

Taiwan Market for Wood Frame Construction & Wood Building Materials

With the help of foreign investment in the 1960s, and deregulation of Taiwan's financial sectors in the 1980s, Taiwan has emerged from its agrarian roots to become one of Asia's leading producers of high-value goods. It is now one of the wealthiest of Asian countries and the 17th largest economy in the world. The Taiwan government is now turning its attention to promoting leisure time, domestic tourism, and aesthetics. As part of this emphasis on aesthetics, the use of softwood building materials in urban areas and tourist areas is increasing rapidly. Gazebos made of treated southern yellow pine are replacing concrete structures at city parks, and in rural areas the government is building more walkways and viewing platforms, government administrative offices, and public buildings of solid lumber, logs, and glue-laminated (glulam) beams. Private companies are also building communities of wood frame cabins and log frame resorts in tourist areas. While the wood frame housing market will likely always remain a niche market in Taiwan, it can be considered a way to diversify Pacific Rim sales of high-quality lumber and minimize some market fluctuation.

Current Imports

Although trade statistics do not track imports by grade, the Taiwan Lumber Association estimates that over half of the lower grade SPF that Taiwan imports is used for pallets and packaging, which in 1999, consumed approximately 150,000 m³ of lumber.

While the majority of Taiwan's wood imports are low-grade material, increased interest in wood frame recreation facilities should stimulate the demand for higher-grade logs and lumber. For example, as shown in table 1, total imports of US logs declined in 1998, yet by 2000 they increased to the point that they are almost at the volume imported in 1996. These data also illustrate the popularity of naturally decay resistant species, such as western red cedar, used in outdoor applications.

Government Projects Facilitate Wood Frame Construction

Particularly important to the adoption of wood frame construction is the Taiwan government's strong support of wood as a structural building material. Wood as a structural material is viewed particularly as a means to provide more earthquake resistant housing -- a concern that has become more salient since the 1999 earthquake that killed more than 2,200 and left over 100,000 homeless. The earthquake was particularly devastating in the semi-rural areas of Taichung and Nantou, where it damaged 115,000 housing units, completely destroyed approximately 60,000 units and rendered an additional 8,000 uninhabitable. In an effort to improve the quality of wood frame construction and the ease of getting projects started, the Ministry of Interior's Architecture Building Research Institute (ABRI) is receiving approval from the Construction Planning Administration (CPA) to review and revise the building codes.

Table 1. Export volume of US logs by species, 1996-2000 (cubic meters).

Species	1996	1997	1998	1999	2000
Southern yellow pine	1,431	614	472	55	239
Ponderosa pine	366	0	0	0	55
Pine, unspec. species	0	725	532	57	161
Spruce	8,836	9,892	0	10,170	7,928
Douglas-fir	70	0	33	0	0
Port Orford cedar	324	1,395	243	79	227
Western hemlock	26,720	8,458	3,096	14,465	8,106
Western red cedar	19,630	45,681	6,945	20,638	34,634
Red oak	8,437	13,169	10,272	5,438	5,204
Oak, except red oak	2,292	3,079	717	739	1,756
Beech	27	865	16	427	725
Logs, unspec. species	8,161	8,051	24,967	15,922	13,219
Total	76,294	91,929	47,293	67,990	72,254

While the building codes do not restrict the use of wood in private homes if they are under 14 meters or 4 stories high, (with the exception that wooden roof components must be covered) the codes are prescriptive and do not outline detailed engineering requirements to ensure structural soundness or proper treatment of building materials to retard fire and insects. However, wood used as a structural material in public-use and multi-family buildings is considered a "special material" and requires a special building permit that can take up to two years to obtain. This is considered a major limit to the growth of the wood frame construction industry since there appears to be more immediate potential for large public buildings constructed of wood. Fire codes also restrict the use of wood as exposed trusses and beams

in roof construction. However, exposed beams and trusses are a major draw for designers to use wood in public and private buildings.

The revised codes will not only recognize wood as a "standard" building material, eliminating the lengthy review process to obtain a permit to build public or multi-family buildings of wood, they will include detailed requirements for structural aspects such as proper engineering principles, materials, and treating requirements for 2x4 and post and beam construction. The ABRI is looking at North American and Japanese building codes to adapt to their own codes for wood frame construction. The review is expected to be completed by the end of 2002.

In another effort to promote wood frame construction in Taiwan, the CPA, with US\$3.5 million from the Taiwan government, plans to include wood frame multi-story wood frame apartments, townhouses, attached single-story senior housing, and single-family homes for low and moderate-income families in its Nantou redevelopment project. The inclusion of wood frame housing in the CPA's Nantou development is beneficial to the wood frame construction industry since it will provide examples of wood frame construction in Taiwan and show the public that the CPA endorses wood frame construction as an earthquake resistant form of housing. Under the Agriculture Development Act, the CPA is also rezoning 150,000-200,000 acres of agricultural land surrounding Nantou to multiple-use. Medium density areas such as Nantou and Taichung counties are considered ideal for single and multi-family wood frame housing and the newly available land is considered vital to the growth of the wood frame construction industry.

Education Needed to Overcome Consumer Concerns and Architect Inexperience

Despite the government's support for wood frame construction, there are still many obstacles to the widespread use of wood as a structural building material in Taiwan. Foremost of these obstacles is widespread consumer and architect concern about the susceptibility of wood buildings to fire, termites, and water and typhoon damage, and limited technical knowledge about how to design and build wood structures. Other obstacles include cost, difficulty obtaining financing and insurance, and limited space in urban areas for single-family homes. Since there are very few examples of wood frame construction in Taiwan, most consumers do not understand what a wood frame house is, often picturing a log home instead. These misconceptions indicate a need for US industry to educate Taiwanese architects, builders, and consumers that wood frame construction is durable, resistant to the elements if constructed properly, and more comfortable than concrete housing.

Another significant obstacle is cost. According to several builders, the average cost for a concrete or brick structure is US\$31/ft² and the average cost of a wood frame structure is US\$56/ft². Even if a consumer decides to buy a wood frame home, obtaining financing and insurance is very difficult. While the availability of financing is vital to ensure the success of wood frame construction in Taiwan, banks are less willing to finance wood frame projects than steel or concrete projects. Several firms said that since wood products have not passed Chinese National Standards fire tests, banks will finance only 40-50% of the value of wood frame projects, yet they finance up to 90% of concrete projects. In addition, to obtain financing the developer must obtain insurance, and insurance companies are very reluctant to insure wood projects.

Recommendations

There are three recommendations for US industry to increase sales of high-quality lumber and building products to Taiwan. First, a relationship has already been established between the Agricultural Trade Office (ATO) in Taipei and ABRI. The US forest products industry should work with the ATO to strengthen this relationship and provide ABRI with US building codes, technical information about proper design, construction, and maintenance of 2x4 structures written in Traditional Chinese, Taiwan's preferred language. The US forest products industry may follow the precedent set by Canada's Council of Forest Industries and Forintek in May 2001 and sign a memorandum of agreement with ABRI to cooperatively work to revise the building code by providing technical evaluations and cooperating on testing wooden building materials for termites, fire, and humidity resistance. Second, it is paramount that the US forest products industry educate Taiwanese architects and builders about wooden building materials, US timber species, 2x4 technology, and about the advantages of wood frame homes, such as increased earthquake resistance and comfort, by producing and distributing brochures written in Traditional Chinese, and by holding seminars. It is also important to organize trade missions to bring Taiwanese architects, builders, and government officials to view projects in the US and meet with US firms. Third, to stimulate consumer demand for wood frame construction, the forest products industry should participate in trade shows and consider building a model home at the CPA's Nantou housing development. While the market for wood frame construction cannot fully take off until the building code recognizes wood as an accepted building material, US industry should start developing interest at the consumer, builder, and architect level now.