



# International Center of Forestry



*An overview of Washington state's forest products industry for prospective partners in business, investment and research.*

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## The Forest Resource

The forests, streams and lakes provide Washington with its nickname “The Evergreen State.” The state is a prime destination for outdoor enthusiasts and is known for its productive forests and the diversity of its forest products industry.

Washington state is home to approximately 21 million acres of forestland. Over 48 percent of the land in Washington is forested, a much higher ratio than the national average of 33 percent. Forty four percent of the forestland is owned by public agencies, 20 percent by private industry and 19 percent by nonindustrial private owners.

The Cascade mountain range splits Washington into two regions containing distinctly different forest ecosystems.

West of the Cascade Mountains, a cool, mild climate and ample rainfall help create lush forests of Douglas-fir, western hemlock, spruce, fir, and western red cedar. The coastal forests contain a large percentage of the world’s most beautiful and valuable temperate rain forests. East of the Cascades, a temperate, sunny climate and low rainfall support open forests of ponderosa and lodgepole pine.

### A Variety of Trees

Douglas-fir, which is widely used in structural applications because of its strength properties, makes up 40 percent of Washington’s harvest. Hemlock and the true firs make up another 38 percent of the total harvest. Western hemlock is used to produce general construction lumber and also in the manufacture of pulp for papermaking. Cedar species, primarily consisting of western red cedar, comprise approximately 10 percent of the total harvest. Cedar products (including lumber, shakes, and shingles) are valuable because of their decay resistance and durability. Sitka spruce, which is extremely valuable because of its unique combination of light weight and high strength, is used to manufacture specialty components, while its superior acoustic properties make it suitable for sounding boards in musical instruments. Red alder, which makes up approximately 4 percent of the total harvest, was once considered to be a “weed” species because of its status as a pioneer species that invades newly harvested softwood forests.

Today, high quality western red alder, is used in furniture making and cabinet manufacturing. Ponderosa pine and lodgepole pine, which together make up about 8 percent of the harvest in Washington, possess straight grain and good machinability, making them excellent species for moulding, millwork, and wood window components.

## Environment

Washington's forest management focuses on ecologically sustainable production, assuring a continuous resource supply with minimal reduction in biological diversity. Washington's commitment to protecting its forestlands has resulted in some of the nation's most comprehensive and innovative forest practices rules. In addition to these rules, approximately 64 percent of the privately owned timberland in Washington is certified according to sustainable forestry guidelines. The majority of these forestlands have been certified under the American Tree Farm System (ATFS)—a program that originated in the state of Washington.

Washington state law requires that reforestation occur within 3 years of harvest at a minimum stocking level of 190 seedlings per acres in western Washington and 150 seedlings per acre in eastern Washington. However, in western Washington, an average of 350 seedlings per acre are planted each year. Current research in this area is focused on developing more productive seedlings to replace the trees that are harvested. Due to favorable growing conditions, Washington forests exhibit a high rate of annual growth, exceeding harvest by 37 percent, on a volume basis. The forest products industry important manufacturing industries in Washington. Annual value added (by manufacture) is nearly \$4 billion. In 1999, Washington's forest products industry produced over 4 billion board feet of logs, 4.2 billion board feet of lumber, almost 1 billion ft<sup>2</sup> of plywood, and almost 4,500 tons of paper and paperboard. Major financial and corporate institutions that specialize in the forest products industry are located in Washington, as well as a variety of research institutions. Together these institutions enhance the quality of the support services available to the Washington forest products industry. The commitment of the sawmill industry to increasing production efficiency is demonstrated by the fact that over the period 1989–1999, softwood lumber production remained constant at approximately 4.2 billion board feet. This is a remarkable feat considering that during the same period, the number of sawmills declined by 46 percent while employment declined over 24 percent. Investments in state of the art processing technology have largely offset these declines by increasing worker productivity by 29.2 percent, from 284 thousand board feet (mbf) per employee in 1989 to 367mbf/employee in 1999.



## **Primary Wood Products**

The ideal climate, soil, and growing conditions in Washington's forests allow the state to foster a thriving primary wood processing industry, making Washington home to many leaders in the forest products industry. In 1999, there were 74 lumber producers and 13 plywood producers in Washington, including some of the world's largest corporations. Washington primary wood products sector (including logs, lumber, and plywood) provided a value added manufacturing contribution of almost \$2 billion to the economy of Washington state.

### **Softwood Lumber**

In Washington, softwood lumber is produced from high quality species such as douglas-fir, western hemlock, and western red cedar. The strength, durability, dimensional stability, and straight grain of these species make them an excellent material for construction and framing purposes. Species such as lodgepole pine and ponderosa pine have good processing characteristics and provide an excellent raw material for molding, millwork, and other remanufactured wood products. In 1999, 4.22 billion board feet of softwood lumber was produced in Washington, representing 11.5 percent of total U.S. production.

### **Hardwood Lumber**

Although the western states produce just 3 percent of total U.S. hardwood lumber production, the hardwood lumber industry in Washington plays an important role within the regional market. Hardwood lumber in Washington is primarily produced from western red alder. Alder, a fine-textured wood that closely resembles cherry, is used in the production of furniture, cabinets, and millwork. In 1999, 325 million board feet of hardwood lumber was manufactured in Washington, accounting for over 90 percent of the hardwood lumber produced in the western U.S.

### **Plywood**

In Washington, plywood is primarily produced from softwood species, although hardwood veneer is sometimes used as an overlay to improve the surface appearance of plywood used in furniture and cabinet production. Although the supply of large diameter logs suitable for the manufacturing of plywood is declining, advanced processing technologies enable mills to utilize small diameter logs for plywood production. In 1999, 1.14 billion ft<sup>2</sup> of plywood was produced in Washington, representing approximately 5.5 percent of total U.S. plywood production.



## **Value-Added Wood Products**

The forest products industry in Washington manufactures a wide variety of high quality, value-added wood products. While the production volume of value-added products is smaller than that of primary products, their highly valued characteristics, such as color, grains, and surface quality enable higher returns. In 1999, value-added wood products brought revenues totaling \$3.8 billion, exceeding the total revenue of the primary wood processing industry. Recently, the production of engineered wood products, including glulam lumber, LVL, and wood I-joists, has increased rapidly.

## **Remanufactured Wood Products**

Industrial grades of softwood lumber are remanufactured into molding, millwork, door and window parts. Currently, 176 companies produce remanufactured wood products and employ 5,200 people in Washington. Of these mills, 65 specialize in windows and doors; 50 in cut stock, resawing lumber and planing; 29 in custom architectural woodworks; and 32 in other products including flooring. The total value of shipments in this sector was \$776 million.

Furniture manufactured from hardwood such as alder, maple, and oak is especially appreciated for its beautiful appearance. In 1997, there were 316 furniture and cabinet manufacturers in Washington, producing kitchen and bathroom cabinets, household furniture, and office furniture. The total value of shipments was \$332 million.

Trusses are a pre-assembled framework used to support the roof and floors of a building. Trusses enable builders to be more efficient, requiring less time and labor to erect. At last count, 48 truss mills were located in Washington with nearly 1,200 workers. The total value of shipments was approximately \$111 million.

Wood pallets used for storing, stacking, and transporting a wide variety of products are produced mostly from lowergrade lumber. Wood pallets play an important role in product distribution and, in 1997, 47 mills produced wood pallets in Washington with a total shipment value of \$82 million.

## **Engineered Wood Products**

Glulam beams, one of the first and most widely used engineered wood products, are produced from two or more layers of standard dimension lumber glued face to face. Laminated veneer lumber (LVL) is manufactured similarly to plywood, by bonding veneer panels with a phenolic resin to produce a billet. The billets are hot pressed and cut into a variety of lumber sizes for use in I-joist flanges, beams, and headers. Wooden I-joists mimic an I-beam, using grooved flanges made from machine stress rated lumber of LVL that are connected by a thin web of plywood or oriented strand-board. There are currently 9 manufacturers of engineered wood products in the state of Washington.

## Pulp and Paper Products

The pulp and paper sector is strongly integrated with other manufacturing sectors of the forest products industry because it depends on wood residues for its raw material inputs. Since pulp and paper production requires large amounts of water and electricity, resource-abundant Washington provides an advantageous environment for this sector. As of 1999, there were 34 pulp and paper mills with 9,014 workers in Washington.

In 2003, 4.17 million tons of paper and paperboard were produced in Washington, comprising 4.7 percent of the total U.S. production. This industry sector brings a significant amount of value added to the state; approximately \$2.2 billion in 1997. Recently, paper mills have increased their use of recycled pulp, with 26 percent of paper products produced in Washington from recycled materials. Typically the pulp and paper industry is broken down into three sectors: newsprint, paper and paperboard, and market pulp.

Newsprint is a high volume product manufactured with high yield and recycled pulps. Over a million tons of newsprint is manufactured in Washington State each year. A majority of this product is used in North America but several hundred thousand tons are sold into the Asian markets.

Washington's paper and paperboard production is 2.5 million tons annually. Paper is used for writing, computer printing, books, and magazines. Paperboard (a stiff cardboard composed of layers of paper) is usually used for packaging. Market pulp is wood pulp produced for sale rather than for internal use in manufacturing paper products. It is usually a bleached kraft pulp that is used in producing fine papers and tissues. Market pulp makes up 4.0 million tons of Washington's annual production.



## *Examples of Just a Few of Washington State Forest Products Companies*

### Weyerhaeuser

Weyerhaeuser is an international forest products company which grows and harvests trees; manufactures, distributes and sells forest products, including logs, wood chips, building products, pulp, paper and packaging and engineered wood products. Weyerhaeuser is the world's largest producer of softwood lumber and softwood market pulp. It is one of North America's largest producers of forest products, the largest US forest products exporter and a leading recycler of office wastepaper, newspaper and corrugated boxes.

### Simpson

Founded in 1890, Simpson is one of the oldest, continuously operating forest products companies in the Pacific Northwest. Simpson owns timberland in Washington and has production facilities where it produces dimension lumber, plywood and doors. A subsidiary of Simpson manufactures bleached and unbleached kraft pulp and linerboard. At this mill's recycle plant, some 500 tons of old corrugated material are recycled each day.

### Plum Creek

Plum Creek is one of the largest private timberland owners in the United States, holding 7.8 million acres of land. The company is also a maker of value-added forest products for a variety of specialty markets. Plum Creek also owns 6 sawmills, 2 plywood plants, 2 remanufacturing plants and a medium density fiberboard (MDF) facility.



## Internationally-Trade Focused

Because of its abundant forest resources, its location on the Pacific coast, and its geographical features suitable for port facilities, Washington State is the largest exporter of forest products in the United States. Of all US forest products exports, 12.2 percent leave from ports in Washington.

In response to increasing overseas demand for forest products, Washington's secondary export revenue increased from 1989 to 1999. For example, while exports of pulp and paper products remained stable at about \$1.2 billion during this period, exports of value-added wood products more than doubled from \$93 million in 1989 to \$201 million in 1999.

The excellent quality of Washington forest products is highly valued in overseas markets. The largest importer of Washington forest products is Japan, followed by Canada. The major forest products exported from Washington are:

- softwood logs, \$495 million
- softwood lumber, \$258 million
- hardwood lumber, \$117 million
- chips, \$111 million
- prefabricated building materials, \$31 million
- molding and hardwood joinery, \$48 million
- doors/windows, \$46 million
- pulp and paper, \$1.1 billion

The predominant species of logs and lumber exported is Douglas-fir, comprising 73 percent of log export volumes and 35 percent of lumber export volumes. Eighty nine percent of total log exports and 57 percent of total lumber exports (by volume) are directed to Japan. With the increasing demand and the limited supply of the world's forest products, Washington will continue to play an important role in the international trade of forest products in the future.



## Support for an Industry

From law firms to financial institutions, our region is home to service firms with expertise and experience in the forest products industry.

A large educational infrastructure exists in Washington state centered on the forest products industry. Following are some of these institutions:

- Central Washington University Environmental Studies and Applications
- Eastern Washington University
- Fisheries Research, Turnbull Laboratory
- Evergreen State University
- Forest Access Facility
- University of Washington College of Forest Resources, Center for International Trade in Forest Products
- Washington State University Center for Environmental Education, Department of Natural Resource Sciences

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