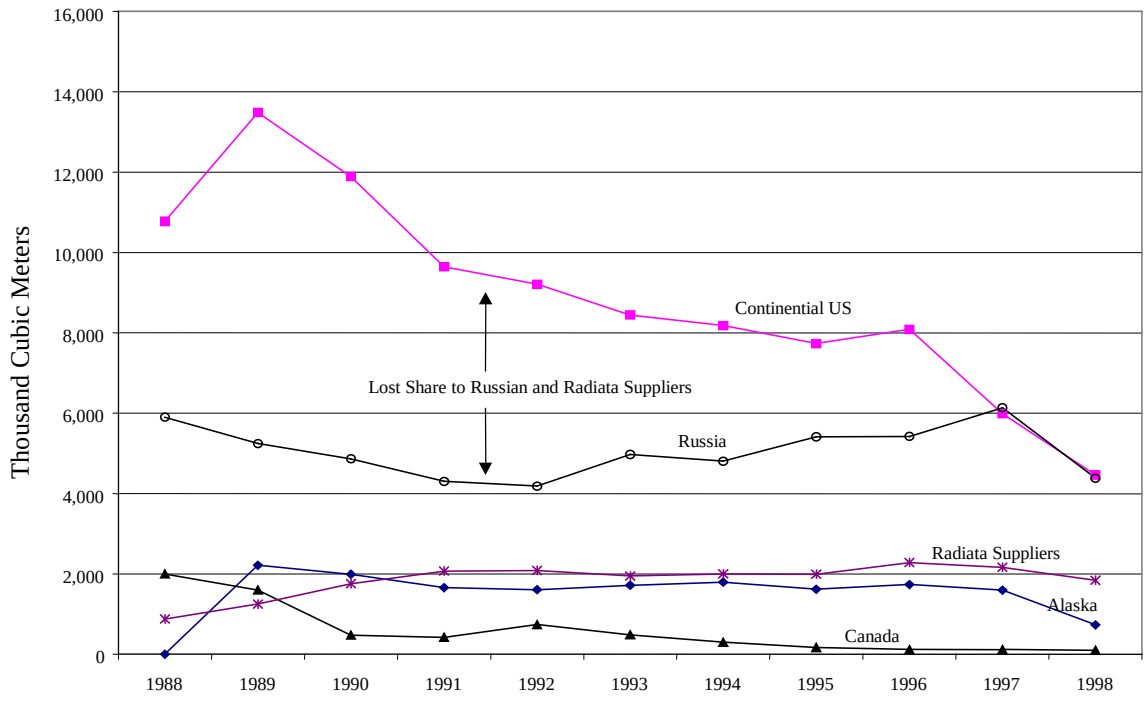

Figure 20. Japanese Softwood Log Imports by Source, 1986-1997
Source: U.S. Department of Commerce 1999, JAWIC 1999.

Note: 1 cubic meter equals 423 board feet

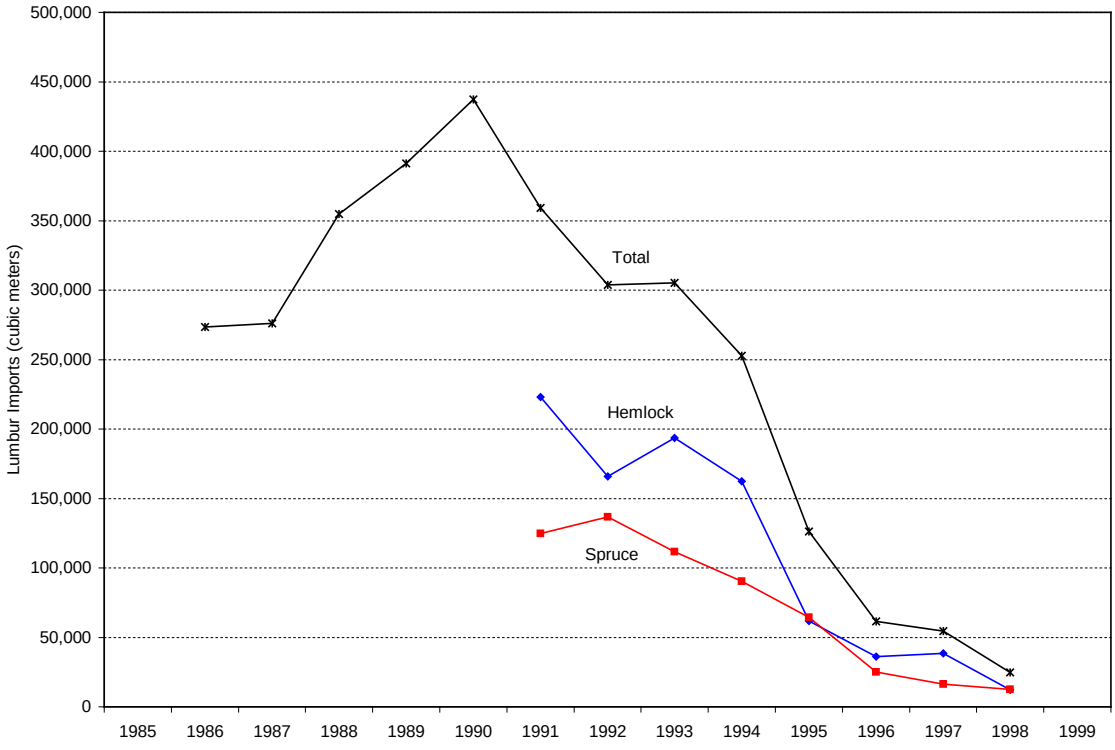

Figure 21. Japanese Imports of Alaska Softwood Lumber by Species, 1985-1999.
Note: 1 cubic meter equals 423 board feet

Table 7. Japanese Imports of Alaska Wood Products, by Product Type, 1991-1998 (cubic meters).

	1991	1992	1993	1994	1995	1996	1997	1998
Hemlock								
Squares	13,406	2,737	29,745	20,557	2,602	--	--	--
Waney Cants	61,774	65,115	62,772	59,562	40,285	17,074	9,217	4,139
Cants for Resaw	--	2,431	7,863	2,595	--	989	290	533
Baby Squares	46,960	32,217	26,630	42,938	12,102	9,171	13,671	1,740
Dimension Lumber	--	--	--	--	--	--	--	--
Various	100,961	63,298	66,501	36,599	6,818	8,979	15,179	5,886
Subtotal	**223,101**	**165,798**	**193,511**	**162,251**	**61,807**	**36,213**	**38,357**	**12,298**
Sitka Spruce								
Squares	18,188	1,781	20,838	18,768	3,142	--	--	--
Waney Cants	48,123	56,605	47,589	49,218	53,589	16,733	11,770	12,501
Cants for Resaw	--	253	954	578	--	2,492	--	--
Baby Squares	10,638	11,197	9,691	7,893	2,378	2,633	2,450	--
Dimension Lumber	--	240	--	--	--	--	--	--
Various	47,231	66,561	32,584	13,999	5,273	3,144	2,069	--
Subtotal	**124,180**	**136,637**	**111,656**	**90,456**	**64,382**	**25,002**	**16,289**	**12,501**
Total	**359,234**	**303,706**	**305,272**	**252,707**	**126,315**	**61,503**	**54,646**	**24,799**

Note: 1 cubic meter equals 423 board feet

CURRENT USES AND OPPORTUNITIES FOR ALASKA SOFTWOOD SPECIES

In 1999, well over 95% of Alaska wood product exports to Japan were comprised of hemlock, Sitka spruce, western red cedar and Alaska yellow cedar, the vast majority of which were exported in log and cant form. To provide a better understanding of how these species are used in Japan, each species will be discussed separately.

Hemlock

The majority of hemlock logs produced in Alaska are imported by Japanese trading companies who often import their logs directly from Alaska on log ships. Most hemlock logs are shipped to the Japanese ports of Tokyo, Nagoya, and Osaka. Once the logs arrive in Japan, the trading companies generally sell them to sawmills (approximately 30%) and wholesalers (approximately 70%). The wholesalers re-sort the logs, based on proprietary grades and the end-use requirement of their customers, before selling them.

Hemlock is traditionally used for structural building components, including posts (*hashira*), sills (*dodai*), and other less critical structural components, such as intermediate posts (*mabashira*) rafters (*taruki*), cross bracing (*sujikai*), and purlins (*moya*) (Tables 8 and 9). Competing species are Douglas-fir, Japanese cedar (sugi) especially in Hokkaido, laminated whitewoods from Europe and Russia, laminated radiata pine, Russian white spruce, and in high quality applications, Japanese cypress (hinoki) and Alaska yellow cedar. The largest single use for hemlock is as posts (*hashira*) used in post and beam construction. Three species, hemlock, Japanese cedar (sugi) and 5-ply laminated whitewood from Northern Europe have captured 90% of the post market. Japanese cedar (sugi) represents 30 to 40% of the post market, and hemlock is losing substantial market share to the European glulam beams. Loss of market share can also be seen in smaller semi-structural components, such a non-structural studs (*mabashira*), as European whitewoods, often laminated or finger-jointed, gain popularity.

European suppliers to the post and beam market in Japan have been successful in offering quarterly pricing and have kept their prices stable. Ninety percent of the European material enters Japan as lamstock while 10% or less enters as finished product. The European lamstock lumber is a very high quality kiln-dried product that is cut to Japanese specifications. Perhaps more importantly, Japanese importers indicate that another reason for the European success can be attributed to European producers responsiveness to Japanese customer requests and their willingness to provide products that meet their customers exact specifications. European five-ply glulam posts produced in Russia by Sumitomo Ringyo are also being imported to Japan.

Hemlock is also used in non-structural applications, including moulding, millwork and shelf material. Competing species include whitewoods from various regions, primarily Europe, spruce, and radiata pine among others. About 10% of the hemlock used is high-grade clear material for use in exposed Japanese house components (*yakumono*) such as *shikii* and *kamoi* (the upper and lower tracks for shoji screens), or in sliding panels (*tategu*) such as shoji. The primary competing species for these end-uses include Sitka spruce and Japanese cypress (hinoki). Similarly, clear hemlock is used in *zosakuzai*, the trim and casing used to imitate western-style interiors.

About 50% of all hemlock imported into Japan is low-grade material that is used for packaging material and competes with radiata pine and Japanese cedar. About 40% of all hemlock imports are used to produce posts and sills for post and beam construction. Finally, approximately ten percent of all hemlock imports are high quality old growth material that is used in non-structural appearance applications where it competes with Sitka spruce and Japanese cypress.

It is difficult to kiln dry hemlock and kiln drying often results in as much as 50% degrade. As a result, hemlock has traditionally not been kiln-dried with the exception of some structural and semi-structural end-use applications. In Japan, the recent adoption of the Housing Quality Assurance Law discussed earlier means that many builders are moving away from the use of green lumber in favor of kiln-dried lumber. This issue has caused significant market share to move from hemlock towards the kiln-dried laminated whitewood lumber from Europe. It should be noted that ease of preservative treatment is one of the reasons hemlock has traditionally enjoyed wide acceptance in the treated sill market. However, because hemlock is treated and installed in the green condition, it is widely viewed as being dimensionally unstable since it shrinks substantially as it dries. As a result, new technology such as the ability to laminate treated lamstock is causing the market to move to laminated Japanese cedar (sugi), radiata pine, and even yellow cedar.

Sitka Spruce

The majority of Sitka spruce logs used for structural applications are imported into Hokkaido while the higher quality logs that are used within the *tategu* (sliding panels) market are imported through Nagoya, Osaka, Shikoku, Hamamatsu, and Tokyo. Sitka spruce is used for structural components including posts and beams, primarily on the northern island of Hokkaido (Tables 8 and 9). The Hokkaido post and beam structural system uses 120mm square posts. The Sitka spruce logs that are sold into the Hokkaido market are generally a lower grade than the Sitka spruce used in other parts of Japan, and knots are much more acceptable in this market. As a result, customers in Hokkaido are much more price sensitive than customers in other regions of Japan and customers who are using Sitka spruce for higher valued end-use applications. It is possible that white spruce from interior Alaska might be acceptable in the Hokkaido market, assuming that its physical and mechanical properties are similar to those of Sitka spruce.

The Sitka spruce market in Hokkaido prefers 12-foot logs, which Alaska suppliers have been reluctant to provide. This may be one reason why the Hokkaido market is turning away from Sitka spruce in favor of Russian spruce (especially from Sakhalin Island), which can be purchased in standard 12-foot lengths. Standard lengths (9 feet for posts) of laminated European whitewood have also succeeded in taking market share away from Sitka spruce. It should also be noted that Hokkaido was the first area in Japan to import whitewoods from Northern Europe and it is estimated that Sitka spruce now holds only 15% of the Hokkaido post market.

Spruce is also used throughout Japan, especially in urban areas, in clear grades for exposed house components (*yakumono*), such as *shikii* and *kamoi*, or in sliding panels such as shoji and fusuma and as trim and casing (*zosakuzai*). Several examples of interior use of Sitka spruce are presented in Photos 1-18. It is also used in musical instruments. It competes with hemlock, white spruce, Russian spruce, Chinese cedar, Japanese cypress (Hinoki), and Alaska yellow cedar. Several manufacturers indicated that while old growth Sitka spruce from both BC and Alaska is acceptable in appearance grade applications, Alaska Sitka spruce is preferred because there is a perceived tendency for the Canadian spruce to darken with exposure over time.

Several shoji manufacturers in Kanuma indicated that they have largely shifted from using Sitka spruce from Alaska to using white spruce from British Columbia. The primary reason for this shift is their perception that the quality of the Alaska Sitka spruce logs was declining as price was rising. In addition to white spruce, the shoji manufacturers interviewed continue to use small amounts of Sitka spruce and yellow cedar. With regard to size, they indicated that they prefer cants in 14-foot lengths. With regard to other clear sawn material, they require dimensions that will yield 36mm thick unfinished stock that will be subsequently remanufactured to a 30mm thickness. While some other standards are used in Japan (for example in the Tohoku region in northern Japan), most shoji are manufactured to the 30mm thickness standard. It should be noted that with the decline in the popularity of Japanese style tatami rooms, the tategu market is shrinking. In the past, it was this market that drove the demand for high quality Sitka spruce logs in Japan.

Several manufacturers suggested that there might be an opportunity for Sitka spruce dimension lumber in non-structural appearance applications. Given that dimension lumber is approximately 38 mm thick, this product would meet the thickness requirements established for the tategu market, assuming that it also met the quality requirements of the market. These manufacturers also felt that Sitka spruce lumber used within the tategu market could be purchased green or air dried because of its greater dimensional stability.

Alaska (Yellow) Cedar

Yellow cedar's natural decay resistance makes it a popular material for sills (dodai) in both post and beam and 2x4 construction (Tables 8 and 9). Six-foot sorts and lower grade material go to sills or laminated sills. The most common yellow cedar sill material is solid-sawn, and undried and generally milled into 105mm x 105, and 120mm x 120mm squares. Competition in the sill market comes from treated hemlock, treated Japanese cedar (sugi), and increasingly from laminated radiata pine (LVL) and laminated whitewoods. In spite of the competition, yellow cedar has been gaining market share in the sill market and this has been partly attributed to its natural decay resistance, which makes the use of toxic preservatives unnecessary.

Twelve-foot and longer high-quality log sorts are used for specialty construction such as marina construction and marine pilings, temple and shrine construction, and renovation work on temples and shrines. In these cases it often competes with Japanese and Taiwanese cypress (hinoki), the traditional favorite for temple construction. Canadian yellow cedar is often preferred over Alaska yellow cedar. Canadian logs have a larger diameter, tighter growth rings and there is a perception that Alaska yellow cedar has more decay around knots than yellow cedar from British Columbia.

Non-structural uses include tategu, keshozai, yakumono, flooring, and bathtubs. The majority of yellow cedar logs are imported into Nagoya, although it is also imported into the ports of Tokyo, Matsayama, Wakayama, and Shikoku.

Western Red Cedar

Western red cedar is traditionally used in decorative applications (keshozai) notably in ceiling panels as well as in sliding doors (tategu) (Table 9). It is not, however, the preferred species except perhaps in ceilings panels. The low cost of whitewoods from Europe, Russia and Canada make the future of red cedar seem bleak for these applications.

The influences of North American culture, however, have caused a boom in "outdoor life", as seen in sales of sports utility vehicles and outdoor garments and gear. There is a growing desire for backyard decks, lawn furniture, and planters, and only the lack of space will limit the scale of this trend.

Value added products such as outdoor furniture and planters may see increased sales in the future, as may building materials for decks. Finished or knock down products might be distributed through specialty stores such as flower and garden outlets, department stores, and do-it-yourself (DIY) outlets. As for decks, some consumers may ask a builder to assist with the project, and that builder will probably go to a lumber supplier for the materials. Other consumers will choose to do the work themselves, and might prefer to purchase kits or materials that are easy to handle and use. In such cases, a DIY outlet is the logical choice.

One interesting product that we saw was an interlocking wood paver system meant to be laid over a concrete veranda (Photos 19-20). The panels were about 12 inches square with a plastic interlocking back. Spaces in the wood and plastic allow water to pass through and drain away. While this product would see competition from other water resistant species, especially from Southeast Asia, the size of this market (mostly condominium dwellers) is potentially very large if such a product gained popularity.

Table 8. Post and Beam Construction Uses by Species.

Product		Market Share (%)	Share Change '99/'98
Post *(Hashira)*	Laminated	66.2	+5.4
	Cypress	14.0	+3.1
	Cedar	10.6	-7.0
	Hemlock	4.5	+0.3
	Other	4.6	-1.8
Beam *(Hirakaku)*	Douglas-fir	62.6	+3.6
	KD Douglas-fir	(37.9)	+10.5
	Laminated lumber	29.0	+1.6
	(Whitewood)	(12.6)	+4.0
	(DF)	(7.1)	-5.7
	Other	8.5	-5.1
Sill Plate *(Dodai)*	Hemlock	54.5	-17.6
	Yellow cedar	19.5	+8.3
	Cypress	9.3	-2.0
	Laminated	6.0	+5.8
	DF	2.9	-
	Others	7.8	-

Table 9. Description of Species and End-uses of Wooden Structural Components in Japanese Post and Beam Construction.

Components for traditional post and beam house

Component		Examples	Species Used	Usage
Kozozai	Structural components Used in all post and beam construction	Posts (toshibashira and kudabashira), beams (hirakaku), sills (dodai), and purlins (sumiki) Square posts (in mm.): 90 x 90, 105 x 105, 120 x 120, 130 x 130, 150 x 150 Rectangular beams (in mm.):	Hemlock	posts, treated sills
			Douglas Fir	beams, purlins
			Hinoki	posts, beams, purlin
			Japanese Cedar	posts, treated sills
			White Wood, Europe, Laminated	all, treated in sills
			White Wood, Russia, Laminated	all, treated in sills
			Radiata Pine, LVL	all, treated in sills
			Yellow Cedar high grade	posts, beams purlins
			Yellow Cedar low grade	sills, usually untreated
			Sitka Spruce, Hokkaido	all, treated in sills
			Russian White Spruce Hokkaido	all, treated in sills
Hagarazai	Semi-structural components Used in all post and beam construction	Non-structural studs (mabashira), cross-bracing (sujikai), rafters (taruki), floor joists (neda) typical sizes (in mm): 30 x 40 36 x 45 45 x 90 27 x 105	Hemlock	all
			Douglas Fir	all
			Hinoki	all
			Japanese Cedar	laminated mabashira
			White Wood, Europe, Laminated	laminated mabashira
			White Wood, Russia, Laminated	laminated mabashira
			Radiata Pine, LVL	laminated mabashira
			Sitka Spruce, Hokkaido	all
			Russian White Spruce Hokkaido	all
Yakumono	Integral exposed wood parts (clear) Used in Japanese rooms only	Horizontal band & top track (kamoi), bottom track (shiki)	Hemlock	all
			Hinoki	all
			Sitka Spruce	all
			White Spruce	all
			Yellow Cedar	all
			Chinese Ceda	all

Table 9. Description of Species and End-uses of Wooden Structural Components in Japanese Post and Beam Construction (Continued).

Components for Traditional Post and Beam House				
	Component	**Examples**	**Species Used**	**Usage**
Keshozai	Decorative and special components Used in Japanese rooms only. Note: this category includes many exotic and specialty species for special purposes	Decorative posts (tokobashira), tokonoma parts, decorative band (nageshi)	Hemlock	all
			Hinoki	all
			Sitka Spruce	all
			White Spruce	all
			Yellow Cedar	all
			Chinese Ceda	all
			Exotics	as specified
Tategu	Sliding doors, etc. Used in Japanese rooms only	Sliding doors (shoji and fusuma), rain doors (amado)	Sitka Spruce	all
			White Spruce	all
			Yellow Cedar	all
			Red Spruce	all
			Hinoki	all
Zosakuzai	Trim, casing, base Used in western-style rooms and often finger-jointed and overlaid	trim, casing, base	Hemlock	all
			Sitka Spruce	all
			White Spruce	all
			Yellow Cedar	all
			Red Spruce	all
			Hinoki	all
			Chinese Ceda	all
			Radiata pine	all
			Japanese Cedar	all

Photo 1. Alaska Sitka Spruce Waney Cants Stored at the Tokyo City Lumber Terminal.

Photo 2. Alaska Sitka Spruce Waney Cants.

Photo 3. **Sitka Spruce Waney Cants at a Shoji Manufacturer in Japan.**

Photo 4. **Logs at a Small Sawmill in Kanuma, Japan that Specializes in Custom Cutting Sitka Spruce.**

Photo 5. **Rough Sawn Spruce Boards are Stickered Prior to Being Air Dried.**

Photo 6. **Kiln Dried Sitka Spruce Lumber Cut to the 38mm by 135mm Dimension Favored by Shoji Manufacturers.**

Photo 7. Rough cut Sitka Spruce Lumber Stacked for Air Drying.

Photo 8. **Sitka Spruce is the Primary Species Used in this Shoji Manufacturing Company.**

Photo 9. **Older Production Machinery Means that Manufacturers are Reluctant to Change the Mix of Species they Use.**

Photo 10. Example of a Shoji Door Manufactured from Sitka Spruce.

Photo 11. Interior View of a Japanese Home Utilizing Shoji Components Manufactured from Sitka Spruce.

Photo 12. Interior View of a Japanese Home Utilizing Shoji Components Manufactured from Sitka Spruce. Note Wide Ceiling Panels.

Photo 13. Interior View of a Japanese Home Utilizing Shoji Components Manufactured from Sitka Spruce.

Photo 14. Interior View of a Japanese Home Utilizing Shoji Components Manufactured from Sitka Spruce.

Photo 15. Interior View of a Japanese Home Utilizing Shoji Components Manufactured from Sitka Spruce.

Photo 16. Interior View of a Japanese Home Utilizing Shoji Components Manufactured from Sitka Spruce.

Photo 17. Interior View of a Japanese Home Utilizing Shoji Components Manufactured from Sitka Spruce.

Photo 18. Interior View of a Japanese Home Utilizing Shoji Components Manufactured from Sitka Spruce.

Photo 19. **Top View of a Modular Outside Decking System Being Sold in Japan. The wooden Decking is Manufactured from Jarrah, a Durable Wood Species Imported from Australia.**

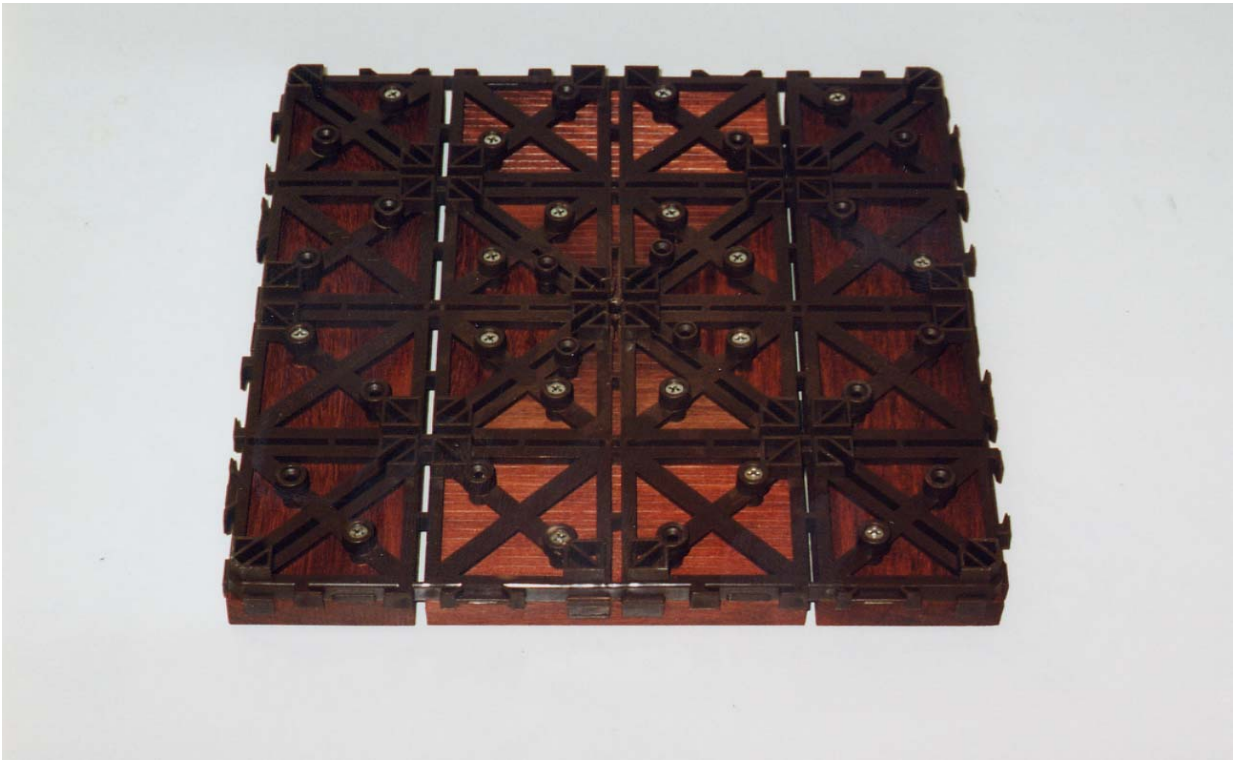

Photo 20. **Bottom View of a Modular Decking System Showing Type of Hardware Used.**

DIMENSION LUMBER

Two-by-four residential construction drives the Japanese demand for dimension softwood lumber. Deregulation in the housing industry and the growing popularity of western-style homes have stimulated demand for 2x4 homes. While still a small segment of Japan's housing industry, the proportion of 2x4 homes has more than doubled in the past eleven years. Despite this growth, the demand for US dimension lumber is struggling. Recent levels of 2x4 housing starts have been slow probably due to the economic recession in Japan and homebuilders reservations about the impact the Housing Quality Assurance Law (HQAL) on the wood-frame construction industry. The future use of green lumber is uncertain since provisions in the HQAL require builders to provide the homeowner with a ten-year warranty on a new home. More stable lumber products such as kiln-dried lumber and glue laminated lumber are expected to largely replace green lumber in new home construction. This preference for dry lumber is already evident from the price differences that exist between green lumber and kiln-dried lumber (Figure 22). For example, green hemlock dimension lumber prices are softening and in March 2000 sold for approximately 28,000 yen (US $263) per cubic meter. Comparatively, kiln-dried hemlock and SPF prices were stable at approximately $380 per cubic meter. Unfortunately, a time series of green dimension lumber prices is not available, although the comparative data for March, 2000 suggests that green hemlock dimension lumber sells for a 31% price discount relative to kiln-dried hemlock dimension lumber. Industry reports also indicate that sales of green Douglas fir dimension lumber and hirakaku beams are poor and prices are slipping (Japan Lumber Reports 2000).

Recently introduced certified rationalized post and beam housing may affect sales of dimension lumber and 2x4 homes. Two-by-four technology has been touted as superior to post and beam construction based on its superior structural performance in earthquakes and seismic events. The devastation that occurred during the Kobe earthquake in 1995 was viewed by many as proof of the superior performance of 2x4 construction relative to post and beam construction. However, the devastation occurred in structures that were built prior to 1980. The post and beam industry has countered by developing a certified rationalized post and beam housing system. The Housing and Wood Technology Center (HOWTEC) evaluates rationalized post and beam house systems for structural performance and provides certification for those systems that meet their performance criteria. As shown in Figure 23, the number of certified rationalized homes has increased over 600% since 1990. While there are still fewer annual housing certified rationalized post and beam housing starts than 2x4 starts, continued growth of the certified rationalized post and beam market could cut into sales of 2x4 homes. This could mean greater demand for kiln-dried baby squares and lower demand for dimension lumber. However, it is more likely that growth in certified rationalized post and beam housing starts would compete directly against the traditional post and beam segment of the housing market.

Japan consumes 60% of Alaska's softwood lumber exports, yet Alaska supplies less than 1% of Japan's softwood lumber imports. Over the past twelve years Alaska producers' export volume and share of the Japanese imported softwood lumber market has dropped from almost 6% to less than 1% (Table 11). Overall, Japan's lumber imports have fallen dramatically since the end of 1997 when the country entered a recession. Lumber consumption is showing signs of recovery, yet in the meantime there have been shifts in suppliers and changes in housing laws. These two factors have affected potential trade with Alaska and Japan. While Alaska suppliers have lost market share, lower cost suppliers have made visible gains, most notably, Canada, Russia, New Zealand, and Chile. Imports of high-quality European whitewood have also increased. European supplier willingness to produce kiln-dried lamstock cut to Japanese specifications has helped them improve their position in the Japanese market. The structural stability of laminated lumber is very attractive to Japanese contractors. In addition, the weakness of the Euro and the Canadian dollar have put Alaska producers at a competitive disadvantage in this more price sensitive segment of the Japanese lumber market.

Table 10. Japan's Housing Starts by Type, 1988-1999.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Non-wood houses	1,083,106	746,123	731,460	788,188	848,821	804,206	888,970	775,698	653,162	649,057
Wood houses	624,003	624,003	671,130	697,496	721,431	666,124	754,296	611,316	545,133	565,544
2x4 houses	51,093	45,437	52,933	56,299	64,037	73,989	93,693	79,458	67,923	75,864
2x4 % of wooden houses	8%	7%	8%	8%	9%	11%	12%	13%	12%	13%

Source: Japan Ministry of Construction 2000.

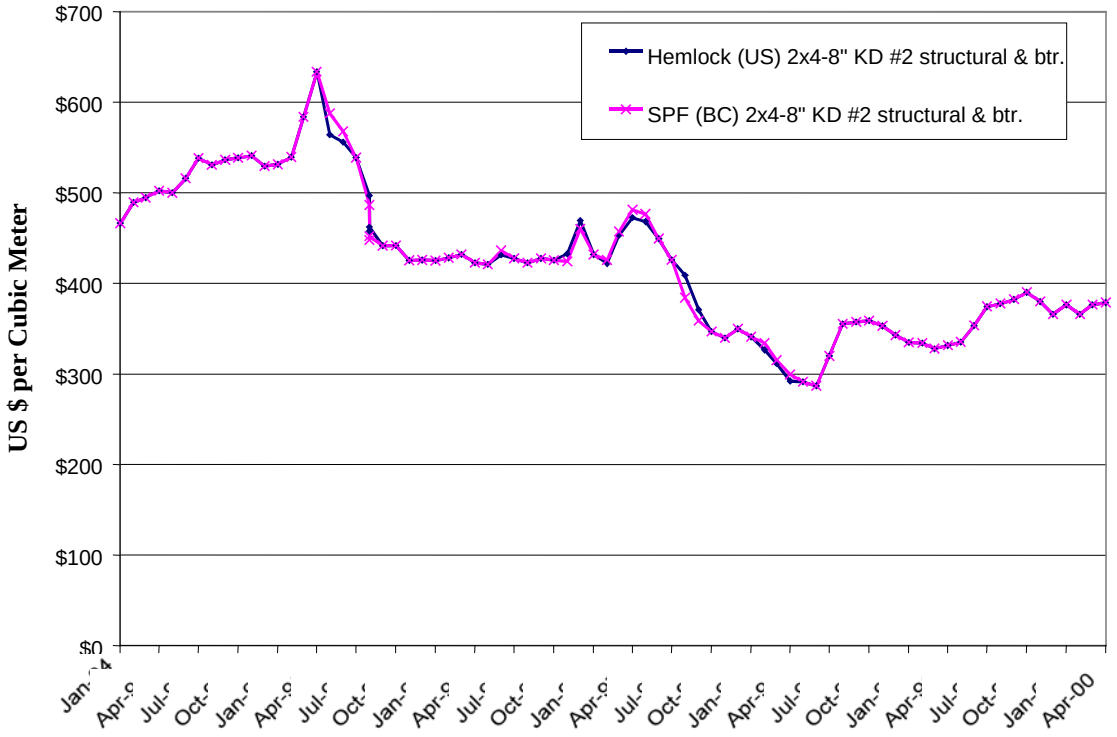

Figure 22. Japan Prices for Kiln-dried Hemlock and SPF Dimension Lumber (1994-2000).
Source: Japan Lumber Journal 2000.

Note: 1 cubic meter equals 423 board feet

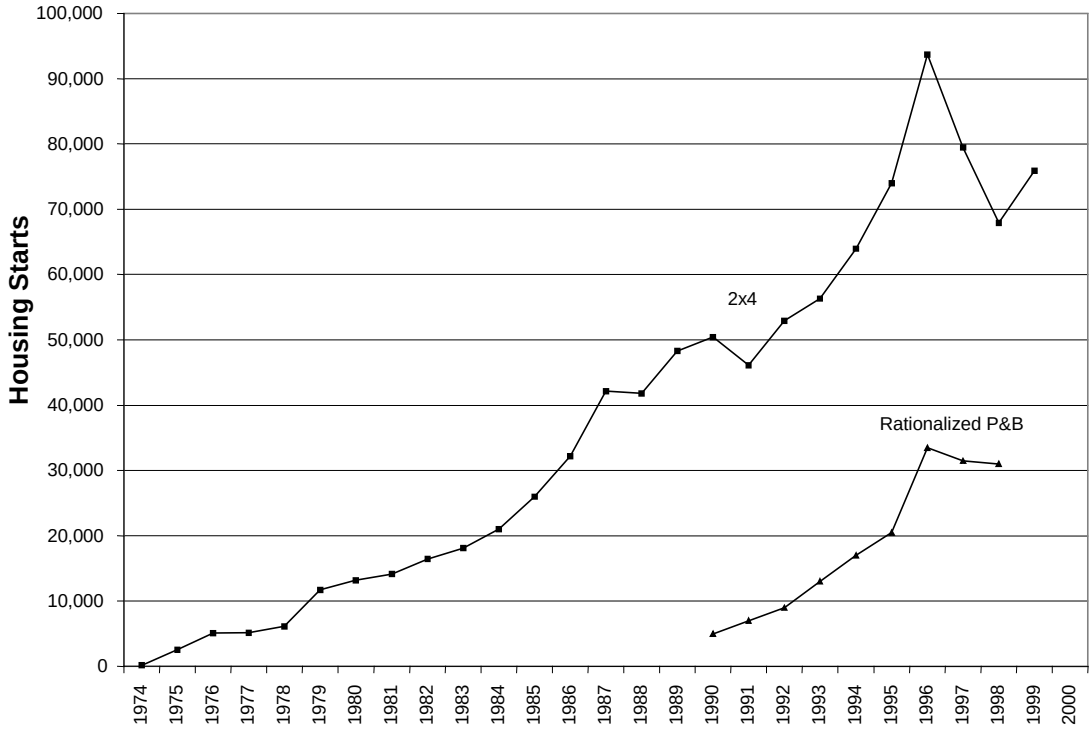

Figure 23. Annual Housing Starts Using the 2x4 and Rationalized Post and Beam Systems
Source: HOWTEC 1999.

Alaska's most significant competitor in Japan's lumber market is British Columbia. Even though harvest costs in coastal BC are higher than Alaska and the PNW, government controlled stumpage prices have enabled the Canadian lumber industry to maintain a cost competitive edge over regional competitors. Strong government support for the Canadian lumber industry, including international marketing support, workforce training, and low stumpage prices have helped Canada become a dominant supplier of softwood lumber in the US and Asia. If Alaska suppliers are to increase their share of Japan's dimension lumber market they must be able to supply kiln-dried lumber at cost competitive prices. This means improving the capacity and efficiency of local mills to include dry kilns. It also means being identifying a cost competitive method for shipping kiln-dried lumber.

However, changes to BC mills' production capabilities should make it increasingly difficult for Alaska mills to compete. In light of the HQA law, many BC lumber mills are expanding their kiln-drying capacity to supply the projected increase in demand. The volume of Canadian kiln-dried hemlock and Douglas fir lumber is expected to increase as BC coastal mills try to recover their lost share of the post market (Japan Lumber Reports 2000a) In addition, the US-Canada Softwood Lumber Agreement has restricted the volume of SPF dimension lumber that BC interior mills can export into the US. As a result, the volume of kiln-dried SPF dimension lumber exported from interior BC sawmills to Japan has increased substantially. However, the Japanese have expressed some concerns regarding the fact that SPF dimension lumber is not segregated by species prior to being kiln-dried. Thus, kiln-dried dimension lumber from Alaska that consists of a single species, rather than a species mix, might gain greater acceptance with Japanese homebuilders.

Another opportunity for Alaska producers may be to supply kiln-dried baby-square posts or lamstock for the post and beam construction industry. This market will still have strong competition from the Europeans (lamstock) and Canadians (hirakaku beams) but the size of the market warrants further investigation. While Japanese mills have historically had minimal kiln-drying capacity, the passage of the HQAL means that many Japanese mills have started to increase their kiln drying capacity. According to a recent survey conducted by the Japan Lumber Reports, the kiln-drying capacity of the Japanese sawmill industry just 15-20% of total lumber output (Japan Lumber Reports 2000a). However, the kiln drying capacity is expected to increase substantially in the next few years as the demand for kiln-dried lumber increases.

Table 11. Japan's Softwood Lumber Import Volume by Source (1,000 cubic meters).

Supplier	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Canada	4,000	4,000	4,500	5,400	5,200	5,350	5,700	6,000	5,700	3,950	4,717
Continental US	3,400	2,800	2,600	2,400	2,500	2,300	2,050	2,000	1,550	689	659
Europe	50	0	0	0	200	500	800	1,100	2,050	1,097	1,901
Radiata	230	350	350	300	350	300	450	400	700	654	709
Russia	175	150	150	150	170	200	250	250	300	307	459
Alaska	391	437	359	304	305	253	126	62	55	25	33
Total	**7,855**	**7,300**	**7,600**	**8,250**	**8,420**	**8,650**	**9,250**	**9,750**	**10,300**	**6,697**	**8,478**
Alaska share	5.0%	6.0%	4.7%	3.7%	3.6%	2.9%	1.3%	0.6%	0.5%	0.4%	0.4%

Source: U.S. Department of Commerce 1999, JAWIC 1999.

Note: 1 cubic meter = 423 board feet

JAPANESE MARKET FOR IMPORTED TIMBER FRAME AND LOG CABIN KITS

Overview of Japanese Policies to Promote the Import of Wooden Housing

Import housing has been defined by the Imported Housing Industry Council as "housing of basic foreign design concepts that utilize foreign materials in about more than half the materials used" (JETRO 1996a). It excludes housing that imitates foreign design or housing that uses only small quantities of foreign components and materials such as Japanese-style 2x4 houses (using the 3x6 module). Imported houses have been sold in Japan since 1909 when an American businessman first sold a prefabricated 2x4 house in Tokyo (JETRO 1996c). However, it was not until recently when the government and related parties have been focusing on increasing imported housing.

The Japanese government has been actively trying to increase housing imports. The Ministry of International Trade and Industry (MITI) announced plans to import 50,000 houses over a five to seven-year period starting in 1993 (Nakamae 1993). MITI also reduced the 4% tariff to 3% on imported housing kits. Furthermore, the Export-Import Bank of Japan increased the amount of low-interest loans available to companies importing houses. As a result, the Imported Housing Industry Council expects imported houses to reach 30,000 per year.

The Japanese government has implemented many programs to increase production of lower cost, high quality housing including imported 2x4 housing. The Ministry of International Trade and Industry (MITI), the Ministry of Construction (MOC), and the Government Housing Loan Corporation (GHLC) are among those agencies that have started promoting 2x4 homes. The MOC has proposed a plan to reduce housing costs to roughly five times the average annual salary for Japanese salaried workers (Yamakoshi 1994). This would be equivalent to reducing housing costs by 33%. They want to achieve this goal by fiscal year 2000. This was introduced by past Prime Minister Miyazawa in the "Five-Year Economic Plan: Sharing Better Quality of Life." This plan aim is to provide quality housing suitable for Japan's economic consumer power. They also want to import more low cost building materials (Pacific Rim Wood Market Report 1996). These goals were reinforced in the governments Action Plan announced in 1994. The Hashimoto administration implemented widespread deregulation by revising the Ministry of Construction's (MOC) 2x4 standards on March 30, 1997. Building standards are now less restrictive in order to reduce housing costs (Washington State CTED 1997). Some of the issues being studied included: reducing the time of issuing work visas for US carpenters entering Japan, providing wider acceptance of US lumber grade marks, and moving towards performance based building codes.

Reducing the time of issuing work visas will enable US workers to more easily enter Japan to build houses and educate Japanese construction workers on North American-style 2x4 construction techniques. Wider acceptance of US lumber grades will reduce the non-tariff barriers imposed on US lumber. A performance based Construction Standard Law allows various designs and building products to be used (Japan Lumber Journal 1997c). The Ministry of Construction anticipates that new products will be developed, new technologies will be used, and foreign products will be introduced into the marketplace. These will reduce the construction time of large wooden buildings, which are currently hampered by cumbersome regulations. The current Building Standard Law is considered cumbersome mostly because of the non-performance based specifications of engineering methods, materials, and sizes. Hopefully this has been addressed with the recent revisions to the Standard Law.

The MOC made many revisions to the Buildings Standards Law in order to allow easier market access for import housing companies. In 1987, MOC first allowed the construction of a 3-story wooden house, which met certain technical standards within the quasi-fire prevention area. Then in 1992, the MOC allowed 3-story wooden apartments outside of the fire prevention area and the quasi-fire prevention area (Japan Lumber Journal 1995). In 1993, the Building Standards Law was modified again by increasing the maximum allowable floor space for wooden houses from 21,500 ft^2 to 32,300 ft^2. These changes encouraged the building of three-story, multi-family wooden houses. These apartments are very attractive for Japan's aging population because the elder parents can live with their children in a less expensive and more convenient manner. It is estimated that the percentage of people over age 65 will increase from 14.5% in 1995 to 20% in 2010 (Kodansha International 1995). This is higher than the estimated percentage in the US and Germany of 16% and 18% respectively (Jahraus and Cohen 1997).

The MOC also allowed all North American wood products used in 2x4 construction, including lumber and plywood, to enter the Japanese market as they are without being graded to JAS standards on January 9, 1997 (Japan Lumber Journal 1997a). Both the American Lumber Standards Committee and Canadian Standards Accreditation Board lumber grades are recognized. These include grading agencies such as APA, WWPA, and NLGA. This reduces the cost of lumber and increases the speed of delivery.

The Government Housing and Loan Corporation has also increased the income ceiling for their programs to ¥13.225 million (JETRO, 1993). This allows a larger proportion of the population to qualify for inexpensive government mortgages. In addition, financing has been expanded so that houses up to 240 m^2 floor space can obtain financing. These changes have increased the percentage of people who can afford housing. MITI officially promotes imported housing directly through its Housing Industry Division and indirectly through the Japanese External Trade Organization (JETRO). JETRO is an international organization promoting trade with Japan's partners. They have a large budget to support information gathering and construction of model home parks. These activities promote imported wood housing as a high quality, less expensive type of housing.

Imported Wooden Housing in Japan

The market for imported wood products in Japan has been slow to recover from the 1997 Asian economic crisis and the subsequent recession in Japan. One exception to this has been the imported wooden home segment of the housing market, Table 12. Whereas Japanese imports of primary and secondary wood products have declined by 51.9% and 43.5% since 1996, respectively, imports of wooden homes increased by 17.9% over the period 1996-1999. In fact, the 9,638 homes imported into Japan represent a record, easily eclipsing the previous record of 8,173 established in 1996. Further, the import statistics suggest that this segment of the market has been much more resilient during the economic recession in Japan than has any other segment of the housing market.

The categories of imported wooden housing consist of log homes, 2x4 homes, panelized homes, post & beam homes (timber frame), as well as other types (such as steel frame homes and various proprietary construction systems). Industry statistics show that in 1999 the majority of wooden homes imported into Japan were 2x4 homes (67.7%), followed by log homes (8.1%), panelized homes (5.5%), and post and beam homes (1.9%). While imports of wooden homes into Japan reached a record high in 1999, the structure of the product mix has changed substantially since 1996. Log homes displayed the greatest growth with the number of units being imported increasing by 178% since 1996. More modest increases were also observed for post and beam homes (64.9%) and 2x4 homes (46.4%). In contrast, imports of panelized homes have declined by 74% since 1996.

Almost three-quarters of the wooden homes imported into Japan were sourced from the US, Sweden, and Canada (Table 13). The US, with a 42.8% market share in 1998, is the dominant supplier of wooden homes into Japan. Sweden, with a 15.5% market share, and Canada, with a 14% market share, are also import suppliers (Photos 21-23). Unfortunately, the Japanese imported housing statistics do not provide details of the types of wooden homes that were supplied by specific countries.

The market for log homes in Japan has traditionally been dominated by domestic firms using local timber species. The primary species used by Japanese log home manufacturers is Japanese cedar (sugi) which is used to build over 80% of the domestically manufactured log homes in Japan. Other domestic species used in log home construction include cypress (hinoki), larch (karamatsu), and in Hokkaido, spruce (ezomatsu) and fir (todomatsu). Log homes imported from the US are usually constructed using lodgepole pine and ponderosa pine, although Douglas-fir is also used. Imported log homes from Scandinavia are almost always built of red pine. Recent import data suggests that the traditional dominance of the Japanese log home industry is being challenged by foreign imports. For example, the most recent data show that the market share of domestic log homes dropped from 73.4% (775 log homes) in 1996 to 59.7% (627 log homes) in 1997.

Photo 21. Finnish Log Home on Display at a Model Home Park Just Outside of Tokyo.

Photo 22. Interior View of Model Log Home.

Photo 23. Detail of Log Wall Section.

Table 12. Japanese Imports of Imported Wooden Homes.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Log	213	174	242	297	472	617	281	424	565	781
2x4	500	582	572	819	1,067	2,509	4,456	5,152	5,199	6,522
Panelized	147	206	436	521	173	1,163	2,030	885	401	527
P&B	111	115	122	111	116	95	97	94	130	160
Other	515	336	340	413	575	1,136	1,309	1,293	1,220	1,648
Total	**1,486**	**1,413**	**1,712**	**2,161**	**3,024**	**5,520**	**8,173**	**7,848**	**7,515**	**9,638**

Source: Log House Association of Japan

Table 13. Suppliers of Imported Wooden Homes into Japan, 1998.

	Number of Homes	Market Share (%)
US	3,203	42.8
Sweden	1,164	15.5
Canada	1,050	14.0
Finland	191	2.5
Other	1,906	25.4

Source: Log House Association of Japan

The vast majority of log homes are built as either a primary residence or a vacation home (Table 14). In 1997, 30.6% of the log homes built in Japan were primary residences while an additional 43.9% were classified as vacation (or second) homes. The largest numbers of log homes were built in the Nagano (95) and Yamanashi (39) prefectures, located west of Tokyo (Table 15). In addition, a large number of log homes were built on the island of Hokkaido (66) and in Tochigi prefecture north of Tokyo (43). The industry statistics presented in Table 15 show that almost 90% of the log homes built in Japan have a floor area less than 1,600 ft^2. In addition, only about 15% of the log homers built in Japan utilized a GHLC mortgage, in contrast to the 30-35% of total housing that utilized GHLC mortgage funding during the periods 1990-1999. This would tend to indicate that most logs homes are being used as second homes and vacation homes for upper income Japanese.

The widespread use of model homes within the housing industry in general, and in particular the log home industry, is reflected in the number of model log homes built in 1998 (Table 15). The industry statistics show that 198 model log homes were built in 1998, which represents almost twenty percent of the total number of log homes built that year. The log home industry is dominated by a small number of companies. In 1998, just five companies built over 80% of the log homes in Japan, with just two of these companies (Aru Shicoa and Talo International) accounting for almost two-thirds of log home construction.

Table 14. End-use Applications for Imported and Domestic Log Homes in Japan.

	1996	1997
First House	255	322
Second House	465	461
Retail	33	26
Hotel/Motel	58	27
Sports Facility	10	18
Office	16	12
Meeting Hall	6	1
Other	213	184
Total	**1,056**	**1,051**

Source: Log House Association of Japan

Table 15. Number of Imported and Domestic Log Homes Built in each Prefecture, by Floor Area (1998).

Prefecture	Floor Area		Total Log Homes	GHLC Mortgage	Model Homes Established
	Less than 1,600 ft^2	Over 1,600 ft^2			
Hokkaido	61	5	66	3	5
Aomari	5	1	6	0	1
Iwate	2	0	2	0	0
Miyagi	7	0	7	3	2
Akita	2	0	2	0	0
Yamagata	5	1	6	0	0
Fukushima	12	0	12	0	1
Ibaragi	13	3	16	1	4
Tochigi	42	1	43	14	6
Gunma	28	2	30	1	15
Saitama	27	0	27	2	2
Chiba	24	0	24	1	10
Tokyo	11	1	12	1	3
Kanagawa	13	2	15	0	2
Niigata	7	0	7	0	0
Toyama	0	1	1	0	0
Ishikawa	2	0	2	0	1
Fukui	1	1	2	0	0
Yamanashi	37	2	39	3	9
Nagano	82	13	95	13	13
Gifu	18	6	24	1	5
Shizuoka	23	0	23	2	7
Aichi	6	4	10	2	0
Mie	19	2	21	4	3
Shiga	21	14	35	0	0
Kyoto	7	5	12	1	0
Osaka	3	11	14	2	1
Hyogo	10	10	20	2	2
Nara	4	4	8	1	0
Wakayama	6	1	7	1	0
Tottori	2	4	6	0	4
Shimane	2	0	2	0	0
Okayama	12	2	14	1	4
Hiroshima	9	2	11	2	2
Yamaguchi	0	0	0	0	0
Tokashima	1	1	2	0	0
Kagawa	1	0	1	0	0
Ehime	0	0	0	0	1
Kouch	5	0	5	0	1
Fukuoka	4	1	5	1	1
Saga	1	0	1	0	0
Nagasaki	6	0	6	2	0
Kumamoto	5	0	5	0	0
Oita	0	0	0	0	0
Miyazaki	0	0	0	0	0
Kagoshima	2	0	2	0	0
Okinawa*	0	0	0	0	0
Other	380	23	403	98	93
Total	**928**	**123**	**1,051**	**162**	**198**

Source: Log House Association of Japan

Table 16. Largest Log Homebuilders in Japan, 1998.

Company Name	Number of Log Homes Built		Total Number of Log Homes Built Since 1987
	Homes Built	Market Share	
Aru Shicoa	413	39.3%	1,772
Talo International	258	24.5%	1,427
Big Box	83	7.9%	180
Mountain Homes	52	4.9%	355
Mitsui	42	4.0%	593

Source: Log House Association of Japan

STRATEGIC RECOMMENDATIONS

Structural Lumber

The Japanese market is experiencing a period of transition due to regulatory changes and new construction technologies. These changes have had, and will continue to have, a dramatic impact on the mix of wooden building materials that are used in residential construction. In addition, these changes are widely expected to change the way that wooden building materials are distributed in Japan as well as the types of support services that Japanese customers will expect. This period of transition will provide opportunities for those suppliers of wooden building materials who are willing and able to meet the changing needs of the Japanese market.

Perhaps the most important aspect of these market changes has been their impact on how houses are built in Japan and the types of building materials that are specified by manufacturers and residential contractors. The Japanese market is transitioning from a green lumber market towards kiln dried lumber. This transition is happening in both the 2x4 market as well as the larger post and beam market with respect to lumber used in structural applications. As the market for green lumber shrinks in Japan, opportunities exist for Alaska manufacturers willing to provide kiln dried lumber to Japan. However, the Japanese have clearly indicated that they prefer softwood lumber to be dried on a species by species basis rather than within species groups (such as SPF lumber). Another consideration is that structural lumber must possess a grade stamp from either a recognized US grading agency (e.g., WWPA, and WCLIB) or the Japanese Agricultural Standards (JAS).

In particular, Alaska producers should be able to take advantage of the preference for Sitka spruce in Hokkaido to supply kiln dried dimension lumber for the 2x4 market and kiln dried baby squares for the post and beam market (90mm, 105mm, 120mm, 130mm, and 150mm squares). In addition, the price sensitivity of end-users in Hokkaido provides an opportunity to utilize lower cost and lower quality small diameter Sitka spruce logs. The increasing price sensitivity of the Japanese is an important factor to take note of since the Japanese have typically been price insensitive in the past.

Two other products that should be of potential interest to Alaska sawmillers are non-structural studs (mabashira) and sill plates (dodai) for post and beam homes. Mabashira are used to fill in between the structural posts and they are typically 30mmx105mm in size. The mabashira market may provide a good opportunity for utilizing white spruce logs harvested from interior Alaska. In the past, Japanese builders tended to use pressure treated green hemlock for dodai, which are generally 105mmx105mm and 120mmx120mm. However, homeowner concern about the environmental and health impacts of wood preservatives has provided an opportunity for decay resistant species to be used for dodai. Alaska (yellow) cedar is readily accepted by Japanese builders for use as dodai and this market has tremendous potential for Alaska producers.

The rapid growth of the precut industry provides an opportunity for Alaska sawmillers to export kiln dried lamstock to precut component manufacturers. Despite the fact that the Europeans currently dominate this market segment, it is still a potentially lucrative market for Alaska lumber producers to explore. However, this market requires not only that the lumber be kiln-dried, but also that it is planed to meet very demanding thickness and width specifications. The preferred dimensions for lamstock in Japan are 22mm in thickness and 108mm in width. Another factor is that, given the dominance of the Europeans in this market, Japanese lamstock manufacturers tend to prefer lighter colored woods, although this is not an absolute market requirement since many glulam posts are not used in exposed applications.

Non-structural Lumber

Perhaps the greatest market opportunity for Alaska softwood lumber exists in the market for non-structural lumber products. Japanese shoji manufacturers have a long history of utilizing Alaska Sitka spruce, western red cedar, and Alaska (yellow) cedar in the manufacture of a wide variety of products. Clearly there is already a strong market for logs and waney cants in the shoji industry. Japanese shoji manufacturers prefer waney cants over logs and the cants should be free of heart center (FOHC). Finally, the preferred dimensions for cants are 8.5, 6, and 2.5 inches in thickness and 14 feet in length. Random width cants are acceptable.

However, the opportunity exists to supply both green and kiln dried lumber to shoji manufacturers. Based on interviews with shoji manufacturers in the Kanto region, Sitka spruce and yellow cedar lumber can be supplied green while white spruce lumber should be kiln dried because of its tendency to stain. Shoji manufacturers have a preference for quartersawn lumber and, while they prefer clear lumber, they are willing to accept C&Better grade lumber. Lumber used for shoji manufacture should ideally be 38mm thick, 135mm wide and 14 feet long. However, the basic dimensions for shoji lumber are as follows: thickness should be at least 36mm and the width should be between 123mm and 190mm. Several shoji manufacturers noted that they were imported white spruce dimension lumber (2x6, 2x8, and 2x10) that they then remanufactured into more traditional sizes. The shoji manufacturers interviewed also indicated that they had already shifted heavily towards using white spruce in their products. They also indicated that price was an important consideration and that the use of lower priced Chinese ceda was rapidly increasing primarily because of its lower price relative to white spruce and Sitka spruce.

KOREA

ECONOMIC OVERVIEW AND MARKET SITUATION

With a land size slightly larger than the state of Indiana (38,031 mi^2), South Korea (Korea) is populated by almost 46 million people. The country is primarily mountainous, with approximately 80% of its population concentrated in lowland urban areas (Encyclopedia Britannica 1996). Migration to urban areas has increased in recent years, and by 1998 Korea's population density reached 1,185 people per square mile in urban centers, making Korea one of the most densely populated countries in Asia (World Almanac 1998). Korea's largest cities include Seoul (10.9 million), Pusan (3.8 million), Taegu (2.2 million), Inchon (2.1 million), and Kwangju (2.0 million) (US Department of State 1998).

Almost two-thirds of the country is covered by forestland, yet forestland totals only 1,594,324 acres, or 0.37 acres per capita, one-quarter of the world's average (Korea Overseas Information Service 1997). The Korean War, an increasing demand for fuel wood, and population growth, has depleted much of Korea's timber resource. Since the 1960s, the Korean Forestry Administration has embarked on a major replanting effort. The Korean Forestry Administration initiated the National Forest Extension Policy with the long-term goal to increase the size of national forests from 30% to 40% of total forestland in Korea (Yoo 1997).

Korea has emerged as an important market for US wood products. During the past 30 years, the country has enjoyed phenomenal economic growth and despite the Asian economic crisis, it is the 11th leading economy in the world and the 4th leading export market for US wood products, importing almost $900 million in wood products in 1997. By 1998, wood imports from the US dropped to $463 million as a result of the Asian recession, but they are beginning to recover. Rising consumer incomes have enabled more families to purchase single-family homes and increased exposure to western home design has piqued consumer interest. Western-style 2x4 homes have been introduced in Korea and are the primary driver for softwood dimension lumber consumption. Wood frame construction is also gaining support from the Korean government. Since the Korean government has almost reached its goal of providing a 100% housing supply, the Ministry of Construction and Transportation (MOCT) is redirecting its mission to focus more attention on building and promoting higher quality housing and more aesthetically pleasing living environments. These plans include developing several communities throughout Korea that will include lower density housing and wood frame homes. Building codes specific to wood frame construction are also being developed with help from US government and industry (Braden and Tichy 2000).

Solid wood products constituted one-third of US wood product exports to Korea in 1997. Unprocessed logs represent 86% of solid wood product exports; however, primary product exports are declining as secondary product exports are increasing. As shown in Figure 24, Korean softwood lumber imports from the US increased from $11.3 million in 1989 to $21.3 in 1997 yet by 1998, US softwood lumber exports to Korea fell to just over $6 million (USITC 2000). While 1999 statistics do not show improvement, the market has stabilized and it is recovering.

Despite the Korean government's efforts to provide greater access to its consumer markets, a variety of obstacles still remain. Some of these obstacles are specific to wood construction, such as inadequate building codes and a lack of technical training in 2x4 construction. Other obstacles are more generic. For example, the import and distribution process is not well understood, even to Koreans. There are limited port facilities and roads, and the dominant form of housing is concrete high-rise. Another important point is that *chaebol*, who dominate many of large construction contracts, can be unreliable when it comes to paying their suppliers. *Chaebol* commonly award contracts to suppliers solely on the basis of which firm will extend credit, the *chaebol* then reinvest these funds for the period before payment is due on the contract. The Korean recession occurred in part, because the *chaebol's* speculative investments failed, and as a result the *chaebol* could not pay their creditors, which forced many creditors into bankruptcy. Many Korean and American firms consider doing business with the *chaebol*, too risky, yet they dominate most of the large construction projects. Other suppliers report no problems receiving payment. Finally, the Korean government's main focus has been on providing housing for the greatest number of people. Since concrete high-rises offer this, there is limited knowledge among housing officials about wood frame construction and single family housing and little attention paid to this type of housing. If US exporters are to improve their competitiveness in the Korean market for wood products they must develop a better understanding of the residential

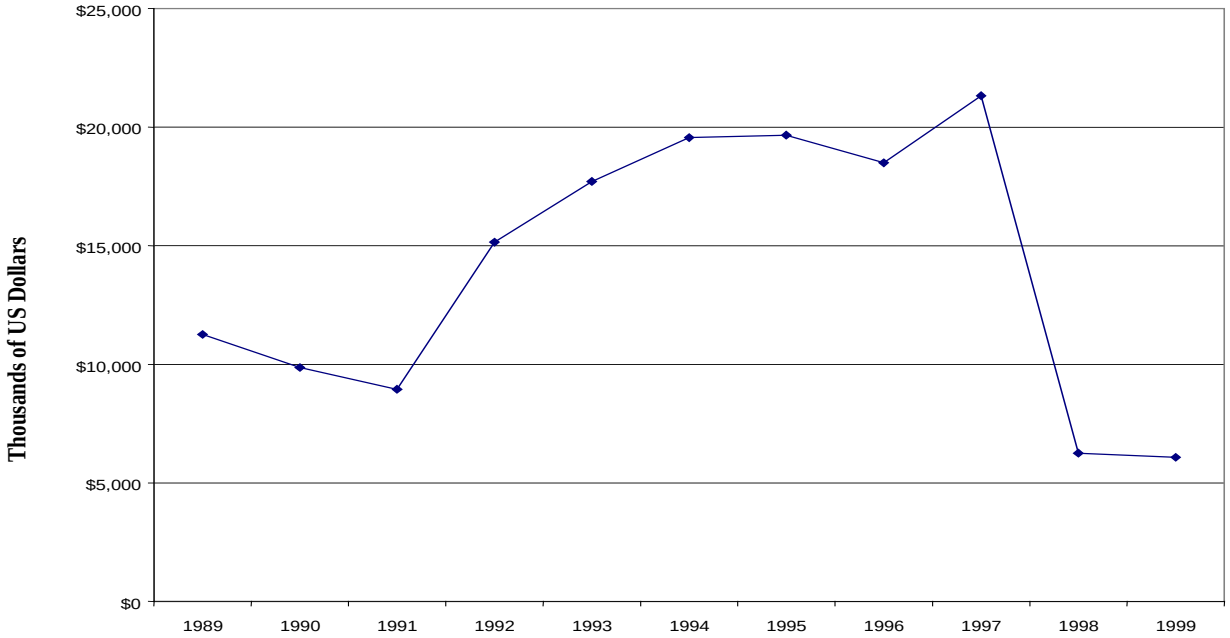

Figure 24. US Softwood Lumber Export Revenue to Korea, 1989-1999
Source: US International Trade Commission 2000.

Construction industry, consumer preferences and product needs, business practices, and consumer and government perceptions regarding wood frame housing in Korea. While upper income individuals are the leading consumers of 2x4 homes, lumber is still a commodity product, and Korea is a price driven market. Suppliers must provide appropriate products at a price that is competitive with European, and South American suppliers.

The Asian economic crisis has had a profound impact on the consumption of luxury goods, particularly wood frame homes and wood-based building materials. In late 1997, the Korean economy suffered a loss in investor confidence as a series of corporate bankruptcies occurred, and the accumulation of bad loans revealed unstable business practices among several of the country's largest *chaebol*, or conglomerates, and lending organizations. Consequently, domestic production and consumption fell, unemployment increased, and the overall health of the economy declined. The Korean won weakened against the US dollar, causing the price of imported goods to double. The Korean government, however, embarked on one of the most aggressive economic recovery programs in Asia. With financial help from the World Bank, Korea successfully instituted several long-term economic reforms that boosted its economy. In 1997, at the height of the recession, industry experts estimated that economic recovery would take 2-4 years, yet from 1998 to 1999, the unemployment rate fell from 8% to 5.7%, the won strengthened, and per capita income is expected to exceed pre-recession levels in 2000 (AF&PA 2000).

Korea, like many new markets, is a combination of opportunities and obstacles for US suppliers. The positive side of the Korean market is that 2x4 homes dominate the wood frame housing sector, and therefore the opportunities for higher grade dimension lumber are increasing. Suppliers do not have to produce market-specific products such as lumber cut to post and beam specifications, which is the case in the Japanese market. Since North American firms introduced 2x4 construction, construction techniques and materials that are used mirror North American techniques. North American industry has the opportunity to set precedents in the Korean 2x4 market and green lumber is among the products accepted.

The Korean market also has a downside. Korean carpenters are good at building concrete frames (rough carpentry) and finish carpentry, yet they are less skilled in wood framing. Training in 2x4 framing technology, in addition to instruction regarding proper handling and storage of wooden building materials is critical to the long-term success of wood frame construction in Korea. For the past four years the AF&PA Korea office has organized an annual two-week long 2x4 construction training program near Seoul in cooperation with the Korean Wood Frame Construction Institute and the Homebuilders Institute. There are still many carpenters, however, who do not understand the engineering and construction principles associated with properly building a 2x4 home and few architects trained in 2x4 design, which limits growth of the industry. It is important for technical transfer on the part of US wood products associations and individual firms to be an integral part of promoting wood frame construction in Korea.

The Korean building code represents another challenge to the widespread adoption of high-quality wood frame housing in Korea. The existing building code places restrictions on the maximum height and total floor area of wood-frame buildings, yet it does not include detailed requirements for structural performance aspects such as proper engineering principles, material use, and foundations. The lack of a detailed building code leaves room for the possibility that construction companies that do not have a complete understanding of wood frame housing may build substandard homes. The impact of poorly built homes may be compounded by the absence of building inspectors for wood frame housing. Instead, Korean law mandates that the builder or architect is liable for any damages resulting from substandard construction. While builders who construct dangerous homes can be criminally charged for any gross injuries, it may be that building codes are enforced only after major damages are incurred. A more likely scenario associated with poor construction is a dissatisfied customer. Given the small size of the wood frame home industry and the reliance on word of mouth advertising, the negative perceptions caused by a few poorly constructed homes could have a widespread impact on the industry.

DOMESTIC PRODUCTION, SUPPLY, AND IMPORTS OF WOOD PRODUCTS

Korea imports approximately 83% of the wood it consumes. In 1996, Korea imported 6.8 million cubic meters (2.9 billion board feet) (1 cubic meter = 423 board feet) of softwood logs, 1.4 million cubic meters of hardwood logs, and 366,000 m^3 of softwood lumber (Foreign Agricultural Service 1997). In 1998, imports of softwood logs dropped to 3.7 million cubic meters and Korea imported 194,000 m^3 of softwood lumber (Foreign Agricultural Service 1999). By 1999, demand for softwood lumber improved and Korea imported 215,000 m^3. Year 2000 imports should exceed previous volumes since 85,000 m^3 of softwood lumber was imported in just the first quarter (AF&PA 2000a).

Although logs, lumber, and chips are the leading wood imports, the general trend in import statistics indicate a decline in primary products such as logs and chips, and an increase in secondary products such as windows, doors, and prefabricated homes as well as lumber. Revenue from logs, lumber, veneer, and plywood remain much greater than secondary manufactured products, yet sales of secondary processed products have exhibited strong growth. According to Foreign Agricultural Service statistics, prior to the recession in late 1997, imports of logs, particleboard, and fiberboard have been declining since 1992, whereas imports of lumber, veneer, plywood, wooden doors and windows, and wood frame homes have increased. Wood frame homes displayed the most significant growth of all the products tracked, with a 1,023% increase from 1992 to 1996, and US export revenues totaling $29.2 million in 1997 (Table 17). Total exports of wood products from the US to Korea, however, have been declining steadily over the past decade. Largely a price driven market, the US must compete with lower cost tropical timber producers such as Indonesia and Malaysia.

The decision by Korean firms to select a particular supplier seems to depend heavily upon the agent the Korean firm interacts with. Some Korean firms base their opinions about wood products from the US on past experiences with lower grades of logs or lumber that have been common in Korea. Thus, opinions about the quality of US products vary greatly from company to company. While most importers reported that producers in the US and Canada provide the highest quality temperate hardwood and softwood products, others cited other countries such as Switzerland, Germany, and Russia. These varying opinions may be a case of a supplier or agent failing to provide materials that are appropriate for the intended final use. It is important in an emerging market such as Korea where reputation is highly dependent upon word of mouth advertising, that agents and sales people take the time to understand what their customers' product needs are before supplying the product. Attentive after sales service is also vital. It is important to understand if and why a customer is not satisfied with the product. Without an active customer satisfaction evaluation, customers are more likely to switch suppliers than voluntarily explain product problems. This is of particular importance to Alaska firms, which, with the exception of a few firms, tend to have few employees and limited resources. Supplying any overseas market requires a great amount of time to research the market to understand consumer preferences and requirements, as well as to secure, service, and maintain contracts. Even if a firm decides to use an agent as an intermediary to the Korean market, constant communication and an intimate understanding of the market is still necessary to ensure that the firm's products are represented well.

DIMENSION LUMBER

As shown in Figure 25, domestic lumber production in Korea peaked in 1988 at almost 6 million cubic meters with domestic sawmills consuming 8.8 million cubic meters of logs. By 1996-1997, consumption of logs for lumber production fell to approximately 4.9 million cubic meters. As shown in Table 18, 95% of domestically produced lumber was milled from softwood logs in 1997 (Wood Markets Quarterly 1997). Domestic sawmills and panel manufacturers facing rising overhead costs and dated technology are finding it difficult to compete with imported lumber and plywood. Industry analysts predict the domestic sawmill industry will continue to shrink. One analyst predicts 50% of Korea's sawmills will close during the next few years (Widman's World Wood Review 1997).

Table 17. Korea's Total Forest Product Imports, 1992-1998 (US $ millions).

Product	1992	1993	1994	1995	1996	1997	1998	% Change 1992-1996
Logs	919	1,183	1012	1,047	963	877	349	-.05
Lumber	250	452	373	409	465	453	166	81
Veneer	30	37	55	46	64	112	43	270
Particleboard	72	91	72	91	77	54	25	-25
Fiberboard	28	56	69	40	26	25	10	-9
Plywood	351	552	536	594	531	449	154	28
Doors & windows	32	48	67	80	110	101	34	216
Wooden homes	2.6	1.9	1.2	11.0	22.6	29.2	6.2	1,023
Total	**1,790**	**2,599**	**2,413**	**2,605**	**2,568**	**2,375**	**912**	**33**

Source: Foreign Agricultural Service 1999

Wood frame construction accounts for only a minimal amount of lumber consumption. Approximately 73% of lumber is used for concrete formwork or scaffolding, the majority of which is low quality softwood lumber (Table 19). The remaining is used as structural lumber in commercial and residential 2x4 wood frame construction. Despite the failing domestic sawmill industry, domestic manufacturers continue to supply approximately five times the amount of lumber imported. While the 2x4 construction sector is still small, it has great potential for growth. The number of western-style wooden housing starts increased from 97 units in 1994 to approximately 800 units in 1996 and an estimated 1,100 homes in 1997 (AF&PA 1998). In 1999, the wood frame home sector appeared to recover from the recession. There were 1,265 units started, a 13% increase over 1998. Two-by-four homes comprise 80% of total wooden house starts and the large number of total starts and building permits issued during the last quarter of 1999 bodes well for further recovery in 2000.

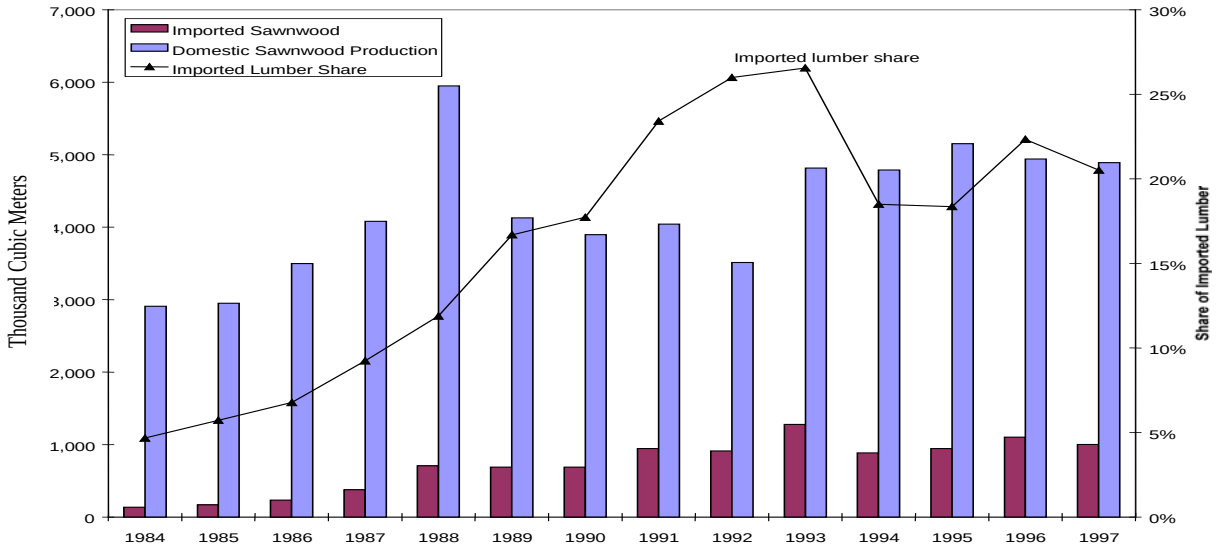

Figure 25. Lumber Imports and Domestic Production, 1984-1997
Source: Korea Forestry Administration 1997, Korea Plywood Industries Association 1998, FAS 1999.

Table 18. Korea Lumber Production by Species (1,000 cubic meters).

	1994	1995	1996	1997
Softwood species	3,190	3,014	3,105	3,073
Hardwood species	672	426	275	157
Total	**3,862**	**3,440**	**3,380**	**3,230**

Source: Korea Plywood Industries Association 1998, FAS 1999.

Note: 1 cubic meter = 423 board feet.

Table 19. Lumber End Use Markets by Product, 1997.

End Use	Sawn Wood	All Wood
Construction & Engineering	73.2%	56.1%
Packaging	10.2%	5.9%
Furniture	n/a	23.5%
Other	16.6%	14.5%
Total	**100%**	**100%**

Source: Korea Forestry Research Institute 1998

As the cost of labor in Korea has increased, domestic lumber production has become less competitive and lumber imports have increased. Imported lumber volume increased from 136,000 m^3 in 1984 to 1.16 million cubic meters in 1996. By 1999, Chile and New Zealand together represented 70% of the imported softwood lumber market, a 32% share increase from 1992 (Table 20). Chile has been the winner in the battle for market share, increasing its share of the Korean softwood lumber market 32% from 1992 to 1998. Meanwhile, the US has had a 30% loss in market share. Radiata pine from New Zealand is used as temporary construction material and for pallets and packaging, Korea's two largest end-use markets for softwood lumber. Softwood lumber imports from the US declined 30% between 1992 and 1998, largely due to US harvest restrictions and the strong US dollar. Canadian lumber imports have declined as well, but by 1998 Canada was still exporting almost twice as much softwood lumber to Korea as the US, although Canada's share of the market fell from 27% to 7% between 1992 and 1998 (Foreign Agricultural Service, 1999).

Where quality is not a major concern, the Alaska, Continental US and Canadian suppliers can expect to continue to lose market share to New Zealand, Chile, and tropical producers who supply lower cost materials. Domestic policies in the US that impose harvest or export restrictions and ultimately drive prices up will continue to have a negative impact on the competitiveness of US products in commodity markets such as logs and lumber. Logs, lumber, and plywood products from Indonesia can also be expected to become more competitive in the Korean market as prices drop in response to Indonesia's economic decline. The US remains far more competitive in non-commodity or niche markets, such as wood frame homes and wooden building materials, where consumers are looking for high quality as opposed to the lowest price. This is particularly true in the Korean wooden home industry, which caters to a high-income sector of the population.

Table 20. Softwood Lumber Imports by Country of Origin, 1992-1998 (1000 cubic meters).

	1992	1993	1994	1995	1996	1997	1998	% Change	1992 Share	1998 Share
US	54	29	23	26	19	19	6	-89%	33%	3%
Canada	43	83	53	41	50	50	13	-70%	27%	7%
New Zealand	28	33	40	91	77	77	42	50%	17%	22%
Chile	34	8	11	144	130	130	94	176%	21%	48%
Russia	--	18	20	17	8	8	--	0%	0%	0%
Others	3	17	5	47	68	77	39	8%	2%	20%
Total	**162**	**188**	**152**	**366**	**352**	**361**	**194**	--	--	--

Source: Foreign Agricultural Service 1999.

Note: 1 cubic meter = 423 board feet

Table 21. US Softwood Lumber Exports to Korea, by Species 1992-1999 (cubic meters).

	1992	1993	1994	1995	1996	1997	1998	1999
Sitka spruce	6,940,065	4,463,273	8,482,390	11,218,265	7,985,861	7,879,060	1,710,681	2,508,094
Pine	475,666	415,876	344,473	403,825	330,322	2,048,315	639,435	1,225,731
Cedar	91,656	93,508	124,976	--	323,257	748,391	155,682	396,918
Douglas fir	996,976	892,753	165,436	960,686	1,349,825	1,084,663	225,197	336,716
Hemlock	1,787,218	3,857,177	655,411	663,613	310,337	501,473	29,443	321,779
Southern yellow pine	512,983	13,477	--	47,508	54,808	209,626	--	139,694
Western red cedar	247,154	177,411	496,240	211,572	685,472	253,930	109,797	100,698
Coniferous, NESOI*	2,519,207	2,131,331	2,203,274	3,057,400	3,023,866	1,438,113	269,288	70,106
Redwood	266,808	475,900	154,648	276,806	285,179	286,200	24,931	43,540
Spruce, NESOI	1,082,431	5,011,600	5,918,937	896,318	1,966,999	3,345,826	465,197	19,446
Fir	7,566	111,200	--	985,628	1,889,956	795,584	105,087	--
Larch	--	--	--	--	25,776	16,397	--	--
Spruce-Pine-Fir	--	--	--	--	--	37,389	--	--
Yellow cedar	165,950	--	106,684	189,650	74,300	--	0	--

Source: USITC 2000. *Non-specified

Note: 1 cubic meter = 423 board feet

According to US International Trade Commission statistics, Sitka spruce is the leading species of softwood lumber exported from the US to Korea, followed by pine, cedar, and Douglas fir. Sitka spruce is in great demand by Korea's musical instrument producers. As shown in Table 21, although imports have not fully recovered, 1999 imports were two-thirds greater than 1998 levels. Cedar, the third leading import, is used for high-grade moulding and millwork. Imports of this species have more than doubled since 1998, an indication that the market for luxury goods is beginning to rebound. Douglas fir and hemlock, western species primarily used for dimension lumber in 2x4 construction, have begun to recover from the recent economic instability. Douglas fir exports peaked in 1996, declined, and have begun to increase, yet the overall trend is downward. Although hemlock was more widely used than Douglas fir, imports of the species are now lower than Douglas fir as the Koreans continue to substitute Radiata pine for hemlock.

STRATEGIC RECOMMENDATIONS

As stated earlier, the Korean market for primary and secondary wood products is price driven, with the exception of specific markets such as building materials for wood frame housing and musical instrument manufacturing. Consumers in the wood frame housing market will pay premiums for high-grade structural and non-structural materials, yet this market is very small. Furthermore, it is difficult for Alaska producers to compete with PNW and BC supplier prices for kiln-dried dimension lumber. Since the market is so small at this time, it is unadvisable for Alaska firms to incur the risks of attempting to supply this market for such low potential returns. Although US firms supply the majority of Korea's dimension lumber, lumber is still a commodity market, and therefore primarily price-driven. Where quality is not a major concern, the US and Canada can expect to continue to lose market share to New Zealand, Chile, and tropical producers who supply lower cost materials. Policies that impose harvest restrictions and rising wages in the continental US and Alaska ultimately drive prices up will continue to have a negative impact on the competitiveness of US products in commodity markets such as logs and lumber.

Rather than focus on Korea for higher processed wood products, such as lumber, it may be more appropriate for Alaska producers to focus on maintaining their share of the Korean market for pulp logs and Sitka spruce logs or non-commodity specialty wood products, such as wood for musical instrument manufacturing. Since Sitka spruce exports dominate US softwood lumber exports to Korea, it appears that Alaska suppliers have identified, not just a niche market, but also one of Korea's leading wood consuming sectors. Sitka spruce has unique physical properties that make it a superior material for wooden musical instruments and it is difficult for any other species of wood to take market share from Sitka spruce in this end market. Since the price for premium Sitka spruce is higher than the price for dimension lumber or wood that is used in plywood manufacturing, the musical instrument makes more sense for Alaska firms. Price competition is not an issue and the necessary manufacturing process is limited, so Alaska firms do not appear to have to upgrade their production facilities.

CHINA

ECONOMIC SITUATION AND MARKET OVERVIEW

Under China's economic reform program, domestic consumption of forest products has increased dramatically since 1986. China was the only Asian economy to increase its total imports of wood products following the 1997 Asian recession. China's GDP has increased at an average annual rate of about 9%, which has stimulated demand for primary and secondary processed wood products. While somewhat unpredictable, industry experts predict that China's growing demand for forest products will continue. The country's annual timber shortage is expected to increase from 40 million cubic meters to 90 million cubic meters from 2000 to 2010 as the recently announced logging ban takes effect. Total timber production for 1999 was expected to be almost 50 million cubic meters, yet demand was estimated to be 60 million cubic meters. Imports make up the remaining 10 million cubic meters (Waggener and Zeng *unpublished report*). FAS officials, however, estimate that unrecorded timber from illegal logging and smuggling makes consumption much higher than 60 million cubic meters (FAS 1999a).

China's forest products market, like many other sectors of the economy, is changing rapidly under economic reforms. There are several drivers for China's increased consumption of forest products, including rising GDP, one of the largest populations in the world, increasing construction activity, and newly lowered tariffs on forest product imports. Housing reforms have also stimulated demand for wood products. While demand is increasing rapidly, limited available forestland and increased forest protection measures constrain China’s domestic timber production (Waggener and Zeng *unpublished report*).

As the economy continues to develop, demand for secondary and manufactured forest products should continue to increase. Expenditures on primary, secondary, and manufactured forest product imports (solid wood, pulp, and paper) almost doubled, from $3.5 billion in 1992, to $6 billion in 1997 (Figure 26). Imports of primary forest products are relatively constant at about $1 billion. Rising consumption and declining domestic timber production will likely mean greater demand for imported secondary processed wood products. US wood product exports have also increased steadily. As shown in Figure 27, paper products are the leading US wood product exports to China, yet primary and secondary wood product exports have also increased.

To preserve forests threatened by floods, especially the type of serious floods that took place during the summer of 1998, the Chinese government announced efforts to limit deforestation. The most important action taken is a proposed nationwide logging ban for harvesting in the remaining natural forests. The demand for imported wood should increase as China depletes its current surplus of timber and wood products. This will likely create a growing timber shortage over the next several decades and should provide long-term opportunities for wood product imports.

In 1993, China launched its Affordable Housing Project, which brought rental prices for government housing closer to market prices. The project has also encouraged people to buy their own homes and will likely drive economic growth in the housing market over the next three to five years. The Chinese government is also encouraging privately owned housing by forbidding construction of employer-owned housing. While the public initially thought that housing reform policies would be immediate, including rent hikes to push people into the market for housing, the government bowed to opposition and will institute more gradual rent increases. Since the market will not be immediately flooded with individuals seeking new housing, the demand for wood should be strong but gradual as opposed to spiking. New construction of offices, shopping centers, apartments, and hotels has been uninterrupted. Although the Affordable Housing Project is expected to stimulate demand for privately owned housing, the number of single family homes, particularly wood homes, is low and limited to upper-income individuals (FAS 1999b).

An area of significant growth resulting from the Affordable Housing Project is in the apartment sector. As housing is becoming more market driven, the interiors of apartments are being upgraded. Wooden finishes in apartments are particularly popular in urban centers. Investment in new housing will also have a multiplier effect on associated industries, especially wood for construction, furniture, and interior use. Housing reform is a major national undertaking, however, which will only gradually bring new opportunities for foreign firms that export secondary and manufactured products to China. Imports of secondary and manufactured forest products could increase in the next five years, assuming the economy continues to grow at the same pace (Waggener and Zeng *unpublished report*).

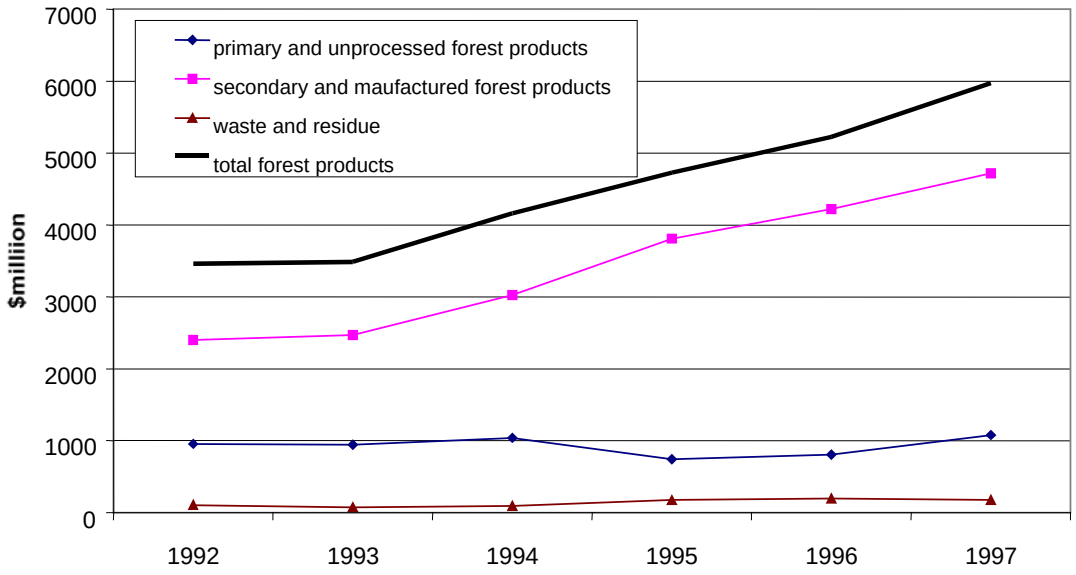

Figure 26. China's Total Imports of Wood Products, 1992-1997
Source: Waggener and Zeng unpublished report.

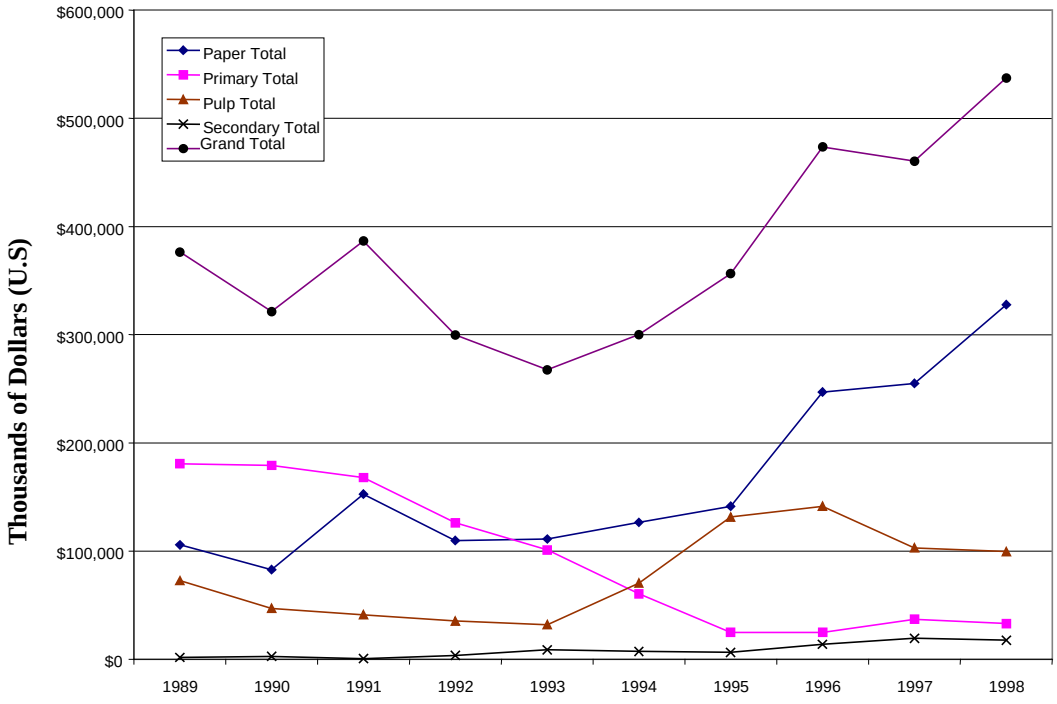

Figure 27. US Wood Product Exports to China, 1989-1998
Source: U.S. Department of Commerce 1999.

Expanding the single family wood-frame housing sector is difficult for several reasons. Building standards, codes, and regulations are inconsistent, and there are no formal quality control measures in place. There is also limited knowledge among Chinese housing officials and architects about proper 2x4 construction technology. If wooden building materials are to be more fully accepted, widespread education regarding structural applications and construction technology is needed (FAS 1999b).

While demand for wood products in China is increasing, price is a primary determinant in who will supply the market. As a result, Southeast Asia is China's primary supplier of softwood lumber. New Zealand, for example, was virtually non-existent in the Chinese market in 1993, yet by 1998 New Zealand was China's second leading supplier of softwood lumber. Several factors have helped New Zealand increase their market share including proximity to market, a consistent exchange rate, and a lower cost plantation resource. While radiata pine from New Zealand is lower quality than North American species, much imported wood is used for formwork, packaging, and remanufacturing into particleboard and plywood (FAS 1999b).

As shown in Figure 28, softwood log imports over the past two years have greatly exceeded temperate and tropical hardwood imports. However, softwood logs are generally used in low value applications such as pallets, plywood, and particleboard. Frames made of softwood lumber used to to package glass sheets for construction are also a signficant end-use for imported logs (FAS 1999b). As shown in Table 22, the majority of China's softwood log imports come from Russia and North Korea. Imports from the US have been inconsistent, but are improving. The China National Timber Import and Export Coropration (CNTIEC), a dealer and warehouser, imports low quality softwood for packaging. CNTIEC regularly buys Douglas fir logs from the US and New Zealand, but it recently purchased low-cost spruce and hemlock from Alaska. In 1996, 0.7 million m^3 of timber was used as packaging, yet recycled plastic pallets are becoming more popular and may increasingly replace wooden pallets. The Chinese government controls all imports through ownership of import-export corporations, limiting the number of legal avenues for importing wood products (FAS 1998).

Fearing that the Chinese longhorn beetle and other wood boring pests would be transmitted through pallets and packaging, the US, Canada, and the EU enacted restrictions on the import of Chinese wood packaging (FAS 1998). The export ban, China's logging ban, and China's efforts to develop alternate packaging to conserve wood resources should affect the future of China's leading wood consuming sector. Wooden boxes are already being replaced by by corrugated cardboard, wooden pallets by honeycomb paper, and bottom frames by iron. Bamboo plywood may also replace corrugated cardboard in situations where more strength is needed (FAS 1998).

Table 22. China's Softwood Log Imports by Country Origin, 1995-1998 (cubic meters).

	1995	1996	1997	1998
Russia	170,180	199,606	531,502	1,072,696
North Korea	68,993	223,103	258,408	174,293
Burma	209,389	84,989	--	--
Malaysia	19,810	--	45,588	86,072
New Zealand	31,035	64,102	29,685	75,280
Myanmar	--		23,910	16,546
US	55,896	26,749	27,956	47,790
Total	**590,118**	**639,395**	**930,170**	**1,480,230**

Source: Foreign Agricultural Service 1999b.

Note: 1 cubic meter = 423 board feet

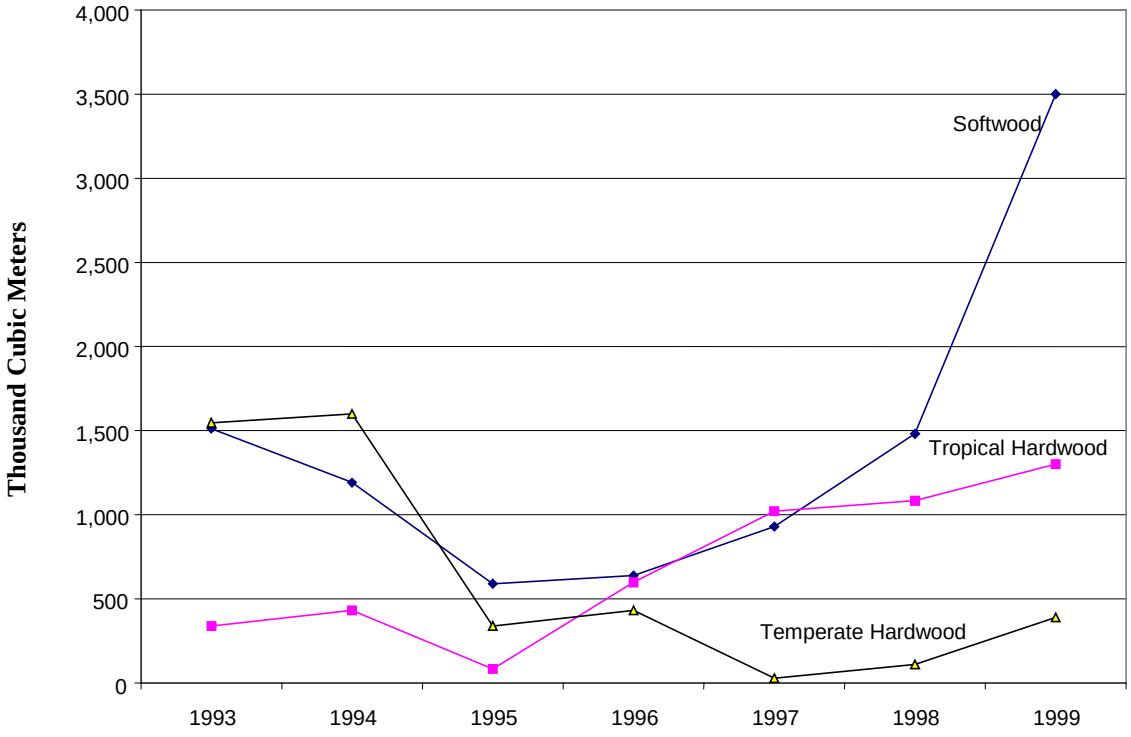

Figure 28. China's Log Imports by Type, 1993-1999
Source: FAS 1994-1999b.

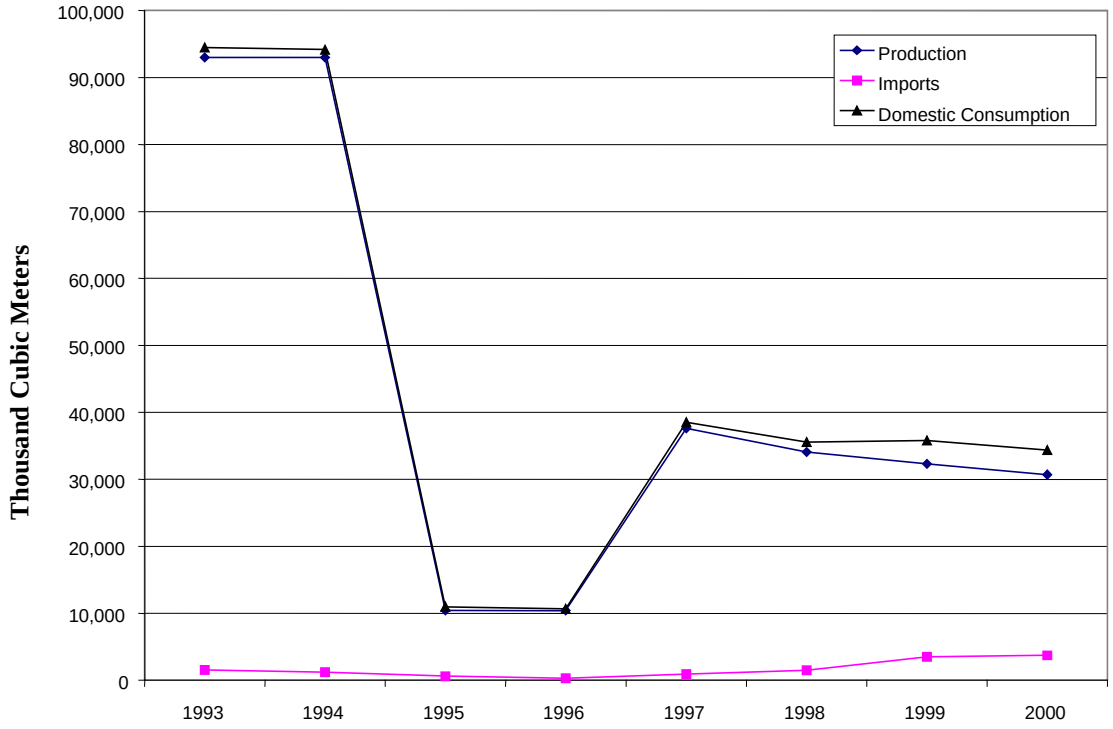

Figure 29. China's Domestic Production, Consumption, and Imports of Softwood Logs, 1993-2000*
Source: FAS 1999a.

*Estimate.

DIMENSION LUMBER

Import statistics indicate that the US is losing its share of the Chinese lumber market. As shown in Table 23, from 1995 to 1998, US export volume increased yet market share declined 2%. Market share has instead shifted to lower cost suppliers in Southeast Asia such as Myanmar, Indonesia, and New Zealand. While imports from Mongolia have increased significantly, timber production in Inner Mongolia was expected to decline 39% from 3.8 million cubic meters to 2.3 million in 1999, which should affect the volume imported by China. Total log and lumber imports are expected to continue to increase in 2000, although at a slower rate as the initial surge following the logging ban wanes (FAS 1999b).

The leading end-use for dimension lumber is wood-frame construction, which is a very small segment of China's housing market. Ownership of western-style wood-frame homes is limited to very wealthy Chinese or foreigners. Table 24 includes China's softwood import volume from the US by species. Very low volumes of yellow cedar and SPF were imported over the past seven years. There may be small volumes of white spruce and Alaska cedar included in the spruce and cedar volumes noted below, yet the total volume is negligible.

Table 23. China's Softwood Lumber Imports by Country of Origin, 1992-1998 (cubic meters).

	1992	1993	1994	1995	1996	1997	1998	% Share 1995	% Share 1998
Mongolia	254,144	83,183	n/a	32,327	5,955	174,516	265,637	21%	67%
New Zealand	--	--	n/a	6,577	2,447	23,579	27,358	4%	7%
Indonesia	2,659	7,832	n/a	9,223	3,304	17,627	17,345	6%	4%
US	5,107	1,322	n/a	8,903	2,040	20,862	16,557	6%	4%
Myanmar	16,441	--	n/a	--	--	15,097	13,590	--	3%
Russia	17,463	50,804	n/a	16,336	410	6,763	9,588	11%	2%
Canada	59,169	73,316	n/a	19,785	4,213	6,941	9,473	13%	2%
Malaysia	10,072	5,857	n/a	2,600	--	11,327	9,105	2%	2%
Taiwan	909	4,628	n/a	8,371	402	8,057	8,286	5%	2%
Kirghizia	--	108,546	n/a	--	--	--	--	--	--
Burma	--	24,067	n/a	40,651	6,088	--	--	27%	--
Other	4,259	8,153	n/a	8,514	1,889	17,953	20,982	6%	5%
Total	**370,223**	**367,708**	**n/a**	**153,287**	**26,748**	**302,722**	**397,921**		

Source: FAS 1999a.

Note: 1 cubic meter = 423 board feet

Table 24. Leading US Softwood Lumber Exports to China, 1992-1999 (cubic meters).

	1992	1993	1994	1995	1996	1997	1998	1999
Ponderosa Pine	--	--	--	--	--	37	1,283	1,838
Spruce, NESOI	6,176	--	--	--	--	2	367	864
Cedar, NESOI	--	--	70	140	197	259	257	536
Southern Yellow Pine	--	256	128	74	--	132	63	31
Western Red Cedar	--	--	--	--	60	169	134	9
Eastern White & Red Pine	--	--	--	--	136	--	--	--
Hemlock	8,030	386	413	--	--	--	3,064	--
Larch	--	--	--	--	--	--	--	44
Hem-Fir	--	6	--	--	--	242	55	--
Pine, NESOI	--	45	24	--	--	--	--	--
Redwood	--	179	298	--	1,057	--	--	--
Sitka Spruce	--	--	--	--	--	150	--	--
SPF	--	--	--	--	--	463	1,643	--
Yellow Cedar	--	--	--	74	281	--	--	--

Source: USITC 2000. *NESOI = non-specified.

Note: 1 cubic meter = 423 board feet

STRATEGIC RECOMMENDATIONS

While the 1998 logging ban on natural forests in China has stimulated demand for imported wood products, much of the wood products imported are low quality logs to be used in the country's furniture and remanufacturing sectors. As shown earlier in this section, softwood log imports over the past two years have greatly exceeded temperate and tropical hardwood imports. However, softwood logs are generally used in low value applications such as pallets, plywood, and particleboard (FAS 1999b). Low price is key in the Chinese market for wood products, which is reflected in the large share that Russia maintains of China's imported log market. One segment that Alaska producers have succeeded in supplying is China's pallet manufacturing sector. The China National Timber Import and Export Coropration, an importer and wholesaler that imports softwood lumber to produce pallets regularly buys Douglas fir logs from the US and New Zealand, yet it recently purchased low-cost spruce and hemlock from Alaska.

China may continue to be a market for Alaska's lower quality logs and green lumber. While the wood frame housing market and the markets for interior wood products are small, they are likely to grow as the Chinese government provides incentives for home owners. Inconsistent wood frame construction regulations and the challenge of changing consumer perceptions about the durabilty of wood frame housing may be obstacles that are too great to overcome for US suppliers to focus on the wood frame housing sector as an end-market. Interior wood products, however, are becoming increasingly popular among individuals living in apartments and single family homes. It is not likely that Alaska processors will make significant headway by producing finished interior products, yet as demand for upgraded interiors increase, Alaska producers may supply more raw materials for China's domestic manufacturing industries.

WESTERN EUROPEAN MARKETS FOR ALASKA LOGS AND LUMBER

ECONOMIC SITUATION AND MARKET OVERVIEW

The European market for wood products is a complex agglomeration of separate countries driven by varying economies, political systems, consumer preferences, building codes, and sources of supply, all of which shape the distinctly different demands for wood products. The markets for wood products vary greatly from country to country, making a discussion of the demand for wood products for the whole of "Western Europe" difficult to discuss. Instead, the countries of Western Europe should be treated separately. This analysis has identified particular countries where has been demand for decay resistant species and presents opportunities for Alaska species. It also discusses the economic and consumer factors that affect demand for these products.

Europe has historically been a difficult market for suppliers located on the US West Coast to access. For example, in 1998, Germany was the tenth leading destination for PNW (Washington and Oregon) wood products, totaling only $3.9 million (US Department of Commerce 1999). Most of European country's demand for softwood products is supplied domestically since shipping costs within Europe are moderate, exchange rates between European countries are somewhat similar, and products provided by European suppliers are often less expensive than those sold by US suppliers. Conversely, shipping costs from the western US are higher, inter-continental shipping can be lengthy, and exchange rates fluctuate. Since demand in the US has been extremely strong over the past few years, US suppliers also do not see a great need to focus on the European market and US wood products have not been price competitive. Identifying markets for Alaska wood products can be particularly challenging since the cost for Alaska mills to manufacture and ship wood products from Alaska is even higher than the costs for mills in the continental US. Given these challenges, a few growing markets have been examined to determine their potential for market entry by Alaska suppliers of naturally decay-resistant species such as western red cedar, hemlock, and yellow cedar. The end-use markets discussed in this section were selected on the basis of apparent recent accelerated activity and at the funding agency's request. These markets include the UK decking market, the Scandinavian siding market, and the German window market.

The most notable areas of expansion have been the decking market in the UK and the decking and siding markets in Denmark. There has also reportedly been an increase in the popularity of wooden garden furniture. According to representatives of the Timber Decking Association and Danish Timber Trade Federation, there are no statistics about the size of these markets since they are so new, but anecdotal evidence suggests that demand is increasing (Bjørner 2000 and Milner 2000). Since some European economies have started to recover from lagging 1998 markets, when interest rates increased and consumers feared a recession, housing starts have increased and repair and remodel activity has started to improve, particularly in the UK (FAS 1999d). There were 184,000 housing starts in 1998, 16,000 fewer than 1997, yet analysts predict that the number of starts in 2003 will equal 1997 figures (FAS 1999d). Construction activity in other countries such as France, Belgium, and Denmark has either been relatively flat or has declined during the past few years.

Despite the lower than average number of housing starts, repair and remodel activity comprises a large portion of the construction activity in the UK, which is typically the case when the number of new housing starts is depressed. According to the Department of Environment, Transport and Regions, in 1998, 48% of the US $62 billion construction sector was spent on repair and remodel work (FAS 1999d). This partially explains the surge in the popularity of new decks. While individuals may not be able to afford a new home, many can afford to build a new deck to improve their existing home.

While repair and remodel activity and the popularity of decks may improve the demand for lumber, most dimension lumber used for construction in Europe is spruce (*picea abies*) imported from Scandinavian and Eastern and Central European suppliers. In fact, price pressures from Eastern European suppliers, an overvalued pound, and the weak Swedish kroner, have caused some sawmills in the UK to cut back or close production. Price is key and the ample supply of European whitewood and redwood makes market entry for the US difficult. Despite the strong competition that domestic sawmills are experiencing, the UK Forestry Commission predicts that domestic softwood timber production will increase from 1998 levels of 8.4 million cubic meters to 15 million cubic meters by 2025, making the market for imports more difficult. In 1998, of the UK's 3.9 million acres of forests managed for timber production, 65% of the forests were softwoods with 32% (1.2 million acres) made up of Sitka spruce, 9% Scots pine, 6% Lodgepole pine, 6% Larch, 4% Norway spruce, and 8% other conifers (FAS 1999d).

Current Exports

Exports from Alaska to Europe are understandably, inconsistent. Shipping routes are complex and much of Europe's timber demand is filled by Scandinavian or Austrian suppliers. More recently, Eastern European suppliers have become an additional source of competition for US suppliers.

Solid wood exports from Alaska to Europe totaled less than $1.5 million in 1998. This was a significant increase from prior years and was due to a large shipment of spruce logs to Switzerland in 1998. As shown in Table 25, southern yellow pine and Douglas fir, both used for construction, are the leading US species consumed by Europeans, although exports of southern yellow pine have dropped dramatically over the past few years. Much lower volumes of Sitka spruce and cedar has also been exported from the US and Alaska. Total exports from Alaska to Europe are negligible and include less than 11,000 cubic meters of logs shipped in 1999, no lumber exports, and small volumes of miscellaneous value-added products.

Table 25. US Softwood Lumber Exports to Europe, by Species (cubic meters).

	1992	1993	1994	1995	1996	1997	1998	1999
Coniferous, NESOI	70,757	28,842	28,511	43,079	38,880	81,410	102,813	78,397
Douglas fir	233,541	127,704	109,737	79,992	67,055	68,670	62,455	59,514
Pine, NESOI	90,858	47,700	52,256	20,420	16,136	16,103	14,186	28,424
Southern yellow pine	474,862	322,494	317,906	301,073	269,433	8,860	33,994	14,686
Larch	1,462	1,879	2,390	490	275	1,512	10,375	14,445
Spruce, NESOI	8,837	6,956	1,574	1,590	754	1,607	885	10,105
Redwood	1,687	2,776	2,800	1,993	5,334	6,844	6,945	9,007
Eastern white pine	5,762	7,736	7,254	5,648	3,059	4,083	5,836	8,412
Hemlock	16,224	6,719	7,400	2,272	5,674	12,735	8,678	5,914
Fir, NESOI	8,560	3,779	1,793	10,657	4,368	6,072	6,108	3,882
Western red cedar	1,334	1,766	2,415	1,629	3,126	2,769	2,097	3,119
Lodgepole pine	9,178	1,864	860	424	2,515	4,965	1,451	2,203
Ponderosa pine	12,248	7,312	5,248	4,274	2,494	4,077	2,759	1,617
Cedar, NESOI	1,328	920	1,212	1,197	728	818	1,015	799
Sitka spruce	780	905	871	53	47	738	398	463
Yellow cedar	69	56	213	309	46	125	1,357	307
Total	**937,487**	**569,408**	**542,440**	**475,100**	**419,924**	**221,388**	**261,352**	**241,294**

Source: U.S. International Trade Commission 2000.

Note: 1 cubic meter = 423 board feet

According to the Softwood Export Council's (SEC) Europe representative, yellow cedar and western red cedar are highly sought after in certain niche markets in the EU. Yellow cedar is valued for its strength and decay-resistant properties in niche markets such as the wooden boat building industry. Western red cedar is used more often in residential applications such as high-end decking and outdoor furniture. Naturally decay-resistant species are much more decay-resistant than treated lumber. When treated lumber splits as it is exposed to natural elements, moisture can reach the inner core of the lumber, which will cause it to decay more quickly. Although naturally decay-resistant lumber is more expensive than treated lumber, many consumers who can afford it prefer these species because they are more durable, and since they are not chemically treated, it is thought to be healthier for the environment. The most common use for naturally decay-resistant lumber is in the decking and siding market. While western red cedar is naturally decay-resistant, price is the primary determinant of decking material for most European homeowners and treated European redwood (*pinus silvestrus*) and European whitewood (*picea abies*) are much more widely used than cedar, largely because they are less expensive (Hunt 2000).

Unfortunately, data regarding imports by species are not collected by European agencies. Since yellow cedar and western red cedar predominately originate in the US and Canada, US and Canadian export data from the US and Canada will be used as a proxy for Western European import data for these species. US export statistics show only small volumes of yellow and western red cedar exported to Europe. Table 26 includes data regarding US western red cedar exports to leading destinations. The EU is clearly not a major market for US producers. This may be because US producers are focusing on supplying the strong US housing market. Canadian export statistics show much greater volumes of western red cedar shipped to the EU in 1999. As shown in Table 27, Canadian suppliers shipped almost 100,000 m^3 of western red cedar to Western Europe in 1999 with the majority of the lumber destined for Belgium, France, and the UK. This disparity in exports between the US and Canada should indicate that there is the potential to increase exports of western red cedar from the US.

Table 26. Leading European Destinations for US Western Red Cedar, 1992-1998 (cubic meters).

	1992	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Spain	329	231	412	208	136	378	496	1,249
United Kingdom	282	72	285	153	190	188	159	884
Belgium Total	434	564	16	378	690	1,403	431	482
Netherlands	--	288	410	55	60	128	134	215
Germany	175	72	219	382	171	477	590	138
Ireland	67	--	--	--	--	--	14	79
Portugal	--	--	--	28	31	--	--	72
Austria	--	--	39	--	--	--	--	--
Denmark	--	--	--	67	1,432	--	17	--
Finland	--	--	15	--	--	--	--	--
France	47	501	480	331	245	127	66	--
Greece	--	--	--	27	--	--	--	--
Italy	--	38	539	--	137	68	190	--
Sweden	--	--	--	--	34	--	--	--
Total Western Europe	**1,334**	**1,766**	**2,415**	**1,629**	**3,126**	**2,769**	**2,097**	**3,119**

Source: U.S. International Trade Commission 2000.

Note: 1 cubic meter = 423 board feet

Table 27. Leading Destinations for Canadian Western Red Cedar 1999 (cubic meters).

	1998	1999
Belgium	35,796	28,690
United Kingdom	16,093	17,865
Netherlands	15,105	15,136
France	20,652	14,510
Germany	9086	8,527
Denmark	6,230	4,286
Italy	3,469	2,982
Spain	694	1,011
Ireland	386	691
Switzerland	415	292
Finland	184	93
Sweden	46	26
Austria	38	22
Norway	47	--
Total Western Europe	**108,241**	**94,131**

Source: Statistics Canada 2000.

Note: 1 cubic meter = 423 board feet

Table 28. Leading European Destinations for US Yellow Cedar, 1992-1998 (cubic meters).

	1992	1993	1994	1995	1996	1997	1998	1999
Austria	--	--	--	--	14	--	--	--
Belgium	--	--	--	--	--	--	18	43
Denmark	--	--	--	--	32	--	--	--
Denmark	--	--	--	--	--	--	--	16
Finland	--	--	--	13	--	--	--	--
France	--	--	--	--	--	23	4	150
France	--	--	--	--	--	23	4	150
Germany	--	--	--	242	--	18	61	--
Italy	31	24	--	54	--	--	177	35
Netherlands	38	--	--	--	--	--	--	--
Spain	--	32	--	--	--	84	1,097	34
United Kingdom	--	--	213	--	--	--	--	29
Total Western Europe	**69**	**56**	**213**	**309**	**46**	**125**	**1,357**	**307**

Source: U.S. International Trade Commission 2000.

Note: 1 cubic meter = 423 board feet

Table 29. Leading Destinations for Canadian Yellow Cedar (cubic meters)

	1998	1999
United Kingdom	34	4,022
Greece	--	441
France	21	99
Switzerland	78	50
Ireland	--	17
Belgium	173	--
Germany	29	--
Italy	3,486	--
Sweden	--	--
Total Western Europe	**3,821**	**4,629**

Source: Statistics Canada 2000.

Note: 1 cubic meter = 423 board feet

Substantially lower volumes of yellow cedar were exported from the US and Canada to Western Europe. As shown in Table 29, Canada exported just over 4,000 m^3 of yellow cedar lumber in 1999. Table 28 shows that the US exported only 307 m^3 of yellow cedar lumber. It is more likely that although western red cedar and yellow cedar are reportedly, highly sought, the end markets that use these two species are high-end niche markets, which would explain the relatively low export volumes.

UK DECKING MARKET

A leading end-use for naturally decay-resistant species is decking, a booming market in Western Europe and particularly the UK. American style wooden decks in the UK have increased from almost non-existence over the past two years to a much sought after home addition. Although statistics about the size of the decking market or the volume of lumber used do not exist, there are other indicators of the market size. For example, in 1996, there were five established deck installation firms, by 1999 there were 60 firms involved with producing and/or installing decks. According to Hicksons, the leading wood preservative supplier in the UK, the decking market in the UK has the potential to grow to between approximately US $400-$630 million (£250 million to £400 million) annually (~£1.57; US $1= £.6357) (SEC Jan 2000). The Chairman of the Timber Decking Association (TDA) agrees that the decking market in the UK has the potential to grow exponentially. He stated "We feel, and market research is demonstrating, that the growth in the UK, with the increased interest in gardens and outdoor living, will be enormous" (TDA 2000). To keep pace with consumer demand, almost 400 large home centers have begun stocking decking products (Spencer 1999), although some experts feel outdoor decking may be a fad (Hunt 2000).

According to a survey by the TDA, consumer awareness for wood decking in the UK is high. Of 1,000 homeowners surveyed, 59% were very aware of timber decking. With further information to overcome any unfamiliarity with the term "decking", 81% were very aware. Over 45% of consumers surveyed thought timber decking had a high aesthetic appeal compared to other traditional surfaces. Patio-style decks were cited as the favorite style, and freestanding, *island* decks were rated second. Many consumers felt elaborate, elevated decks were too expensive. Negative perceptions of decking were related to climate, durability, maintenance, and price. However, when survey respondents were given information about the actual price of decks, most were pleasantly surprised (TDA 2000).

The popularity of timber decking is due in great part to surging consumer interest in linking the home and garden, which has been prompted by popular television home shows. Seventy-two percent of respondents to the TDA survey recognized decking from television and 86% recognized decking from magazines. Surprisingly, do-it-yourself centers and garden centers have not significantly contributed to consumer awareness. Only 10% and 4% of consumers, respectively, learned about decks from these two sources (TDA 2000).

While interest in decking is high, consumers appear to need information and advice. Of the consumers surveyed, two-thirds felt they needed more information about installation, 64% about cost, 63% about design, and 58% needed advice about where to purchase decking materials. Thirty percent of respondents stated they would look for decking at DIY centers and garden centers, yet only 17% and 9% of respondents said they would go to these two sources for advice, leading researchers to believe that DIY centers are missing some potential market share (TDA 2000).

Table 30 illustrates the leading wood product exports from the US to the UK. It is not possible to determine the volume of decking exported since decking does not have a specific harmonized code. Decking exports are most likely included in the category "other".

Table 30. Uses for American Softwoods in the UK (1,000 cubic meters).

Product	1996		1997		1998	
	(m^3)	(Percent)	(m^3)	Percent	(m^3)	Percent
Furniture	10.4	31.1	13.1	31.1	12.7	31.9
Doors	12.5	37.1	15.2	36.1	14.3	36.0
Windows	1.8	5.4	2.5	5.9	2.3	5.9
Paneling	1.0	3.1	1.0	2.4	0.9	2.2
Flooring	0.2	0.7	1.0	2.4	2.0	5.0
Stairs	2.2	6.6	2.7	5.2	2.2	5.5
Moulding	0.8	2.4	0.9	2.1	0.8	2.0
Other	4.7	13.6	5.7	13.6	4.6	11.5
Total	**33.6**	**100.0**	**42.1**	**100.0**	**39.8**	**100.0**

Source: Softwood Export Council 2000.

Note: 1 cubic meter = 423 board feet

Competitors and Pricing

The UK decking market has predominately used treated southern yellow pine, European softwoods, and tropical hardwoods (Pearce 2000). Leading species include softwoods such as southern yellow pine, Douglas fir, western red cedar, European redwood, European whitewood, and naturally decay-resistant tropical hardwoods such as bangkrai, sapele, and small volumes of teak.

Prices for imported softwood declined significantly during 1998 with the strong pound, high production levels in Sweden, the Asian economic decline, and poor demand. Despite a resurgence in the construction sector in 1999, the strong pound and depressed prices for Scandinavian and Baltic logs and lumber are keeping sawnwood prices down. Strong US demand and non-competitive pricing have cost US suppliers market share in the UK. From 1997 to 1998 US softwood exports to the UK fell from 51,000 m^3 to 41,000 m^3. US lumber prices remained stable during 1999, and exports to the UK are expected to remain flat (FAS 1999).

As shown in Table 25, southern yellow pine exports from the US to the EU far exceed the combined volume of naturally decay-resistant cedar. The naturally decay-resistant properties of western red cedar and yellow cedar are sought after, yet for most consumers the price is beyond their budgets. If western red cedar is to become competitive in the European decking markets, suppliers will have to meet or beat competitor prices (Pearce 2000). The cost of treating timber is reportedly approximately $40-$50 per cubic meter (Timbmet 2000). Although, consumers are becoming more environmentally aware, the cost to purchase treated lumber is far less than the cost of naturally decay-resistant western red cedar or tropical hardwoods.

There are very few statistics maintained about the timber industry in the UK. There is no published information available regarding import volume by species and country of origin, nor price information. Approximate prices for competing species gathered through interviews of UK timber importers and decking manufacturers are included in Table 31. As shown, knotty grade western red cedar with one clear face, which UK decking companies purchase primarily from Western Canada, is the highest priced material. Typically, western red cedar and naturally decay-resistant hardwoods are used in high-end decks. While representatives from decking companies believed that western red cedar is suitable for decking, they stated that the cost limits its widespread use. There is also a geographic distribution for the type of decking material used, which is based primarily on cost. Hardwood and cedar decks are more prevalent in southern England, whereas treated softwoods are more common in the north.

Table 31. Approximate Prices for Lumber Used in the UK Decking Market (US$/m^3)*.

Species	US$/m^3	US$/1,000 board feet
Scandinavian pine	$270-$280	$638-$622
Southern yellow pine	$390	$922
Radiata	$390	$922
Western red cedar	$2,570-2,655	$6,076-$6,277
European redwood	$210-$240	$496-$544
Bangkrai/Balau	$650-$700	$1,537-$1,655
Teak	$1,880-2,000	$4,444-$4,728
Sapele	$785	$1856
Iroko	$785	$1856

Source: Timbmet 2000

*Prices do not include treating

According to a representative of Timbmet, the most commonly used species in the UK decking market are Scandinavian pine, treated southern yellow pine, and radiata pine (Timbmet 2000). Timbmet, a firm that specializes in decks made of tropical hardwoods, estimates that a 540 ft^2 two level deck can easily cost $4,800 (£7,500). Reportedly, design, installation, and sales expenses exceed the material cost. The company reports that despite the price premium for tropical hardwoods, Timbnet's hardwood sales surpass total (treated and untreated) softwood lumber sales because their upper-income consumers like the appearance of hardwood decking (Timbmet 1999). It may also follow that if products such as western red cedar become valued for appearance or durability these products will develop a following in upper-income niche markets. It should be stressed again, however, that price is the determining factor for the majority of English consumers when selecting decking material.

Other firms have elected to use treated European redwood from Sweden, Finland, and Russia. This timber is reportedly favored because it is kiln-dried to 18-20% moisture content, it machines very well, and it treats well. One firm signs annual price contracts with its suppliers to ensure stable pricing. Howarth Timber reports that the firm's most popular deck by far is constructed of 2x4s. Prices range from US $290/m^3 for Economy Ground Level Boards, to $376/m^3 for All-Purpose Deck Boards, to $330/m^3 for Excellent Quality Ground/Low Level Boards. The most popular are the moderately priced All-Purpose Deck Boards. The main competitor to European redwood from Scandinavia and Russia is domestic and Baltic whitewood. Whitewood is fast growing, yet it reportedly has large knots and it twists. Most consumers in the UK appear to value low price above appearance or quality, and demand for these lower priced materials is greatest (Hunt 2000).

Distribution System

The distribution system for decking varies from company to company and the type of market being served. One distribution system is focused on the DIY market where lumber is imported by sawmills or chemical treating companies, milled into decking lumber or kits, and sold to garden centers and home improvement retailers. The second distribution system is for the installed-decking market. In this case, sawmills or chemical treating companies import and sell materials to smaller deck installation companies. In some cases, the importer/sawmill owns the deck design and installation company. Ostermann and Schewie, for example, produces decking lumber and decking kits and offers a complete design and installation service through its franchises, Archadeck (Spencer 1999).

Almost all western red cedar is imported into the EU through large import firms, sold to large domestic manufacturers, and produced into finished products. Reportedly, it is very uncommon for western red cedar to be sold through retail home improvement centers (Pearce 2000). Some of the leading importers of western red cedar and exterior use wood products are included in Appendix C.

I-DECK, a large UK deck manufacturer, predominately uses tropical hardwoods such as bangkrai (aka: damar laut, selangan batu no. 1, or yellow batu), a highly durable, knot-free, and insect resistant species. The company imports bangkrai that is branded with the company logo to signify it has passed strict quality control inspection. The lumber is received in long lengths in pack form and sold to importers who break the packs down to sell the lumber to timber retailers. The company expects to sell to DIY stores and garden centers soon. I-DECK decking is available in timber form, which generally requires professional installation, or in tiles, which the consumer can install as garden paths or to replace paving slabs (Timbmet 1999).

While data regarding decking by species in Europe does not exist, US deck price data can be used to examine the price differential between US species that compete with each other in the decking market. As shown in Figure 30, with infrequent exceptions, western red cedar is consistently higher priced than southern yellow pine, the leading US export for decking and outdoor use. Despite the erratic pricing of southern yellow pine, the price of southern yellow pine has been on average $190 lower than the price of western red cedar, with only infrequent exceptions in 1992-1999. While western red cedar decking may be used in high-end decking applications, it is likely that southern yellow pine will maintain a much larger share of domestic and international markets in relation to western red cedar.

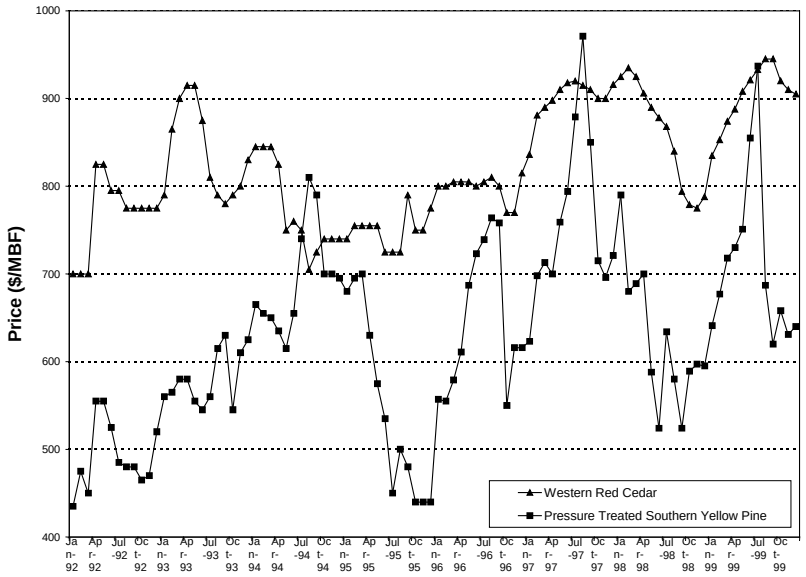

Figure 29. Average Monthly US Lumber Decking Prices from January 1992 - October 1999
Source: Shook and Eastin 2000.

Other information about US use of siding materials may also shed some light on potential European use of western red cedar. According to a study of builder perceptions of western red cedar decking and siding by Shook and Eastin (1996), builders stated that they favor the ease of installation, beautiful appearance, and consumer status associated with cedar siding. The physical properties of western red cedar also make it resistant to the elements. However, as shown in Table 32, in 1995 western red cedar siding amounting to only 9.2% of the Puget Sound siding market. The most commonly noted detractions associated with western red cedar siding include poor product consistency and uniformity, and high-cost maintenance.

Based on builder responses analyzed in Shook and Eastin's research, suppliers should focus on price competition with other similar products. In international markets where there is no perception that western red cedar is superior in appearance and durability compared to other materials, suppliers should develop promotional campaigns that emphasize these aspects and that proper, yet easy maintenance will enhance the natural weather and insect resistant properties of western red cedar. However, it may be more beneficial to Alaska suppliers to focus on the US Pacific Northwest market. There are several factors that make the PNW market attractive to Alaska suppliers. First, suppliers can build on the high-status perception of western red cedar that already exists. Second, shipping costs to the Continental US are lower than shipping costs to Europe. Third, proximity to markets makes it easier for suppliers to initiate contracts and service buyers. Fourth, the US market for decking is large and red cedar is commonly used. Current estimates indicate that over 6.5 million decks are constructed on U.S residential structures on an annual basis at a cost of $1.9 to $3 billion. In 1999, slightly over 47.4% of new home decks were constructed with pressure treated lumber, followed by western red cedar, concrete, and redwood representing 18.5%, 14.1%, and 11.1% percent of the market, respectively (Shook and Eastin 2000). The popularity of western red cedar decking has increased and its use has doubled since 1995. Finally, increased harvest regulations coupled with increased demand for western red cedar in the PNW market should create opportunities for additional suppliers.

Table 32. Estimated Square Footage of Various Residential Siding Materials Installed in 1994-1995 in the Puget Sound Market, Market Share, and Estimated Share that the Puget Sound Market Represents for Each Residential Siding Material Nationally.

Siding Material	Estimated Square Feet Installed (August 1994 through July 1995)	Puget Sound Market Share	Estimated share of the National Market Represented by the Puget Sound Market[a]
OSB	14,029,146	51.3%	7.60%
Hardboard	3,532,245	12.9%	0.40%
Plywood	2,927,467	10.7%	2.48%
Western red cedar	2,510,960	9.2%	1.51%
Stucco	239,867	0.9%	NA[b]
Vinyl	1,081,440	4.0%	0.04%
Brick	1,012,693	3.7%	NA
Cedar Shakes/Shingles	945,467	3.5%	NA
Wood Fiber-Cement	908,480	3.3%	NA
Other (e.g. metal)	72,000	0.3%	NA
Spruce (solid)	66,667	0.2%	NA
Aluminum	3,467	0.0%	0.24%
Redwood	0	0.0%	NA
Total	**27,329,899**	**NA**	**NA**

Source: Shook and Eastin 1996

[a]Calculated using 1994 product shipment data provided by various industry associations.

[b]Not available due to lack of data or unreliable product shipment data

WESTERN RED CEDAR DECKING AND SIDING IN DENMARK

According to interviews of Danish timber importers, demand for western red cedar siding is strong. Several importers anticipate use of western red cedar siding will increase in 2000 as construction industry in Denmark continues to improve (Pearce 2000). As shown in Table 33, housing starts in Denmark have been increasing since 1980. Table 34 also shows expenditures on new residential construction and repair and remodeling have increased substantially since 1980, indicating that even when spending on new construction was somewhat stagnant, spending on repair and remodeling increased (Ministry of Housing and Urban Affairs, Denmark 1999). A massive information campaign (www.trae.dk) by the Danish government and timber industry to promote the use of wood. This campaign has had a spin-off effect and has stimulated demand for timber decking and siding.

Denmark, with a population of 5 million, imports approximately 2 million cubic meters of sawn softwood per year, or 80% of total consumption (Bjørner 2000). Sweden and Finland supply approximately 90% of Denmark's timber imports. The remaining 10% is imported from the Baltic States, Russia, and the EU. Tropical hardwoods, are also used in the decking market.

While US softwood lumber exports to Denmark are declining, the overall demand for western red cedar is reportedly increasing. Danish architects are reportedly beginning to specify western red cedar in new projects. Total Danish imports of sawn western red cedar, are between 10,000 to 20,000 m^3 (Bjørner 2000). However, US suppliers maintain a negligible share of the Danish western red cedar market. As shown in Table 35, the US has historically imported very low volumes to Denmark. Canada exported more western red cedar to Denmark, but volumes were still very low. Canadian suppliers exported only 6,230 m^3 of western red cedar lumber in 1998 and 4,286 m^3 in 1999. No western red cedar logs have been exported from Canada to Denmark during the past two years (Statistics Canada 2000). According to a representative at the Danish Timber Trade Federation, exterior siding and decking is becoming more popular, yet there are no statistics regarding market size, since these markets are so new.

Table 33. Danish Housing Starts, 1980-1998 (1,000 units).

Type	1980	1985	1990	1995	1998	1999
Detached single family	878	919	959	975	999	1,010
Other single family	154	205	266	299	308	311
Multi-family	891	899	922	948	959	963
Other	21	44	50	54	55	22
Total	**2,109**	**2,228**	**2,353**	**2,427**	**2,461**	**2,371**

Source: Ministry of Housing and Urban Affairs, Denmark 1999, Statistics Denmark 2000

Table 34. Danish Expenditures on Residential Construction and Repair and Remodel, 1980-1997 (1 billion Danish kroner, current prices).

	1980	1985	1990	1995	1997
Home construction	19.8	26.5	31.2	38.9	47.3
Repair and remodel	-	-	12.8	21.6	20.9

Source: Ministry of Housing and Urban Affairs, Denmark 1999

Table 35. US Softwood Lumber Export Volume to Denmark, 1992-1999 (cubic meters).

	1992	1993	1994	1995	1996	1997	1998	1999
Southern yellow pine	9,110	965	1,306	1,117	1,284	938	1,158	1,072
Softwoods, nesoi	0	0	232	155	132	540	32	388
Larch	0	0	0	0	0	0	0	332
Douglas fir	365	0	209	1,181	259	51	86	84
Yellow cedar	0	0	0	0	32	0	0	16
Lodgepole pine	62	166	90	17	0	0	0	0
Pine, NESOI	528	1,260	0	413	120	286	0	0
Western Red Cedar	0	0	0	67	1,432	0	17	0
Cedar, NESOI	0	34	42	0	35	13	0	0
Redwood	143	96	0	0	118	14	0	0
Sitka spruce	0	0	178	0	0	0	0	0
Total	**10,208**	**2,521**	**2,057**	**2,950**	**3,412**	**1,952**	**1,381**	**1,940**

Source: U.S. International Trade Commission 2000.

Note: 1 cubic meter = 423 board feet

Distribution System

Typically, large importing firms broker decking and siding to timber yards and DIY retail stores. Decking and siding is generally installed by professional independent craftspeople or by do-it-yourself homeowners. The number of firms who install siding is difficult to determine since these firms are most likely general contractors and not wholly devoted to installing siding (Bjørner 2000).

GERMAN MARKET FOR ALASKA (YELLOW) CEDAR

Overview of the German Economy and Construction Sector

US exports of wood products to Germany have declined steadily over the past few years. As shown in Table 36, softwood lumber import volume in 1998 was two-thirds lower than the volume imported just three years earlier. US imports of logs, lumber, and veneer are being replaced by imports from Scandinavia and Eastern Europe for several reasons, including the strong US housing market, high exchange rate of the US dollar, and higher cost of transporting products to Europe from the Western US. German manufacturers are importing more lumber and veneer and fewer logs. Industry experts report that softwood lumber and wooden panels will begin to be sold through construction material dealers and home improvement centers as opposed to the traditional system of selling products through importers and wholesalers (FAS 1999).

The largest volume of lumber from the US is Douglas fir, which is most likely used for construction lumber and window and door frames (Table 37). Cedar volumes are negligible. In many cases, tropical hardwood lumber is used because it is naturally decay-resistant, yet less expensive than Alaska yellow cedar.

Table 36. Germany's Softwood Lumber Imports by Source (cubic meters).

	1995	1996	1997	1998
US	116,570	93,747	51,299	45,900
Sweden	1,079,098	1,163,846	1,363,153	1,195,263
Finland	895,423	743,422	912,893	950,999
Lithuania	315,010	587,938	484,671	322,294
Czech Republic	229,314	449,324	517,349	486,545
Austria	221,153	338,973	408,957	416,089
Poland	351,733	314,723	394,518	398,176
Russia	478,592	252,372	289,489	218,384
Latvia	610,389	248,123	229,868	303,503
Norway	48,917	224,939	193,617	196,265
Canada	264,155	87,959	70,153	79,616
Total Non-US	**4,493,784**	**4,411,616**	**4,864,668**	**4,567,134**
Total	**4,923,737**	**4,765,272**	**5,281,266**	**5,185,838**

Source: Foreign Agricultural Service 1999.

Note: 1 cubic meter = 423 board feet

Table 37. US Softwood Lumber Exports to Germany, 1989-1999 (cubic meters).

	1992	1993	1994	1995	1996	1997	1998	1999
Douglas Fir	15,673	19,639	16,355	18,384	12,143	17,986	15,343	11,998
Softwood, NESOI*	12,543	5,042	6,242	6,242	4,962	12,879	27,974	4,201
Larch	853	108	1,255	221	21	610	921	2,457
Southern Yellow Pine	--	--	--	--	--	1,611	1,290	1,252
Ponderosa Pine	2,915	2,138	2,110	1,812	908	1,611	1,290	1,252
Pine NESOI	--	--	--	--	--	5,566	723	1,023
Spruce-Pine-Fir	--	--	--	--	--	381	2,683	757
Hemlock	2,440	1,105	1,343	533	58	1,517	62	385
Eastern White & Red Pine	2,156	308	--	--	--	223	24	224
Spruce, NESOI	83	5,713	1,046	444	--	595	68	184
Western Hemlock	--	--	--	--	--	407	913	147
Lodgepole Pine	515	176	78	--	122	784	75	118
Redwood	263	241	39	228	539	500	848	74
Fir	--	--	--	--	--	338	1,127	26
Yellow Cedar	--	--	--	242	--	18	61	--
Cedar, NESOI	322	37	--	82	202	--	--	--
Western Red Cedar	175	72	219	382	171	--	--	--
Fir	1,370	709	435	465	321	--	--	--
Pine NESOI	49,164	20,821	16,488	5,529	4,759	--	--	--
Southern Yellow Pine	79,980	51,218	53,355	43,132	33,552	--	--	--
Sitka Spruce	288	242	478	21	--	--	365	--
Total	**168,740**	**107,569**	**99,443**	**77,717**	**57,758**	**45,026**	**53,767**	**24,098**

Note: U.S. International Trade Commission 2000 *NESOI: Non-specified

1 cubic meter = 423 board feet

Germany's Construction Industry

While the number of housing starts in Germany in 1999 was almost 9% lower than the number of starts in 1998, there has been a steady increase in remodeling activity. In 1996, the German housing industry entered a recession. Figure 31 shows the spike, decline, and recent recovery of the construction industry. The construction sector in Western Germany started to slowly recover in 1999 as the demand for single family homes strengthened, yet the number of building permits for single family homes in Eastern Germany declined 20% during the first eight months of 1999. Market recovery may be temporary, however. Industry analysts expect subsidies that stimulated home construction, particularly in Eastern Germany, will be eliminated, which may reduce the number of single family housing starts in 2001 and beyond (FAS 1999).

Most German homes are constructed of masonry, although wood frame construction has become more prevalent in recent years, particularly in Eastern Germany. In 1998, 13,300 prefabricated wooden homes were built, a 2,250 unit increase from the prior year. Industry experts estimate that approximately 805 of the new homes are wood-frame construction. Few prefabricated homes are imported from the US, however, since German building codes are very stringent (FAS 1999).

There have also been changes in the structure of suppliers in Germany. Several German planing mills have been forced out of business by increased competition from Nordic mills, which have changed their marketing strategy to sell directly to end-users as opposed to distributors. In an attempt to protect German manufacturer's share of the domestic market, several firms are discussing mergers (SEC 1999).

Figure 30. German Housing Starts, 1991-2000*
Source: Foreign Agricultural Service 1999.

*estimated

Windows

German wooden window manufacturers have been especially impacted by the depressed state of the building industry. According to attendants at FENSTERBAU 2000, a trade show for doors and windows held in Nuremberg, the mainstay of the window market is home renovation and not new construction. As shown in Table 38, the market share for wooden windows has fallen from 34% of the market in 1993 to an estimated 24% in 2000, and there has been a direct share shift to plastic windows. According to the FAS, individuals are buying fewer wooden windows because they are concerned about the environmental impacts associated with tropical wood. Plastic windows are also cheaper and easier to install and maintain. Temperate softwoods are not being used as substitutes for tropical wood because they are considered high maintenance. When softwoods are used, window frames are generally made from laminated stock instead of solid wood (FAS 1999).

Another leading challenge for German window manufacturers is lower cost wood imports from the Czech Republic, Slovakia, and Poland. While lower cost suppliers from Eastern Europe are supplying more volume to Germany, some manufacturers are using larch and Douglas-fir as well, although larch imports lag far behind spruce and pine (SEC 1999). As shown in Table 39, Swedish and Finnish producers supply larger volumes of spruce and fir, yet Eastern European suppliers are quickly gaining market share. From 1998 to 1999, softwood lumber volume from Scandinavian suppliers either declined or rose only slightly. On the other hand, lumber imports from some Eastern European suppliers reached triple digit growth (SEC 2000a).

In the market for window scantlings, meranti, a tropical hardwood is among the most price competitive. As shown in Table 40, meranti is the leading price competitor with solid pine and spruce scantlings, both of which are sourced within Europe. Finger jointed scantlings, however, are the most price competitive.

Table 38. German Window Production by Material, 1993-1000 (million units).

	1993	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000***	**1993 Share**	**2000 Share**
Wooden	7.9	7.6	7.4	6.9	6.6	5.9	5.3	5.1	34%	24%
Plastic	9.9	11.8	12.3	2	12.6	12.2	11.5	11.5	43%	55%
Aluminum	4.7	5.2	5.2	4.9	4.4	3.7	3.7	3.6	20%	17%
Aluminum/wood	0.5	0.6	0.7	0.7	0.7	0.8	0.8	0.8	2%	4%
Total	**23.0**	**25.2**	**25.6**	**24.5**	**24.3**	**22.6**	**21.3**	**21.0**	**--**	**--**

Source: Foreign Agricultural Service 1999.

*estimated

Table 39. German Softwood Lumber Imports (cubic meters).

Commodity Number	Spruce/Fir HS 4407 10 91			Pine HS 4407 10 93			Other Softwood HS 4407 10 99		
	Jan-Sept		% change	Jan-Sept		% change	Jan-Sept		% change
	1998	1999		1998	1999		1998	1999	
France	$2,121	$1,507	-29%	$4,729	$4,508	-5%	$15,770	$3,424	-78%
Belgium	$19,186	$36,284	89%	$479	$486	1%	$2,858	$1,557	-46%
Netherlands	$16,911	$6,136	-64%	$1,108	$447	-60%	$5,283	$1,143	-78%
Denmark	$12,840	$14,513	13%	$2,197	$1,080	-51%	$4,770	$3,664	-23%
Sweden	$586,929	$490,305	-16%	$41,646	$42,291	2%	$714	$299	-58%
Finland	$555,533	$553,677	0%	$72,544	$60,970	-16%	$282	$84	-70%
Austria	$134,009	$139,554	4%	$8,434	$6,578	-22%	$58,326	$36,279	-38%
Others	$619	$2,289	270%	$2,438	$2,735	12%	$366	$948	159%
EU	$1,328,148	$1,244,265	-6%	$133,575	--	100%	$88,329	$47,398	-46%
Norway	$108,453	$134,662	24%	$5,334	$5,417	2%	--	--	--
Estonia	$34,620	$61,376	77%	$3,225	$3,155	-2%	$15,809	$19,769	25%
Latvia	$158,007	$172,037	9%	$22,977	$23,155	1%	$42,678	$50,563	18%
Lithuania	$184,560	$172,914	-6%	$10,707	$16,045	50%	$56,697	$36,666	-35%
Poland	$54,919	$50,703	-8%	$87,740	$98,796	13%	$99,038	$99,187	0%
Czech Rep.	$160,801	$208,016	29%	$8,148	$11,461	41%	$207,366	$200,846	-3%
Romania	$6,857	$11,746	71%	--	$98	--	$5,795	$33	-99%
Others	$8,893	$13,821	55%	$519	--	--	$14,838	$28,392	91%
Europe	$2,045,258	$2,069,540	1%	$272,225	$277,222	2%	$530,590	$482,881	-9%
Ukraine	$1,310	$6,598	404%	$7,574	$13,323	76%	$5,490	$9,354	70%
Belarus	$63,294	$138,073	118%	$37,985	$14,957	-61%	$13,350	$11,150	-16%
Russia	$160,771	$246,003	53%	$4,511	$64,631	1333%	$38,469	$49,979	30%
Other CIS States	$63	$108	71%	--	$804	--	$475	$287	-40%
US	$525	$418	-20%	$1,847	$1,378	-25%	$32,316	$22,997	-29%
Canada	$44	$210	377%	--	$132	--	$43,942	$26,396	-40%
Others	$38	$82	116%	$257	$720	180%	$1,557	$1,650	6%
Total	$2,271,303	$2,461,032	8%	$324,322	$373,076	15%	$666,189	$604,694	-9%

Source: Softwood Export Council 2000.

Note: 1 cubic meter = 423 board feet

Table 40. German Window Scantling Prices (Deutchmark per Lineal Meter).

	December 1999	March 2000
Meranti	7.20-7.50	7.40-7.90
Spruce		
one-piece slats	8.40-9.50	8.40-9.40
finger-joint	6.10-7.00	6.00-7.00
Pine		
one-piece slats	7.70-8.50	7.50-8.70
finger-joint	5.40-6.20	5.00-6.20
Larch	12.00-14.00	11.00-14.00
Oak	18.40-19.50	17.00-21.00
Hemlock	9.80-9.90	9.00-10.00
Douglas fir	-	-
White seraya	-	-

Source: Softwood Export Council 2000a

CERTIFIED FOREST PRODUCTS

A growing trend in the European market for wood products is certified products. Certified forest products (CFPs) are products that are certified by a third party certification organization to be manufactured from timber grown on sustainably managed forests. To assure that end users of certified products are using products that are actually "certified", a chain of custody certificate accompanies all certified products. This chain of custody certification requires businesses to establish systems to ensure that certified forest products are labeled from when they harvested, when they go through the manufacturing process, and to the final sales destination (Certified Forest Products Council 1998). Certified forest products have enjoyed only limited success in North America, yet European consumers have been the driving force behind the CFP movement. Pressure from consumer and environmental groups in the EU to provide documentation of sustainable forestry practices for imported wood has stimulated the demand for certified products (UN/ECE 1999).

Firms that include certified forest products in their product line may find that they can more easily obtain access to markets and customers seeking certified products. It may be worth considering for Alaska firms interested in accessing the European market for wood products to provide certified products. Granted, these markets will probably be small volume niche markets such as the wooden boat building industry or high-priced decking. However, as shown in the case of Collins Pine a supplier of both certified and non-certified wood products, a company that is discussed later in this section, offering certified products can help suppliers establish contracts with customers who may later purchase non-certified products as well.

Demand

Table 41 lists the leading certified buyer groups in the EU. There are also buyers groups developing in other parts of Europe. Club ProForet is a newly established group of seven Swedish and French companies that favor products certified by the Forest Stewardship Council (FSC). While sales of certified wood constitute only a small portion of total wood sales, the demand for certified wood is increasing (AF&PA 1999a). Furniture grade pine (European redwood), joinery, and other pine lumber are the most common products in the certified wood market (UN/ECE 1999). In addition to pressure from buyers groups to move toward certified products, some public organizations have banned the use of tropical wood and have written standards for certified products. Although these standards are not nationally recognized, they have been criticized as a trade barrier.

The trend toward purchasing FSS certified products has been particularly strong in the UK over the past five years. A group of 85 large and small home improvement retailers known as the *1995 Plus Group*, organized by the World Wide Fund for Nature (WWF), has made a voluntary commitment to increase purchases of FSC certified wood.

Table 41. Retail Buyers Groups in Europe's Leading Importing Countries, 1999.

Country	Buyer Group	Number of Members
Austria	Gruppe 98	26
Belgium	Club 1997	81
Germany	Gruppe 98	31
Netherlands	Har Voot Hout	11
Netherlands	FSC Linked	473
Spain	WWF Grupo 2000	N/A
UK	1995 Plus Group	89

Source: UN/ECE 1999

Potential demand for CFPs is thought to be greatest in the UK since consumer awareness about the term *sustainable forest management* is highest of all EU countries. Of individuals surveyed, just over 50% of consumers in the UK were aware of the term, compared to 25% in Austria, 18% in Germany, and 8% in France and Italy (Rametsteiner 1998). Another survey also found that 60% of consumers polled would be interested in information about certification, and 65% felt that a sustainable forest management system or certification is needed (UN/ECE 1999).

The volume and value of CFP trade in the UK is unknown, since CFPs have no harmonized code, or separate customs classification. It is known, however, that in 1998, 15,000-20,000 m^3 of FCS certified wood was sold in the Netherlands, or 2% of the Dutch wood market. The majority of these imports originated in Brazil, with lesser volumes supplied domestically or imported from Poland and Malaysia (UN/ECE 1999). AssiDoman, a Swedish firm, is expected to sell 100,000 m^3 of certified wood to the UK home improvement market in 1998, and the firm forecasted that sales would increase in 1999 (UN/ECE 1999).

Supply

According to an unpublished study regarding demand for CFPs, in mid-1999, only an estimated 600,000 m^3 of certified wood was available in the EU. Based on the area of certified forestland in Europe in 1998, there is the potential to produce 20,000,000 m^3 of certified timber per year (UN/ECE 2000). Worldwide, there were 39 million acres of certified wood. As shown in Figure 32 the majority of these forests are located in Sweden (59%) and Poland (17%). US certified wood producers may find the EU a difficult market to enter since the bulk of certified wood is produced in Europe, and new initiatives developed in Europe are encouraging greater domestic production. The Woodland Assurance Scheme (UKWAS) was initiated in 1999 by the UK Forestry Commission and endorsed by the FSC. The program should open the way for a large proportion of forests in the UK to be FSC certified during 2000. Sweden's entire industrial forestland has been FCS certified. There are also large areas of FSC certified forests in Poland that are used to supply wood to the UK's do-it-yourself market. Finally, Malaysia and Indonesia are working with the FSC to have portions of their forestlands certified (FAS 1999). While Figure 32 illustrates the proportions of forests that are certified, it can be somewhat misleading as an indicator of certified wood available in the marketplace. For example, Collins Pine, a US wood products supplier, certifies approximately 50% of the firm's production, yet less than 5% is labeled and sold as CFPs because there is a lack of demand.

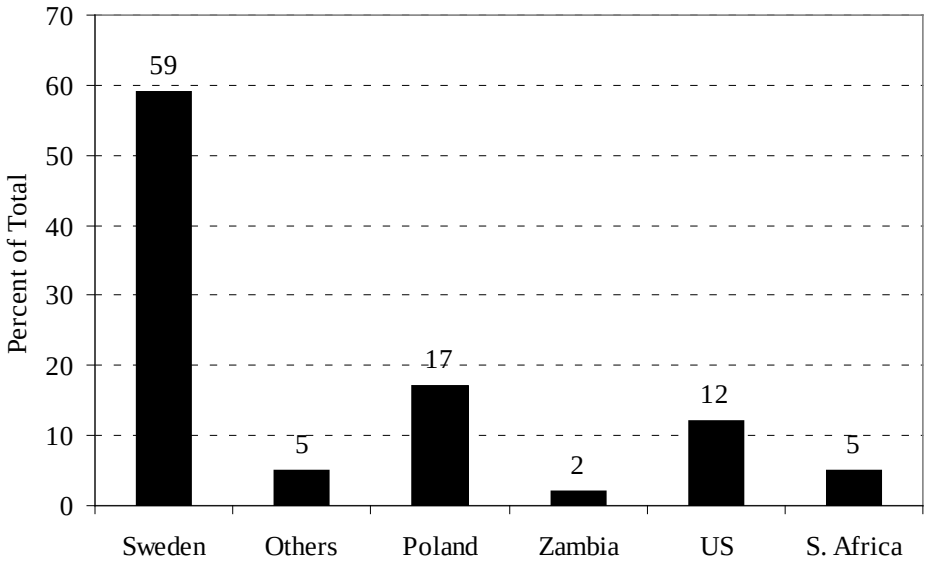

Figure 31. Estimated Potential Production of FCS-Certified Timber, 1999
Source: UN/ECE 1999.

European government and FSC programs have developed initiatives to promote the use of certified wood products, yet consumption is still low. Suppliers are also reluctant to certify their forests. Surveys of forest owners believe little return, both ecological and economic, comes from certified forestry. The majority of companies in Finland, the UK, and Germany that responded to the Forestry Wood Chain survey believe the price premium for certified roundwood will be less than 5%, if any. Two-thirds of sawmill representatives thought they would have to absorb the additional cost (UN/ECE 2000). From these findings, Rametsteiner speculates that sawmills would have to charge an additional 3% for lumber, which makes it difficult to succeed in increasingly competitive commodity markets.

According to a study by Forsyth (1998), companies have not obtained consistent premiums from CFPs. Interviews of 11 companies in the US and EU found that six had paid premiums between 5-20% and four stated their customers paid premiums between 5-10%. AssiDomän in Sweden reports that it garners approximately 6% more for certified lumber than uncertified (UN/ECE 2000).

While profits for CFPs do not appear to be covering the added expenses incurred at this time, marketing CFPs may have other benefits. Selling CFPs may give producers access to niche markets, it may help promote a company's image as "environmentally aware", and it may help develop strategic marketing networks. Certification may also help companies differentiate their product, which can be particularly important in highly competitive commodity markets. One small wholesaler noted that the real value in certification lies in the ability to maintain or improve market share. Lumber typically has a low profit margin, yet this wholesaler noted that certified products commanded the full margin more often (UN/ECE 2000). Offering certified products may also help a company enter new markets first selling certified products, then possibly other, non-certified products. For example, by producing certified products, Collins Pine was able to begin selling CFPs to a large retailer and a large furniture company. Small European importers and wholesalers have found that selling CFPs gives them access to buyers from large DIY retail chains (UN/ECE 1999).

REGULATORY CONSTRAINTS

In 1998, the European Union (EU) was the third leading export destination for US wood products, importing over $1.2 billion annually. However, US suppliers face several obstacles to supplying European buyers. First, since the EU expanded to include Sweden, Finland, and Austria in 1995, the EU has become more than 70% self sufficient in supplying its wood needs, up from 40% self sufficiency prior to 1995. Second, US suppliers are finding it increasingly difficult to competitively offer products to the EU as the US dollar has strengthened, making it more attractive for European buyers to purchase from countries with similar exchange rates. Countries such as Korea, China, Japan, and Eastern Europe are becoming more competitive in supplying the European market as a result of more consistent exchange rates with the EU (AF&PA 1999a). Third, trade barriers instituted by the EU have given domestic processors a competitive advantage over international producers. There are several other regulations that hinder the competitiveness of US, and specifically Alaska producers, including phytosanitary restrictions, restrictions on treated lumber, tariffs, and metric labeling requirements. The following are leading restrictions to the import of US wood products.

Phytosanitary Restrictions on Green Coniferous Wood Products

In 1980, the EU enacted a ban on all green softwood wood products from the US and many hardwood species. This ban was amended in 1993 to allow all softwood products, except western red cedar, to enter the EU if accompanied by a certificate of heat treatment of a phyotsanitary certificate. Western red cedar does not need a certificate of heat treatment since it is naturally pest resistant. (AF&PA 1999a).

Duty Free Quota on Softwood Plywood Imports and Scandinavian Supplier Competition

Since 1987, the US has been operating under a duty-free quota on all softwood plywood. Under the agreement, the first 650,000 cubic meters of softwood plywood from any origin into the EU is duty-free each calendar year. The quota is usually met during the first quarter. Thereafter, US softwood plywood exports are subject to the full 7% tariff rate (AF&PA 1999a).

The tariff on US softwood plywood is compounded by a dramatic expansion in the production capacity of Scandinavian countries. This increase in capacity is impacting US market share, particularly the post-quota amounts in which the EU tariff applies. The EU has generally imported more than 1 million cubic meters of softwood plywood from the US annually; the added Scandinavian capacity combined with the tariff has caused US competitiveness to decline (AF&PA 1999a).

In addition to the duty-free softwood plywood quota, the EU also has a General System of Preferences (GSP) program. The GSP mandates that certain third world countries such as Brazil, Russia, Poland, and the Baltic states are given country specific quotas. The quotas allow products to enter the EU countries at a tariff level 70% the normal rate and are applied for after these countries have exported good exceeding the generic duty free quota volume (AF&PA 1999a).

COMPETITORS

Eastern European Supplier Competition

While the infrastructure in Eastern Europe is generally below western standards, Eastern suppliers are making inroads into the western European market for several reasons. First, suppliers in Eastern Europe, in an attempt to generate western currency, often sell products below cost. Second, labor costs in Eastern Europe are reportedly 1/30 the cost of labor in the Western Europe and the US (Braden 2000). Third, starting on July 1, 1999 Hungary, Poland, Slovenia, Czech Republic, and Estonia eliminated tariffs on veneer, lumber and panel products imported from outside of the EU. Other Eastern and Central European countries that want to join the EU have also begun to eliminate tariffs on primary wood products. The intention is to import raw materials, produce value-added products domestically, and import finished products to the EU. Tariff elimination could keep US products out of a $20-$40 million market for hardwood products in Central and Eastern Europe (AF&PA 1999a).

The price differential for products from Central and Eastern Europe appears to have made inroads into the EU market. While political and economic instability reportedly can make importing wood products from Eastern Europe, approximately 80-90% of German furniture manufacturers or importers interviewed for a past CINTRAFOR project stated that they import wood from Eastern Europe. There are drawbacks to importing from Eastern and Central Europe however. Most Eastern European suppliers do not have kiln-drying capabilities and the countries often do not adequate infrastructure in place to facilitate the efficiently deliver of products (Braden 2000).

STRATEGIC RECOMMENDATIONS

While there are markets in the EU for naturally decay resistant wood products, Alaska species such as western red cedar and Alaska (yellow) cedar face five basic obstacles: 1) the niche markets where they could be used are very small, 2) The end-uses for these species are dominated by lower cost domestic species, 3) in high-end niche markets where Alaska species could be used, tropical species dominate, 4) the cost of transporting products from the Western US to Europe is high 5) the US dollar has been strong and exchange rates have fluctuated, making prices for US products less competitive and stable compared to European wood products. The markets where naturally decay resistant species could be used include the decking market in the UK and the siding market in Denmark, which utilize western red cedar and lesser amounts of Alaska (yellow) cedar. However, Alaska species encounter formidable competition from lower cost European redwood and European whitewood and expensive tropical hardwoods. The UK decking market is dominated by lower priced domestic redwood and whitewood, and tropical wood dominates the high-end decking market.

If Alaska producers are interested in supplying the UK decking market they must do two things. First, they must supply products that are cost competitive. It would be unwise to focus on selling higher-cost, naturally decay resistant species to the deck market aimed at the average income consumer. Instead, Alaska species should compete with naturally decay resistant tropical species. However, western red cedar is reportedly approximately $650-690/m3 more than teak, the highest priced tropical wood used for decking, which means that competing even with high priced tropical species could be difficult (Timbmet 2000). Second, if Alaska producers are able to supply Alaska species at a cost competitive rate, they must still work to improve consumer awareness of western red cedar in the decking market.

Alaska suppliers may consider obtaining FSC certification as a marketing tactic for selling wood products to Europe, and particularly the UK, where certified products have become popular. Some firms include certified wood products in their product lines as way to help them establish a contract and later sell non-certified wood products as well. Since the infrastructure of the Alaska forest products industry is relatively flat - the landowner typically owns the processing facility as well, chain of custody certification would be relatively simple to track. However, firms should first consider the limited size of the naturally decay resistant market before jumping to the next step of considering certification.

Unfortunately, little information about the Danish market for naturally decay resistant siding exists. While US exports to Denmark are declining, the demand for western red cedar is reportedly increasing. Danish architects are reportedly, beginning to specify western red cedar in new projects. Total Danish imports of sawn western red cedar, are reportedly between 10,000 to 20,000 m^3, although no officials exist to verify these numbers (Bjørner 2000). The US has exported no western red cedar to Denmark in the past few years. Canadian suppliers are not faring much better. Only 6,230 m^3 of western red cedar lumber was exported from Canada to Denmark in 1998 and 4,286 m^3 were exported in 1999. The Danish decking market is extremely difficult to characterize because it is very new and no statistics about the market have been collected. According to a representative at the Danish Timber Trade Federation, exterior siding and decking is becoming more popular, yet there are no statistics regarding market size, since these markets are so new.

Since the market is difficult to characterize it is also difficult to provide firms with recommendations on whether they should approach this market or how they should do it. US and Canadian export statistics indicate that the Danish market for western red cedar is extremely small. Given the challenges of introducing a new product, securing contracts in a foreign country, and the expense of servicing foreign markets, it does not appear that the market is large enough to justify the additional time and risks associated with entering a new export market. The market may at some point become large enough to consider, but at this time it appears premature.

The German market for yellow cedar also faces several challenges. The market share for wooden windows in Germany has fallen from 34% of the market in 1993 to an estimated 24% in 2000, and there has been a direct share shift to plastic windows. According to the FAS, individuals are buying fewer wooden windows because they are concerned about the environmental impacts associated with tropical wood. Plastic windows are also cheaper and easier to install and maintain. Temperate softwoods are not being used as substitutes for tropical wood because they are considered high maintenance. When softwoods are used, window frames are generally made from laminated stock instead of solid wood.

Another leading challenge for softwood suppliers is lower cost wood imports to Germany from the Czech Republic, Slovakia, and Poland. From 1998 to 1999, softwood lumber volume from Scandinavian suppliers either declined or rose only slightly. US softwood lumber exports to Germany declined 60% from 1993 to 1995 and yellow cedar lumber exports have been negligible. On the other hand, lumber imports from some Eastern European suppliers achieved triple digit growth. The combined obstacles of the declining use of wooden windows and the increasing competition from lower cost Eastern European timber suppliers makes the German market particularly unattractive for Alaska suppliers.

A more promising market may be the US PNW market for western red cedar used for decking and siding. Current estimates indicate that over 6.5 million decks are constructed on U.S residential structures on an annual basis at a cost of $1.9 to $3 billion. Slightly over 47.4 of new home decks were found to be constructed with pressure treated lumber, followed by western red cedar, concrete, and redwood representing 18.5, 14.1, and 11.1 percent of the market, respectively (Shook and Eastin 2000). Increasingly strict harvest regulations about allowable harvest areas in the US PNW coupled with the increasing demand for western red cedar decking and siding may present an opportunity for Alaska suppliers. Harvest volumes in British Columbia are also declining. Finally, the logistics of servicing a regional as opposed to international market are numerous. Regional markets are easier to access because there are no differences in language or consumer preferences, and they are closer, making shipping, establishing contracts, and providing after sales service easier. The PNW market is particularly suited to Alaska western red cedar producers because products must go through Seattle en-route to international destinations anyway.

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APPENDIX A: TERMS OF REFERENCE

Services are for a Survey of International Opportunities for Alaska Softwood Producers. The Consultant shall perform such professional services and accomplish such tasks as are identified and defined in the following scope of work. The Consultant will be responsible for, but not necessarily solely limited to, the activities and reports as detailed in the scope of work below, and secondarily, the Consultant's project proposal.

Among other opportunities, the survey will pay particular attention to investigating the following niches and products and answering the questions listed under each item. Ultimately, the survey should seek to determine whether or not these current and potential niches, markets, and products provide economic opportunities for Alaska manufacturers.

Assess current and future uses of Alaska spruces, hemlock, western red cedar, and Alaska (yellow) cedar in the Pacific Rim. Historically, most Alaska logs, as well as large cants and flitches, have been sold directly to Japan. Will the ongoing shake up and consolidation of the Pacific Rim processing industry present an opportunity for Alaska mills to sell more value-added products? What segments of the Pacific Rim's secondary processing industry have been hurt the most and does this present market opportunities for Alaska producers? What are the current products made by Pacific Rim mills, particularly those in Japan, for Alaska woods? Will requirements of the new building standards law of Japan present opportunities for Alaska producers? Do the prices of these products support manufacturing in Alaska?

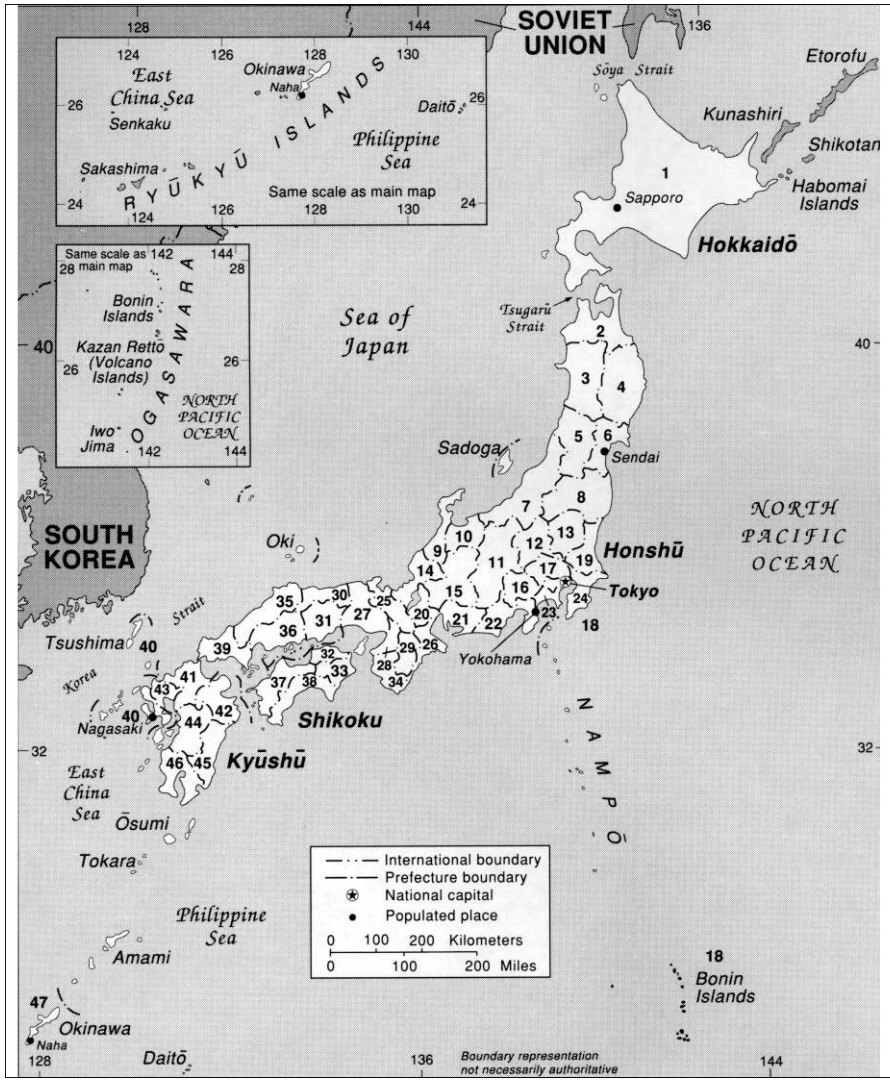
Quantify the current and potential demand for Alaska spruces, hemlock, western red cedar, and Alaska (yellow) cedar products in European, primarily western European markets. Identify what Alaska products currently compete in European markets, their closest competitors, and a price for Alaska and similar non-Alaska products. Determine the potential market size for naturally decay-resistant Alaska (yellow) cedar as a substitute for chemically-treated wood products and other outdoor applications such as doors and windows. The demand for certified forest products and naturally resistant, chemical-free products should be kept in mind during this examination. Quantify the current market for western red cedar siding and decking products in Northern Europe, particularly Denmark. Summarize the position of current competitors in the market including range and average prices and distribution and sales channels.

Assess market opportunities for timber frame and log cabin kits for the Pacific Rim home market, particularly Japan. The report should include detailed information on the number of homes sold annually and any regional patterns. Other pertinent information required includes range and average size of homes, range and average prices, current sellers in the market and their distribution and sales channels, and regulatory requirements such as fire and seismic event standards and codes and other pertinent standards existing in the Pacific rim markets defining material specific strength and/or quality control specifications.

Given the clear, fine-grained nature of Alaska spruce and hemlock and assuming the adoption of an ALSC grade for Alaska spruce and hemlock which recognizes strength design values similar to second- and third-growth Douglas Fir, identify and quantify future potential international market opportunities for Alaska spruce and hemlock products.

The result of this survey will be a report on international softwood product opportunities for Alaska species. The report shall be directed towards current and potential mill owners and operators and the associated industry. It will focus on opportunities and provide practical information, including transportation costs, sales and distribution channels, and current pricing information. The report will serve as a basic primer and provide a foundation for further private study by individuals interested a particular niche, product, or market.

APPENDIX B: JAPAN PREFECTURES



Japan Prefectures

1. Hokkaido
2. Aomori
3. Akita
4. Iwate
5. Yamagata
6. Miyagi
7. Niigata
8. Fukushima
9. Ishikawa
10. Toyama
11. Nagano
12. Gumma
13. Tochigi
14. Fukui
15. Gifu
16. Yamanashi
17. Saitama
18. Tokyo
19. Ibaraki
20. Shiga
21. Aichi
22. Shizuoka
23. Kanagawa
24. Chiba
25. Kyoto
26. Mie
27. Hyogo
28. Osaka
29. Nara
30. Tottori
31. Okayama
32. Kagawa
33. Tokushima
34. Wakayama
35. Shimane
36. Hiroshima
37. Ehime
38. Kochi
39. Yamaguchi
40. Nagasaki
41. Fukuoka
42. Oita
43. Saga
44. Kumamoto
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