C I N T R A F O R

Working Paper

107

China Treated Lumber Market Study

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CINTRAFOR
Center for International Trade in Forest Products

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This material is based upon research supported by the USDA Cooperative State Research, Education and Extension Service, the USDA Foreign Agricultural Service, the Softwood Export Council, the Southern Forest Products Association, the Evergreen Building Products Association and the State of Washington Department of Community, Trade and Economic Development. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the funding agencies.

Executive Summary

As China's economy has grown and personal income has risen over the past decade, spending on landscaping and public works projects has increased dramatically, and with it China's demand for treated softwood lumber. New luxury residential developments commonly include traditional Chinese landscape design, which includes man-made lakes and waterways traversed by footbridges and flanked by wooden fences, gazebos, and pavilions with decks. Government projects to revitalize shopping areas and tourist destinations has boosted demand for high-quality US treated southern yellow pine (SYP) lumber used to build walkways, bridges, stages, and landscaping elements.

Treated softwood lumber is a relatively new product in China, yet imports have increased steadily over the past several years. However, as demand for treated softwood lumber has increased, the number of domestic wood treaters has also increased. These new Chinese lumber treaters pose a competitive threat because many produce poor quality treated lumber which threatens to undermine the good reputation that US treated SYP has established.

This research is intended to provide US suppliers with a description of the Chinese treated softwood lumber market and strategic marketing recommendations. This report is based on information collected through interviews with treating plant managers, softwood lumber distributors, and other industry experts. Additional information was collected from surveys completed by Chinese architects, distributors, and other construction professionals.

The report consists of four parts: 1) an overview of the China's wood preserving industry, 2) a description of the Chinese treated softwood lumber market, 3) results of surveys about user perceptions and attitudes about various treated softwood lumber species used in China, and 4) strategic implications for US manufacturers, exporters and industry associations.

Key findings include the following:

1) China's treated softwood lumber market is extremely competitive and price dependent. The majority of the treated lumber used in China is supplied by local treaters offering low prices. Russian pine treated with Chromated Copper Arsenate (CCA) is by far the most widely used treated softwood lumber species in China, due to its low price. However, imported and Chinese treated US SYP is quickly establishing a niche in high-quality market segments and many Chinese treaters report that they would buy as much untreated US SYP as they have access to. The majority of treated SYP from the US is used in government-funded projects where interest in quality and durability is more important than low price.

2) Chromated Copper Arsenate (CCA) is the most widely used treating chemical used by Chinese treaters. A growing number of Chinese treaters have started to use Alkaline Copper Quatenary (ACQ) and several are developing their own environmentally responsible treating chemicals. Since China has no regulations governing the preservative treated lumber industry, most Chinese treaters develop their own chemicals or dilute purchased preservatives to reduce costs, and the quality and durability of lumber treated with these chemicals is reportedly poor. As China's government enacts more environmental standards and as more Chinese manufacturers follow international environmental standards as a means of accessing international markets, interest in environmentally-friendly treating chemicals should increase. Survey responses indicate that Chinese construction professionals rate the importance of environmentally-friendly treating chemicals fourth highest in a list of ten quality and service attributes associated with preservative treated softwood lumber. With no regulatory body however, the majority of Chinese treaters will likely use substandard preservative treating chemicals and treating procedures to keep product costs low.

3) According to survey results, US treated SYP has established a reputation as a high-quality, durable and environmentally-friendly building material. As stated above, since China has no standards governing proper treating methods and chemicals, and no testing body to ensure the quality and durability of domestic treated lumber, US industry representatives are concerned that domestically treated softwood lumber may erode the reputation of US treated SYP.

4) While survey respondents rated softwood species from the western US highly, Chinese treaters have negative perceptions about the species. Primary concerns were that Douglas-fir lumber does not absorb preservative treating chemicals completely and the ends require re-treating if the lumber is sawn after initial treating. Conversely, treaters were resistant to using Hem-fir because it absorbs preservative treating chemicals too readily, which increases the price of treating.

5) According to interviews with Chinese lumber treaters and softwood lumber distributors, US exporters face several barriers to expanding their market share in China. The most significant of these obstacles is that most consumers do not understand the differences in performance and durability between imported US treated softwood lumber and less expensive domestically treated lumber. Second, US suppliers continue to face obstacles associated with not providing lumber in metric sizes. Finally, Chinese distributors report that not having ready access to US lumber prices hampers their ability to quote prices as readily as suppliers of domestic treated lumber.

6) Environmental regulations in China are few and enforcement is inconsistent. However, the Chinese government is reportedly investigating the feasibility of reducing environmental pollution by imposing legislative and economic measures on "dirty" industries. Industry experts anticipate that new environmental regulations applied to the Chinese wood treating industry may improve the competitiveness of US preservative treated lumber compared to locally treated lumber.

7) China's distribution system for softwood lumber is regionally fragmented with hundreds of thousands of distributors, trading markets, and sales outlets across the country. This regional fragmentation makes it important for US suppliers to work with distributors in several regions of China or with a distributor who has a network of regional representatives. Chinese distributors who have become recognized as experts with a basic understanding of wood frame design and softwood lumber performance characteristics have gained a competitive edge over their less knowledgeable competitors.

8) As manufacturers and distributors work to differentiate themselves from their competition, survey respondents report an interest in naturally decay resistant and lesser used species such as Alaska yellow cedar, Sitka spruce and western red cedar from the western US and Canada.

The US softwood lumber industry has been successful in developing the Chinese market for preservative treated softwood lumber. To a large degree, this success has been based on educational programs that have raised construction professional's awareness of the superior performance and durability of softwood lumber that has been properly treated to international wood treating standards. The results of this research clearly demonstrate that there is a brand awareness of US preservative treated southern yellow pine as the "gold standard" of treated softwood lumber products in the Chinese market. Like any successful branding effort, the rapid development of the preservative treated softwood lumber market has spawned low-cost domestically treated products with inferior performance and poor durability. Often, domestically treated SYP is marketed as US-treated SYP. In other cases, pine from South America is marketed as US SYP. In a price sensitive market like China, where markets tend to move towards a commodity focus, it is hardly surprising that these domestically treated, low-priced products have gained a surprising degree of market success.

The success of these inferior treated lumber products threatens to undermine the entire market for treated softwood lumber if consumers associate the poor performance and low durability of this domestically produced inferior treated lumber with all treated softwood lumber. To the extent that US preservative lumber manufacturers and exporters allow the commoditization of treated softwood lumber, they stand the risk of having US treated lumber be subject to consumer perceptions based on the poor quality of domestic Chinese treated lumber. From a marketing perspective, it becomes important that the US industry adopt a branding strategy that allows consumers and end-users to differentiate high quality US treated lumber from low quality domestically treated lumber. Thus, it is imperative that the US treated lumber industry work with industry associations and their Chinese distributors to implement a promotion and education strategy to differentiate US preservative treated lumber from competing products.

Fundamentally, this marketing strategy would help prevent the commoditization of US treated lumber in the Chinese market and ensure that the poor performance of domestically treated lumber in China does not adversely affect the reputation or demand for US treated lumber. Failure to do this would seriously jeopardize the market for US treated lumber in China.

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Background

Over the past five years, US wood products exports to China have increased substantially and in 2005, China became the fourth largest export market for US wood suppliers. While almost half of the wood products exported to China in 2006 were primary processed products such as logs (32%) and lumber (47%), the proportion of value-added wood products is increasing. For example, from 2001 to 2006, value added wood products increased from 16% to 21% of total US wood product exports to China (Table 1).

While China's importance to US value-added wood products suppliers is growing, the market for US wood-based building materials to date has been rather limited. Competition from low priced domestic building materials continues to limit market opportunities for more expensive US products, and Chinese consumers have not accepted wood frame housing to the extent that the North American industry initially anticipated.

Although wood frame housing has not been widely adopted, there are opportunities for US wood building materials used as interior finishing materials in China's booming condominium market. The government policy to phase in turnkey housing in Shanghai by 2010 is expected to provide opportunities for US value-added wood products in this $2.5 billion market. Furthermore, the potential for the turnkey housing initiative to expand to other large cities holds additional opportunities for US exporters. Despite resistance from consumers and developers, turnkey housing is becoming a larger segment of Shanghai's housing stock.

Understanding the issues and the implications of the turnkey housing initiative is important to help US exporters develop effective marketing strategies. China is a patchwork of regional distribution networks, housing regulations, consumer preferences, market segments, and housing markets. The successful exporter will try to understand these variations and tailor their sales strategy to specific target markets.

The trend to create beautiful surroundings has extended to landscaping and imports of treated and untreated softwood lumber have increased steadily (Table 1). Pressure treated SYP is used across China in walkways, boardwalks, bridges and decks in government-funded public projects and large private residential communities.

While exports of US treated SYP to China increased for a few years, the early success and rapid adoption of treated wood landscaping elements attracted large numbers of Chinese competitors who quickly added treating facilities to produce locally treated lumber using imported SYP. Pressure treated lumber processed at most of these domestic treaters' facilities generally has low preservative retention levels and most local treaters have poor, if any, quality control procedures. While some Chinese treaters follow international treating standards, most mix their own chemicals to reduce production costs. Further, much of the locally treated SYP is marketed as US treated SYP. US SYP suppliers also report that local treaters capitalize on the reputation that US SYP has established by marketing all treated pine as US treated SYP, whether it is from Russia, New Zealand, or Finland.

While most domestically treated softwood lumber lacks the durability of US treated SYP lumber, suppliers of domestic treated softwood lumber have been successful because they are able to offer lower prices than their competitors and because consumers have little understanding of pressure treated wood and the importance of employing proper treating standards. Ultimately, these unregulated treaters threaten to undermine the reputation that US treated SYP has developed and erode the existing market.

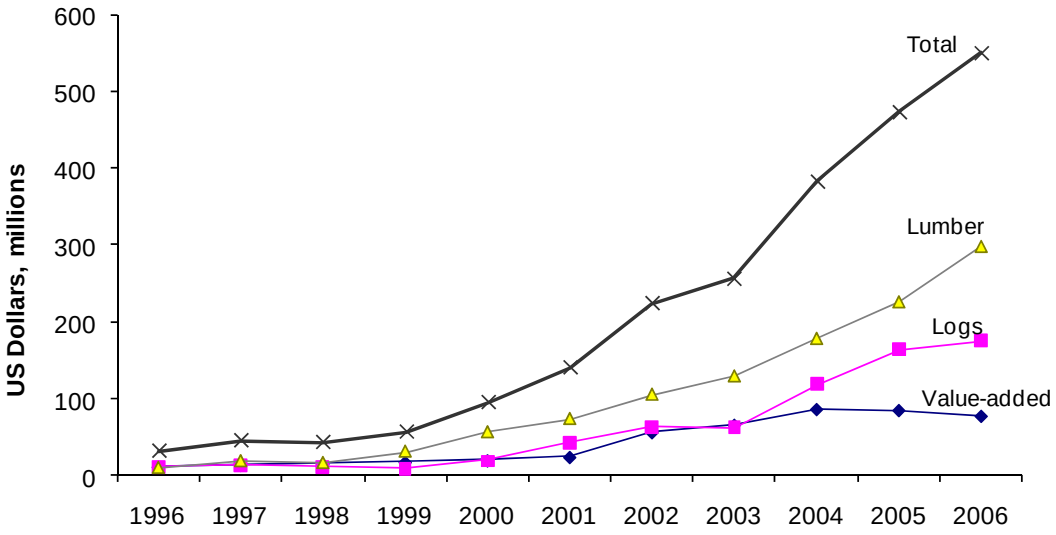

Figure 1: US solid wood product exports to China, 1999-2006 (estimated).
(Global Trade Atlas 2006).

Table 1: Chinese imports of select wood products from the US, 2001-2006 (US $1,000s).

Product	2001	2002	2003	2004	2005	2006
SW lumber	6,234,258	9,371,607	16,609,527	20,298,220	14,289,657	21,267,215
SYP lumber	686	5,054	2,118	4,819	6,938	5,155
Treated lumber	0	323	323	938	77	248
Hem-fir lumber	0	13	92	645	79	17
Doug. fir lumber	0	0	183	54	356	108
HW lumber	101,315,914	165,958,578	181,257,454	210,793,595	258,782,708	331,895,892
Plywood	145,829	273,622	1,162,652	1,362,253	1,535,057	1,482,768
Veneer	14,517,092	21,774,091	27,317,814	37,612,615	38,477,928	39,992,095
Moulding	62,354	3,951,213	11,806,992	7,498,489	20,177,451	18,227,804
Doors	137,768	529,631	317,421	1,688,673	868,976	744,783
Windows	158,065	1,108,561	661,839	1,983,923	1,170,678	613,708

Source: Global Trade Atlas, Foreign Agricultural Service

In order to ensure that poor quality treated lumber does not undermine the entire treated lumber market in China, it is important for US suppliers to continue to stress the difference between US treated softwood lumber and competing species. Promotional and educational programs are also vital to educate Chinese architects and developers about the importance of treatment quality for long-term product durability and performance.

One encouraging development is the inclusion of environmental cleanup as a priority in the 11th Five-Year plan (2006-2010). China's central government plans to improve the state of China's environment by restricting "dirty" industries and by reducing depletion of China's natural resources. Improving energy efficiency in new residential and commercial buildings is central to the government plan.

Environmental Legislation in China

As China's government implements programs to grow its economy it faces rising pollution levels and rapid depletion of its natural resources. In an effort to curb rampant pollution and the overuse of China's natural resources, the central government has issued environmental regulations. Top priorities of the 11th Five-Year Plan (2005-2010), include reducing energy consumption, reducing natural resource consumption, and improving the environment. Other regulations were issued to close manufacturing plants that are identified as excessive pollution sources. The Shanghai municipal government has also enacted regulations to develop smaller and more affordable residential units and energy-saving buildings (Shanghai Daily 2006). The central government will also continue to restrict the supply of land available for single-family luxury villas.

The central government has modified trade policies to discourage polluting industries. On September 15, 2006, the central government reduced value-added tax (VAT) rebates for energy-intensive, high-polluting and resource-intensive products and increased VAT rebates for agricultural and high-tech exports. The policy also increased the VAT on exports of wood chips, hardwood and softwood flooring, chopsticks, and wood skewers to 10% (FAS 2006)

To conserve domestic forest resources, the State Council issued a report titled "Accelerating the Conservation and Substitution of Wood Resources". The report cites wood conservation and substitution as one of China's most important approaches to build an environmentally-friendly economy. The report outlines government plans to reduce domestic wood consumption by 40-50 million m^3 annually by 2010. It also recommends that 5% or more of the timber produced in China (excluding firewood) should be treated with wood preservatives. Less than 1% of China's domestically produced lumber is now pressure treated.

Since local enforcement of central government policies is notoriously spotty, the effectiveness of these measures is uncertain. Chinese and international analysts agree that the goal of many local Chinese government officials is to maximize regional GDP. Therefore, they are reluctant to shut down heavy-pollution and resource-intensive industries and employ the additional staff needed to monitor industry and enforce new standards. Intervention from the central government is generally needed for central government policies to be carried out locally. However, US treated softwood lumber suppliers may see recent policy developments as a positive sign that the central government is taking environmental problems seriously and that environmentally-friendly products will become increasingly popular in China.

Objectives

The specific objectives of this study were to:

1. Describe the turnkey housing policy in Shanghai and the potential market for turnkey housing in other cities
2. Describe the market segments for turnkey housing (high income vs. low income) and the material specification characteristics in each segment
3. Identify opportunities and obstacles for US building materials suppliers in the interior finishing sector
4. Provide a competitive assessment of the treated softwood lumber industry (including industry structure, types of chemicals used, preservative treatments employed)
5. Identify developers and builders perceptions of treated softwood lumber in general (and imported products versus domestic products in particular)
6. Assess the potential impact of promotional activities for treated softwood lumber products (including seminars and advertorials) on the price sensitivity of builders and developers)
7. Identify opportunities and distribution strategies for treated softwood lumber products in exterior applications
8. Identify factors that may be critical to successfully supplying wooden building materials to these sectors.

1. China's Turnkey Housing Market

In June 2001, the Shanghai municipal government introduced a plan to introduce finished housing to improve housing quality and reduce the number of consumer complaints about poor workmanship and dishonest business practices by Shanghai's legion of interior contractors.

Most Chinese homeowners purchase condominiums as unfinished concrete shells and hire interior contractors to install floor and wall coverings, kitchens, lighting, and bathrooms. With a boom in housing sales, China's home decoration market is now valued at $50 billion a year and it is growing at a rate of 20% annually (Xinhuanet 2006). With more Chinese consumers hiring interior contractors to finish their condominiums, complaints about these contractors have reached an all time high. For example, contractors may replace products specified by the homeowner with less expensive materials while poor workmanship is common. Many unscrupulous firms reportedly change their names frequently to avoid resolving disputes with unhappy customers and satisfactory resolutions to customer complaints are difficult to achieve.

When Shanghai's municipal government introduced turnkey housing and announced that 85% of Shanghai's condominiums would be sold as turnkey units by 2005, analysts expected developers would undertake the finishing work or hire large, third-party contractors or home centers. They predicted the policy change would force many small contractors out of business and simplify the distribution system for building materials. Most developers, however, do not want the added responsibility of servicing government mandated two-year housing warranties for finish work completed by a third party contractor, and the structure of the finishing market has remained unchanged.

Although consumers and developers have not adopted turnkey housing as quickly as expected, approximately half of the new condominiums completed in Shanghai in 2003 were sold as finished units (The Center for Housing Industrialization, N.D.). The Shanghai government continues to encourage developers to provide turnkey housing and government officials extended their time frame to achieve 85% adoption by 2010.

According to Madame Jiang, Vice Secretary General, Shanghai Green Building Promotion Council and other construction professionals, although finished housing represents a significant portion of newly completed condominiums, it is not likely that the government will achieve their goal by 2010. While the turnkey housing initiative promises to reduce corruption in the interior finishing market by allowing consumers to see what they are buying, consumers are still apprehensive. Despite the long process of managing a variety of subcontractors, many consumers prefer to personalize their homes by selecting finish materials themselves. Consumers are also distrustful of developers and believe that they can save money and have higher quality finishes by buying materials at traditional building materials markets themselves. A new government policy that caps the selling price of finished homes is adding to consumer resistance. If consumers buy unfinished condominiums and add the finish materials after the purchase they can bypass the price cap policy and ultimately afford a larger, more luxurious condominium. Developers have also expressed concerns about how government mandated two-year building materials warranties and service call-backs should be handled.

Although turnkey housing continues to face consumer resistance, some developers who have built turnkey housing say that turnkey housing is accepted in very high income and very low income markets. Since many US suppliers of wood-based building materials find it difficult to compete in middle-income markets due to price, turnkey housing may represent a less price sensitive market segment. If the Shanghai government is able to successfully introduce turnkey housing, it has the potential to expand to other cities. If even half of China's residential floor area is sold as turnkey housing, the way that building materials are bought and sold will dramatically change. For example, in 2004, 786.1 million square

meters of residential construction was completed in Shanghai, approximately 390 million square meters of which were finished units, and housing growth across the rest of China has been steady) (China Statistical Yearbook 2005).

Table 2. China total new construction by floor area, 1995-2004.

	Total Floor Area ($10,000\ m^2$)	Total Residential Floor Area ($10,000\ m^2$)
1995	145,601	107,433
1996	161,966	121,913
1997	166,057	121,101
1998	170,905	127,572
1999	187,357	139,306
2000	181,974	134,529
2001	182,437	130,420
2002	196,738	134,002
2003	202,644	130,161
2004	207,019	124,881

Source: China Statistical Yearbook 2005.

1.1 Case Studies of Successful Turnkey Housing Projects

One developer that has successfully sold finished housing is Shanghai Shui On Group, a large Hong Kong-based development company that develops residential, commercial, and retail projects, including Xintiandi, a well-known and award winning retail area in downtown Shanghai. Shanghai Shui On Group is building a number of condominium projects for sale and rent. One of these projects is Shanghai Rainbow City, a 10,000-unit high-rise rental and condominium property that caters to middle-income expatriates and high-income Chinese. Units range from four bedroom two-story town home style units to small two bedroom flats. The average sized unit is approximately 1,000 square feet and the average selling price for a turnkey unit is $\$174/ft^2$ ($RMB15,000/m^2$). Units are finished with hardwood composite flooring and paneling and a mix of building materials from the US, Europe, and China.

According to Mr. Lai, Managing Director of Project Management, Shui On purchases building materials only from suppliers that are registered in China. They evaluate suppliers on the basis of:

1) company size
2) manufacturing capabilities
3) source and supply stability of raw materials
4) processing capabilities,
5) product availability and recognition in the marketplace
6) product suitability

The company also reviews supplier references and the supplier's business registration to ensure that the supplier is stable and reputable. Finally, Shui On representatives visit suppliers' factories to assess the quality control process.

Since Shui On works with a number of internationally-based architecture firms, the company has its own company-specific supplier requirements. Since China may not have established standards for many of the products Shui On uses, these requirements are based on testing standards from other countries and ISO standards . The developer's product procurement process is also evolving. Shui On used to source

materials from different suppliers for each phase of construction. The company is now shifting to developing stronger partnerships and strategic partnerships with fewer suppliers and architects to improve product and construction quality.

While other developers typically offer two-year warranties, Shui On offers three-year product warranties. This requires that Shui On identify suppliers who provide fast after-sale service. Foreign firms can hire local companies to provide after-sales service on their behalf. To ensure that suppliers honor the required three-year warranty, Shui On pays its contractors in phases. The company pays up to 30% initially depending on the size of the contract. Upon product delivery, the developer pays another 40% and an additional 25% upon installation. The developer retains 5% of the contract balance for the three-year warranty period, paying the supplier in increments with 1.6% at the end of the first year, an additional 1.6% in the second year, and a final 1.6% at the end of third year.

Another developer that offers high end finished condominiums is Shanghai Jinyuan Real Estate. Units in Jinyuan's Jian Yige high rise condominium project sell for US$302/ft^2 (RMB26,000/m^2) and include a variety of imported building materials.

Both developers report that their units are selling briskly and that housing demand has rebounded following a slowdown in late 2005. While the majority of the building materials used in the two projects were domestically produced, Shanghai Jinyuan Real Estate intentionally used some internationally recognized, brand name, imported building materials to appeal to the project's very high-income clientele.

1.2 The Role of Home Centers and Traditional Building Materials Markets

There are developers who have successfully integrated finished apartments into their product offerings and addressed the issue of providing product warranties and product servicing. However, most Chinese consumers still rely on traditional building materials markets to supply their interior design needs.

Traditional building materials markets supply approximately 98% of building materials. These markets include retail space for hundreds of vendors who stock everything from kitchens and bathrooms to wooden windows, doors, and flooring, with vendors selling similar products often being located close to each other. Consumers enjoy the ability to move from showroom to showroom negotiating prices with vendors selling similar goods. One building in the market may showcase dozens of booths with wooden flooring while other buildings may feature entire floors of plumbing fittings, kitchens, lighting, or lumber. While consumers cannot buy all of the building materials they need from one vendor, the building materials street can be a one-stop area where consumers can purchase a range of materials and contract installation services. One major drawback however, is the lack of vendor permanence. Since showrooms do not require much capital to set up, vendors can easily close and move on. If consumers are not happy with the product or workmanship they receive, there is a good chance that the supplier may not be in business when they return.

Home centers on the other hand, offer money back guarantees, product warranties, satisfaction-guaranteed installed after sales service, design services, and non-negotiable prices (services not generally offered by traditional retail markets) to attract customers. Although these services have attracted some middle- and upper-income consumers, most consumers still shop at traditional markets where prices are more competitive. To compete, some vendors at traditional markets have also started to offer product warranties. Home centers continue to struggle to improve their market share, which is currently estimated to be approximately 2%. Facing intense competition from vendors at traditional markets who work with independent installers and contractors, home centers have not successfully established themselves as installed sales providers outside of their small middle and upper income customer base. To offset their expected sales losses, home centers have recently begun selling soft furnishings, bedding, and other

decorative items to supplement their building materials offerings and in an effort to become a one-stop shopping location for expatriates and convenience-oriented Chinese consumers.

2. Overview of China's Treated Softwood Lumber Industry

Wooden building materials, used in traditional Chinese construction and landscaping, disappeared for decades as China faced extreme timber shortages and a closed trading environment. During the past decade however, designers, developers, and city governments have rediscovered the appeal of wood and softwood and hardwood lumber is being used to build footbridges, decks, walkways, and decorative fences in public and private projects. Designers, developers, and government officials are also recognizing that poor preservative treatment is vital to extend the performance and longevity of outdoor wood, particularly in China's environment of extreme climates, ranging from hot and humid coastal areas to the severe cold and dry inland areas. As construction professionals become more educated about lumber preservatives, treated softwood lumber use in China has surged.

Treating chemicals that are widely used in the US such as Chromated Copper Arsenate (CCA) and alkaline Copper Quatenary (ACQ) are relatively new to China. China's wood treating experience began in the 1950s when the Ministry of Railways oversaw creosote treating of railroad ties and poles. Chinese treaters still produce approximately 200,000 cubic meters of creosote-treated poles and railway sleepers annually (Jiang 2006). Wood treated with tung oil, a traditional Chinese preservative is used widely in China and is the preferred treating chemical for wood used in traditional Chinese-style gardens due to the dark color it imparts to the treated lumber.

With rising use of preservative treated softwood lumber, several Chinese research centers have begun researching treating chemicals. The Wood Industry Research Institute (WIRI) at the China Academy of Forestry in Beijing, and the Guangdong Academy of Forestry (GAF) are China's two leading wood preservation research centers (American Chemical Society—ACS, 2006). WIRI specializes in preservative chemicals (such as anti-mold preservatives), treating standards, and the preservation of historic wooden structures. Research at GAF focuses on treated softwood lumber used in agricultural and landscape applications (Jiang 2006). The use of treated softwood lumber is still somewhat limited compared to the use of non-wood materials, yet there are some applications where treated softwood lumber is preferred, such as historic preservation, landscaping, decks at high-end public and private projects, and these markets are growing.

Historic Preservation

Recognizing the need to preserve historically important wooden temples and buildings, the China Academy of Forestry (CAF) has used over 100,000 m^2 of preservative treated lumber over the past 20 years to replace and restore wooden structural members (CWCSDC, 2003).

Government-sponsored Landscaping and Structural Applications

Chinese consumers have more time and money than ever to devote to creating and enjoying attractive surroundings and local governments are working hard to attract consumers to shopping and tourist areas. City governments and developers are redeveloping outdoor areas and many of these areas include wooden benches, decks and architectural details that mimic traditional Chinese architecture. Government managers are less concerned with material cost at these high profile projects, and are more concerned with product durability and performance. Consequently, SYP has become the favored material. For example, Qingdao, the site of the 2008 Olympic sailing event is home to China's longest treated softwood lumber walkway – all of which was built using US treated SYP.

US treated SYP was also used at Holland New City, a government-backed residential development built to accommodate families displaced by the 2010 World Expo fairgrounds and Shanghai's growing population. Located in Pudong, a suburb of Shanghai, the development is part of the Shanghai government's "Nine City One Town" residential development. Planners and architects from around the

world are designing the project around the World's Fair theme "better city, better life". When completed, the 23 square mile development will include enough single family homes and affordable apartment complexes to accommodate 500,000 residents. A river flanked by wooden walkways and cultural squares will wind through the development, and adjacent waterways will include marinas and a yacht dock. The Shanghai government also plans to establish a 60 km^2 forest around the community – one of five planned forests for suburban Shanghai. Trees and green areas are already being planted.

In keeping with the community's environmental theme, wooden landscape features are used extensively throughout Holland New City. Shanghai Xuelihua Timber Structure Engineering Company, Boise-Cascade's distributor in China, supplied the materials and drafted the structural designs. All of the SYP used is ACQ treated and grade stamped in accordance with Southern Pine Council and the American Wood Preservers Association standards.

Technical advice from the local distributor was an important part of selling the project. The local distributor designed gazebos and trellises for the project and advised the developer on how to reduce waste by modifying the conceptual designs to work with standard US lumber sizes. Another project at Holland New City integrates a cantilevered treated pine deck with steel beams to create a modern, highly stylized clubhouse that extends over a neighboring lake. Over 127,000 board feet of US treated SYP were used in the first phase of the project.

The Shanghai municipal government also selected US treated SYP when it renovated Century Square on Nanjing Road. Nanjing Road is one of Shanghai's most popular and historically significant shopping and gathering areas. In the 1930s it was China's retail center and home to some of the country's most famous shops, some dating to the Qing Dynasty (1644-1911 AD). Given Century Square's historical significance and visibility, the City of Shanghai wanted structures that were attractive and could withstand continuous heavy use and exposure to the elements. Well-known Shanghai architect Xing Tonghe of Shanghai Modern Architectural Design, selected Shanghai Xuelihua Timber Structure Engineering Company, Boise-Cascade's distributor in China as the SYP supplier and design consultant for the project.

Photo 1: Southern yellow pine was used to build the deck at the sales office for the Holland New City project in Pudong, a suburb of Shanghai. After the project is sold the sales office will become a clubhouse.

Photo 2: Local timber distributor, Xuelihua Timber Structure Engineering Company, supplied SYP for the Holland New City development, provided technical advice, and helped the project designer reduce waste by modifying designs to fit US lumber dimensions.

Photo 3: Southern yellow pine was used to build planters and as edging at the Century Square project at Shanghai's busy Nanjing Road shopping area.

Photo 4: The project architect for the government-sponsored Century Square renovation project in downtown Shanghai selected US SYP for its beauty and ability to withstand heavy use.

Identifying and selecting an appropriate and reputable distributor is essential to the success of US treated softwood lumber suppliers in China. Not only must US suppliers invest time and resources to ensure that the distributor is a reputable businessperson; but finding a distributor who is established in the local lumber market can improve a suppliers' competitiveness and provide unique access to material specifiers in many projects. It is important that suppliers find local distributors who understand that proper treating is vital to the performance and durability of treated softwood lumber. Some local distributors have become recognized experts in wood frame construction. While these distributors typically work with a design firm to advise the local architect about proper design and construction of wooden landscaping structures, an understanding about how wood functions can set the distributor apart from distributors who simply sell lumber. A list of some of the more well known lumber suppliers is included in Appendix A. Their inclusion in this report should not replace exporters due diligence and investigation of the distributor before entering into a business agreement.

Private Residential Developments

China now has over 200 luxury golf course developments and hundreds more are planned. These golf courses commonly include wooden landscaping features. Sheshan golf course, located approximately 30 minutes from downtown Shanghai features China's first glulam bridge, which was supplied by Washington State-based Calvert Company.

Even more prevalent are luxury single-family villa developments for wealthy Chinese business people and expatriates. With the popularity of these developments there has been an explosion in the demand for landscaping and outdoor wood products. Water features are particularly popular in Chinese culture and many luxury developments are located on a river or include man-made lakes and waterways and wooden landscaping features.

US exporters and industry associations have invested a great deal of time educating Chinese architects and construction professionals about US wood species' characteristics and end-uses, which has improved awareness about the benefits of using treated SYP. Chinese construction professionals reported preference for SYP can be partially attributed to their reluctance to use incised lumber. Developers' decision to use imported treated SYP versus less expensive substitutes, however, is highly dependent upon the project budget and the developers target customers. Developers report that internationally recognized brand names and high quality imported products are important selling points when building homes to rent or sell to wealthy Chinese and expatriates. These attributes are less important to middle-income consumers, who want homes that look good and function well, but who don't demand the highest quality finishes and building materials. In these cases, developers say they use domestic products that have foreign brand names and building materials that look similar to those used in more expensive projects. Domestically treated Russian pine is commonly used in China because developers can build attractive landscaping features and decks at a much lower price. While the wood structures built with those substitute products do not last as long or look as good as those built with imported treated SYP, these products can last until the two-year government mandated building materials warrantee has expired.

2.1 China's imported treated softwood lumber market

The use of pressure treated lumber in China was almost non-existent when Finnforest, Hoover, and Canfor began promoting and selling treated pine in China. The new product was first carried by home centers in larger cities and used by luxury home developers. FinnForest's promotional efforts proved effective. Scandinavian red pine was well received and commanded a premium price. According to an AF&PA study (2004) of China's outdoor and residential construction market, all other treated species that followed were considered similar to red pine.

Intensive market promotion and a network of local distributors who stocked the product locally helped red pine from Finland develop a strong following and a good reputation. Several treaters however, said that users are beginning to realize that the physical properties of red pine are very similar to those of Russian Scotch pine, which is beginning to erode demand for red pine from Finland.

As shown in Table 3, demand for imports surged in the absence of local production. A number of US SYP suppliers entered the market shortly after Scandinavian suppliers. Foreign suppliers enjoyed substantial market growth with little domestic competition until 2003, when a growing number of local treaters began treating softwood lumber as well.

Many of these Chinese treaters are lumber processors who expanded their services to include treating operations when they saw demand for treated lumber increase. The increase in domestic treating is illustrated in Table 3. The primary reason for this is price. Not only is Chinese treated softwood lumber less expensive than imported lumber due to lower overhead, labor, and freight costs, but Chinese treaters use CCA which is less expensive than the more environmentally friendly ACQ, which US treaters began using in 2005. Chinese treaters also regularly mix their own preservative treating chemicals to reduce costs.

As shown in Table 3, Chinese users were initially reliant on imports for their treated softwood lumber supply, yet as demand increased, domestic treaters quickly emerged. By 2006, approximately 150 treating plants were operating with an average monthly capacity of 1,300 m^3 per plant (ACS 2006, Jiefang Daily 2006). Approximately 40% of these treaters are located in Shanghai, 30% are in the Beijing area, and 10% are located in the Guangdong, Zhejiang, and Jiangsu areas.

Table 3: Imports and Chinese production of treated lumber, 2000-2005 (cubic meters).

	2000	2003	2004	2005*
Imports	5,000	30,000	50,000	100,000
Domestic production	50	300	50,000	100,000

Source: New Zealand Trade and Enterprise (NZTE) 2005. *Estimate

Although there is a cost associated with stocking product in China and US suppliers must find a Chinese partner that they can trust, the most successful US lumber suppliers have inventory readily available in China. According to one treater, once developers order treated lumber, they demand that it be delivered on site immediately which seriously hampers the competitive abilities of companies that do not stock product in China.

2.1 Distribution channels for treated softwood lumber

Foreign suppliers first focused on big-box retailers such as German-owned OBI and English-owned B&Q to access the do-it-yourself (DIY) market in China. However, suppliers soon learned that Chinese consumers were not interested in DIY and the volume of treated lumber sold through these retailers was almost non-existent. Home center inventory is also dominated by low-price, domestic products. Given the lack of consumer interest in DIY, big box retailers are offering installed sales with warranties, and cash back returns that are not generally offered by Chinese retailers.

According to Steven Gilman, CEO of B&Q Asia, ["China's home improvement market] is a very price-competitive market. We have never really had the lowest prices; we've always been about "EDFP"—everyday fair price. And we have always said that we want to offer customers excellent value for money, not to be cheap. But Chinese consumers are really tight consumers. They don't spend any more than they have to. The margin model is inverted in China: the vendor makes the most, the middlemen makes the

second most, and the retailer makes the least. That is not the margin model we see in most developed countries…slowly but surely we're starting to take out some of the middlemen and take a larger share" (Desvaux and Ramsay 2006).

With big box retailers failing to provide expected returns, suppliers started to sell directly to traders, developers, construction firms, and other end-users. Foreign suppliers generally rely on local distributors to identify upcoming projects and sell treated softwood lumber to contractors and developers. According to one distributor, 98% of his sales are to developers and landscape contractors. Only 2% of the distributor's sales are to individuals.

China's distribution system for treated softwood lumber is regionally fragmented and most regional timber markets are new and not well established. Some distributors have national networks of offices, yet this is rare. Most US suppliers work with several distributors in a number of regions. In cases where a Chinese distributor has national representation they may have three levels of distribution: a head office, regional offices, and local offices.

Head offices lead business activities, handle financial contracts for large customer accounts, oversee regional and local offices, conduct national level market development, provide training and technical support, oversee quality control, direct design and construction services, and identify and sign new regional and local distributors.

Regional distributors are responsible for monitoring and providing assistance to local distributors including: providing training and technical advice, monitoring sales progress, monitoring financial performance, and ensuring that payments are received. Regional distributors also pursue new contracts on the regional level. Regional offices act as their own business entities.

Local distributors are responsible for selling to local customers and in some cases, collecting on invoices. According to larger distributors with regional and national offices, local distributors do not have an adequate network of business connections nor the experience to develop the market on their own. They also lack the experience to train their employees in design and construction technology. Local distributors rely heavily on technical and business advice from the distribution firm's national or regional office. An important item to note, however, is that regional and local offices may act as their own business entities. While US suppliers, and even the national distribution office may require cash upon delivery of goods, some US suppliers allow regional and local offices to extend payment terms to their customers, but the regional office must pay their headquarters for goods upon delivery. This way, the regional distributor assumes the risk associated with extending credit to customers. According to a national sales representative for two US building products manufacturers, the China headquarters may extend payment terms, but only to very large, reputable developers. In these cases, the China distributor will carry the paperwork themselves as opposed to giving the sale to a regional or local office. They do this to ensure that the contract is serviced well and that payment is collected (Cao et al. 2006).

2.2 Major species used

Scotch pine from Russia is the most widely used softwood lumber species in China. The low price and Russia's ample supply of logs have helped Russian suppliers steadily increase their market share and maintain their position as China's leading softwood lumber supplier). By 2006, Russian pine supplied almost 65% of China's treated softwood lumber market (personal communication Mr. Li, Shanghai Dabutong 2006).

To take advantage of the surge in log exports to China, the Russian government introduced Resolution #158 on March 24, 2006, which increased tariffs on roundwood exports. The new tariffs, which went into effect in June 2006, increased 60% to $5.40 per cubic meter. There will be a further increase to $8.11 per cubic meter effective July 1, 2007, and additional increases in April 2008 and January 1, 2009. With the current timber shortage in China, analysts do not expect the export tariffs will do much to slow the volume of imports (Cathay Forests 2006).

Table 4: China softwood lumber imports from leading suppliers, 2003-2006 (cubic meters).

Supplier	2003	2004	2005	2006
World	1,373,357	1,699,766	1,883,063	2,109,414
Russia	436,130	648,703	908,755	1,016,160
Canada	264,981	343,133	283,070	331,696
New Zealand	195,462	215,531	210,457	279,415
Chile	76,526	113,366	133,396	126,732
Finland	55,582	72,747	71,594	66,404
United States	54,770	64,136	49,094	66,467
Myanmar	53,126	51,047	45,637	3,731
Australia	7,688	22,357	43,504	58,361
Sweden	12,841	31,088	33,738	50,523

Source: Global Trade Atlas 2006.

In order to remain competitive in the very price sensitive Chinese market, most Chinese treaters of Russian pine lumber have extremely low profit margins (ranging from 5-10%, or as low as RMB 100/m^3) (personal communication Mr. Xu, Hongyida 2006). For example, untreated Russian pine lumber (unplaned) costs approximately RMB 1680/m^3, while treated Russian pine lumber ranges from RMB2500 to RMB3600/m^3. Russian pine is also used as a substitute for red pine from Finland. According to Chinese treaters, end-users are beginning to realize that the physical properties of red pine are very similar to those of Scotch pine from Russia.

Common locally treated species include red pine, SYP, Canadian SPF, Chinese larch, Chinese spruce, Chinese Mason pine, Radiata pine, Hem-fir, Douglas-fir, and eucalyptus. Naturally decay resistant species such as merbau, western red cedar, yellow cedar, and Chinese fir are also becoming popular in expensive market niches.

Douglas-fir was first used in China in the early 1900s as a structural material. It was recently reintroduced as treated softwood lumber, yet market acceptance has been limited. Years of promotion of treated SYP taught end-users that the green hue of treated SYP indicates that the lumber is treated and now Chinese construction professionals look for this when selecting preservative treated lumber. Chinese consumers and construction professionals also reportedly dislike the incising marks that are necessary for treating chemicals to adequately penetrate Douglas-fir, hemlock, and larch.

Education is required to inform end-users and treaters that incising does not affect the strength of the lumber and actually helps the chemicals penetrate the lumber more thoroughly. AF&PA's technical director in Shanghai recently began educating Chinese users about western species used in outdoor applications. While Chinese treaters recognize that hem-fir is easier to treat than other species, rising hemlock prices and a stronger Canadian dollar has made using hem-fir more expensive and demand has slowed. As shown in Table 5, SYP is the leading outdoor use species from the US. The volume of cedar is higher, yet much of this lumber is used in China's pencil factories. Ponderosa pine is used for furniture manufacturing and Sitka Spruce is used for musical instruments. Despite early promotional programs to educate Chinese users about the advantages of preservative treated western species such as Douglas-fir and hemlock, demand for these species remains limited.

Scotch pine from Russia is used in the majority of residential applications where project budgets are moderate whereas red pine from Finland and US treated SYP are more common in government projects where durability and longevity is paramount and price is secondary. Intensive market promotion by US trade associations has helped US treated SYP develop a strong reputation as a durable lumber product. Demand for SYP has been rising steadily in recent years and a number of treaters predict that SYP will soon overtake Finnish pine's position as the second leading treated species used in China. However, there are some obstacles to the use of SYP in China.

Table 5: China's imports of US softwood lumber, 2000-2005 (cubic meters).

	2002	2003	2004	2005	2006
Cedar	43,929	52,456	48,831	35,165	27,166
Untreated SYP	14,197	5,611	13,801	19,737	13,458
Ponderosa	2,856	10,588	13,655	14,046	14,456
Sitka Spruce	2,818	3,276	3,712	4,123	847
Other Pine	20	41	724	1,812	2,146
SPF Mix	52	0	0	462	0
Douglas fir	0	1,416	118	570	310
Hem-fir	219	135	1,012	402	40
Other Spruce	88	179	183	374	330
Other softwood lumber	635	1,379	16,804	1,786	1,909

Source: Global Trade Atlas 2006.

2.3 Barriers to Market Growth

The most significant barrier to the use of US treated SYP is price. Promotional and educational programs about the quality difference between US treated SYP and other species have been effective, and demand is rising. However, since US treated SYP costs approximately US$125/cubic meter more than Chinese treated SYP, the volume of SYP exported to China is still low and use is limited to government projects and high-end residential projects. Domestically treated SYP in China sells for US$625-750/cubic meter (RMB5000-6000/cubic meter) whereas US treated SYP costs US$750-875/ cubic meter (RMB6000-7000/cubic meter). Customer preferences are also changing and Chinese treaters are shifting from untreated 2 inch, #1 grade lumber to lower grades and 1 inch thickness.

According to some Chinese distributors, limited understanding about price fluctuations in the US timber market, as well as a lack of price information weakens their confidence in buying and selling US products. Local distributors say that frequent price fluctuations make it difficult for them to quote prices for projects that have not started. One distributor suggested suppliers post current lumber prices and recent price history on their company websites which would enable him to develop a price estimate to use when quoting projects. Volatile prices and limited information about suppliers not only affect Chinese

distributors, but also importers and treaters. One Chinese treater said he would like to import SYP directly from US suppliers but his only contacts are domestic distributors.

The scarcity of metric sized lumber from the US is a common obstacle in many export markets and it continues to constrain market expansion in China. Since Chinese designers draft building plans in metric units, they must convert US dimensions to incorporate the products into their designs. This increases the complexity of work and the time required to prepare the drawing. In China's booming construction market, construction schedules are tight and developers are reluctant to modify their construction schedule to incorporate the lead times required for the product to arrive from the US. Instead of importing SYP lumber, many treaters with sawmill facilities prefer to import cants and cut their own lumber as a way to reduce costs, improve overhead, shorten lead time, and produce custom sizes to meet customer specifications.

Inconsistent quality and uncertain price fluctuations between the various species of preservative treated softwood lumber available in China also plague China's treated softwood lumber market. As the popularity of treated softwood lumber and outdoor landscaping has increased, so has the number of species purported to be suitable for outdoor applications. Since many end-users are unable to distinguish between softwood species, a number of new suppliers, such as suppliers of Chinese plantation pine and South American pine, have begun to market their species as SYP (AF&PA 2004).

All treated lumber is not equal in terms of the treating chemicals and methods. Since China has no treating standards or inspection process for preservative treated lumber, treating consistency and quality varies widely. According to industry experts, in order to lower costs and meet customers' specifications on color and lead times, many local treaters do not even consistently follow their own treating procedures. Treaters also commonly mix their own chemicals on-site, often diluting the treating chemicals to lower costs or adjust the color for clients.

With competition in commodity markets fierce, raw material costs rising, and profits limited, a number of treaters and distributors in China include design services as a means of improving profit margins and differentiating themselves from their competitors. Some companies even provide in-house timber construction services to ensure that the structure is constructed correctly. Since treated softwood lumber structures are still relatively new in China, providing design services often makes the difference between winning and losing a contract. Suppliers also reportedly increase profit margins by 35-40% by including design services, which helps offset the rising cost of lumber and treating chemicals. Many Chinese treaters predict that rising raw material prices and increasing domestic competition will force industry consolidation.

2.4 Quality assurance

With no environmental regulations banning the use of CCA (a treating chemical that is cost-effective but considered by US authorities as potentially harmful to people), it is used to treat approximately 70-80% of the softwood lumber treated in China. The widespread use and price competitiveness of CCA treated lumber poses a significant barrier for US producers who, in keeping with a voluntary agreement with the EPA, use ACQ, a more expensive treating alternative. Copper azole (CA), which is more expensive than both CCA and ACQ, is almost non-existent in China.

In 2001 the central government and the China Wood Conservation Center (CWCC) (an industry association made up of Chinese treating companies and government agencies which regulates treaters, certifies products, and develops industry standards), began developing draft standards for the wood treating industry. The draft standards reportedly favor non-arsenic preservatives such as ACQ and CA and several Chinese treaters interviewed for this study said that they expect the government to adopt

international wood treating standards as they have with other environmental standards. Many Chinese treaters said they have already started using both ACQ and CCA to prepare for the expected changes. At the same time, industry experts agree that even if new industry standards forbid the use of CCA, the standards will probably be difficult to enforce. Despite the government and CWCC's efforts, the process to draft quality assurance measures is lengthy and the industry remains unregulated.

With no industry standards or official regulating body in place, Chinese treaters are left to regulate themselves. This has created a race to the bottom in terms of quality as treaters try to undercut their competitors' prices. And since treated softwood lumber products are still new to many Chinese, end-users have little basis for distinguishing between high quality and low quality treated lumber and few construction professionals can tell the difference between high-quality US treated SYP and domestically treated SYP. Since Chinese construction law only requires two-year warranties, low quality and low priced treated softwood lumber have gained a significant share of the market. Suppliers of higher quality treated softwood lumber may offer a service agreement that will take effect when the warrantee period expires, but in a market where low price is key, this is only an incentive for high income segments of the market.

The desire to produce treated lumber at the lowest possible cost has not only eroded product quality, but the environmental standards and treating procedures at a number of local treating plants are dismal as well. According to the authors of Existing problems within the Chinese treated softwood lumber industry and comments (Su and Liu 2006), most Chinese treating plants are poorly designed, their equipment does not meet basic industry standards, they have little or no quality control procedures, and they have poor systems to prevent chemical spills and leaching into the surrounding soil and groundwater. Su and Liu also note that employee safety standards and practices are almost non-existent.

Specifically, Su and Liu report that they observed occasions where the treating cylinder, measuring tank, and track were in direct contact with the ground – a setup that is prone to leaching into the adjacent soil. Other local treaters use concrete treating tanks, which are also vulnerable to cracking and polluting the adjacent soil. The authors also reported inadequate sized drain tanks being used which allowed treating chemicals to spill out of the treating cylinder or measuring tank. Undersized tanks also lead to inaccurate measurements of absorption and waste volumes.

Quality consistency is another widespread problem. While the CWCC is available to test product specimens, certification is voluntary and few treaters test the quality of their products. Industry experts have also said that treating plant employees receive little or no training about proper treating and material handling procedures. Many companies lack measuring equipment or a measuring tank, meaning that they have no accurate procedures for calculating retention levels.

Local treaters may also forego proper treating methods to meet short lead times. For example, one treater said that his plant will treat wood without kiln drying it first in order to supply the lumber when the customer needs it. Skipping the drying process seriously diminishes the treating chemical's effectiveness since water filled cells are unable to absorb treating chemicals. Another treater said that when requested, he will reduce the chemical level in order to produce lighter colored treated lumber.

A number of local treaters also mix their own chemicals. Some local treaters follow proper procedures and produce quality treating chemicals. Treaters who have inaccurate equipment and poor quality standards, however, produce lower quality treated lumber. Industry experts said that some treaters use rough estimates when mixing treating chemicals. Others do not always test preservatives left in measuring tanks or maintain component proportions (which is important for testing retention level after treatment). And as mentioned earlier, many treaters lower treatment quality to meet customer specifications, which

can be detrimental to the longevity of the project when the customer is unfamiliar with necessary treating standards for treated lumber.

3. Survey

Chinese users of preservative treated softwood lumber have access to more wood species and suppliers than ever before. However, faced with these new choices and information from a number of sources, many construction professionals do not understand that these wood species have differing levels of performance with respect to durability and preservative retention. In addition to a lack of understanding about species differences, many Chinese users do not understand that proper treating is vital to the performance and durability of treated softwood lumber. Users often base their purchase decision on price and, in an extremely price sensitive market, an absence of industry-wide treating standards has helped low priced products dominate.

Since most US suppliers cannot compete on the basis of price, it is important to understand the product attributes that Chinese users value most and how they perceive treated softwood lumber species from the US relative to competing products. Understanding Chinese user perceptions of various treated softwood lumber species is important to develop promotional strategies to market US treated softwood lumber in China, to highlight attributes that customers value, and to differentiate US treated softwood lumber from competitors products. According to several studies, products with superior attributes produce higher levels of customer satisfaction, which in turn improve competitiveness and financial returns (Tzokas and Saren 1999; McQuiston 2003; Lindgreen and Wynstra 2005). To help US exporters and trade associations better understand Chinese user perceptions of US treated softwood lumber species, CINTRAFOR conducted two surveys to measure Chinese user experience with US treated softwood lumber and competing species; attitudes about different competing species; and attitudes about the importance of a range of quality and price related attributes.

Since most lumber sales in China are business-to-business transactions where developers purchase lumber from traders and distributors, construction professionals were the main group of interest for these surveys. This group includes traders, distributors, wood processors (including treaters and value-added manufacturers who use treated softwood lumber), designers, developers, and builders.

3.1 Attribute Selection

The concept of value is multi-dimensional. From the perspective of construction professionals, product value can be measured in terms of product quality, buyer and supplier relationships, and other psychometric and econometric measurements such as satisfaction and financial returns (Levitt 1981, Reichheld 1993, Lindgreen and Wynstra 2005). According to a number of studies about consumer perceptions of value added wood products (Eastin et al 2005, APFA 2004, Vlosky and Shupe 2004, Hansen and Bush 1999, Cohen et al. 1992, Smith and Sinclair 1989), twelve attributes are considered important in measuring the value of treated softwood lumber. These attributes can be classified into two groups: 1) “product-specific attributes”, which includes product strength, long life, appearance, consistent quality, product availability, product image1, cost advantage and price stability; and 2) “supplier-specific attributes”, which includes product warranty, market support systems2, environmental treatment, and international preservative treating standards (Table 6).

These twelve attributes were included in the survey and measured using a 1-7 Likert-like scale (where 1= not important and 7= extremely important) to measure how important the various attributes are to users when making product selection decisions.

[1] Product image is related to product reputation and branding effects.
[2] Market support systems refer to the availability of customer service and market promotion provided by suppliers.

Table 6: Product attribute categories.

Category 1: Product-specific attributes	Product strength Material appearance Long product life (durability) Consistent quality Product availability Product image Cost advantage Price stability
Category 2: Service-specific attributes	Product warranty Market support systems Treating to environmental standards Treating to international standards

3.2 Product selection

Ten treated softwood lumber species were included in the survey. The products were identified through interviews with treating plant managers, who said the species included in the survey are the most widely used in landscaping and outdoor projects in China. A main objective of this study is to determine if users believe there are differences in price and performance between US treated SYP and Chinese treated SYP. To measure user perceptions of the two products, SYP was included in the survey as both US treated SYP and Chinese treated SYP. A category for naturally decay resistant species (NDRS) was also included to determine if survey respondents were aware of NDRS, and if so, to measure their perceptions. Western Red Cedar was used as a proxy for NDRS.

The survey also included questions to determine the effect of demographics such as respondents' profession, business location, geographic sales range, and respondents' prior experience using treated softwood lumber products.

Pretest

The questionnaire was developed in English and translated into Chinese by a native Chinese-speaking CINTRAFOR graduate student and pre-tested by several treating plant managers in Shanghai. Based on feedback from the pre-test, Douglas-fir and hemlock were added to the list of products. The final version of the questionnaire is attached (Appendix C).

Data collection

Two rounds of surveys were conducted. The first survey was administered by researchers from CINTRAFOR at the 4th Annual Shanghai International Architecture & Planning Exhibition, held June 15-17, 2006. Three students from Fudan University in Shanghai assisted with gathering survey responses. 201 surveys were collected, of which 120 were complete.

Surveys were also distributed during the September 17-22, 2006 US-China Build program seminars in Guangzhou, Qingdao, and Shanghai about US building materials and US wood products. All three cities are located in temperate climates where wooden landscaping features are popular. Qingdao is the site of China's longest treated softwood lumber boardwalk and there are a number of wooden landscaping features, bridges, and walkways in Shanghai. Surveys were administered to 333 architects, developers, manufacturers, distributors, government representatives, importer/traders, designers and members of the media who attended the three seminars. Unlike the surveys administered at the Shanghai trade fair, surveys were placed at each seat in the seminar and attendees were given a small gift if they completed the survey. The surveys conducted at the seminars enabled researchers to evaluate if there are regional

differences in familiarity and attitudes about treated softwood lumber. A total of 172 questionnaires were collected. Fourteen of the surveys were judged to be invalid and they were dropped from the analysis resulting in 157 usable surveys.

3.3 Survey Results

As shown in Figure 2, the majority of survey respondents were employed by design and construction firms.

Almost three-quarters of the 340 respondents who responded to the question about sales range conduct most of their business in the triangular shaped territory of the Yangtze River Delta, which extends from Shanghai to southern Jiangsu province and northern Zhejiang province shown in Figure 3. The area is one of the fastest growing and wealthiest areas of China and one of the country's most important manufacturing centers. The remaining companies conducted most of their business in their local geographic area. The remaining 24% of respondents said that they were employed by national companies, but that these firms conducted most of their business in first tier cities such as Beijing, Shanghai, Shenzhen and Guangzhou.

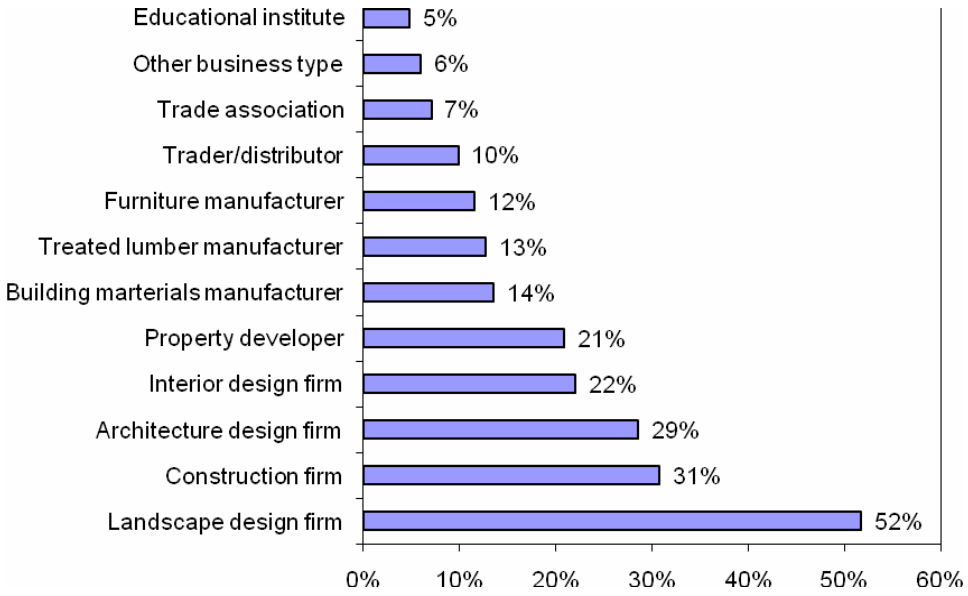

Figure 2. Percent of respondents employed in various business sectors.

Figure 3: Map showing Yangzte River Delta region.

End-use applications

Respondents were asked to select one application that they believed had the best market potential for treated softwood lumber. As shown in Table 7, most respondents thought that gardening and landscaping had the best market potential (79%), followed by structural use (32%), outdoor furniture (22%), and indoors where high humidity is a factor (saunas, swimming pools, flooring) (24%), and 5% wrote in various other uses.

Table 7: Respondents to "best market opportunity" for treated softwood lumber in China by end-use.

End-use	Percentage of Responses
Gardening and landscapes (e.g. decks, bridges, walkways)	74%
Structural	32%
Outdoor furniture	22%
Indoor applications (e.g. saunas, indoor swimming pools, flooring)	24%
Other	5%

N=340 (Respondents were allowed to select more than one answer)

Respondent experience using preservative treated softwood lumber

Respondents were also asked to indicate their familiarity and experience with treated lumber and NDRS. These responses were used to categorized respondents as "users" or "non-users. As shown in

Table 8, “Users” were those who had either used treated softwood lumber or those who said that they favor treated softwood lumber compared to non-wood substitutes. “Non-users” were those had no experience using treated or NDRS. All respondents except those who indicated that they were “not familiar and not interested” were asked to assess ten treated and naturally decay resistant softwood lumber species on the basis of 12 product attributes to compare the difference between user and non-user perceptions.

As shown in Figure 4, just over half of the survey respondents said that they had either used preservative treated lumber or that they preferred it over non-wood substitutes. The surveys of these respondents were analyzed further to determine if experienced users had different opinions from non-users when selecting treated softwood lumber and different perceptions about the various treated softwood lumber species. Understanding the attitudes of these users can reveal important information that can help US treated lumber suppliers tailor their marketing programs and improve customer satisfaction.

One-quarter of respondents indicated that they had no experience with preservative treated softwood lumber but that they were interested in learning more. These respondents were considered “interested non-users”. This group is an important market for US softwood lumber suppliers. Education and promotion through seminars, technical and design publications, supplier directories and trade show presence are vital. Several successful treated softwood lumber distributors have developed a market niche by holding seminars for construction and design firms. These individualized seminars have helped this group of distributors distinguish themselves as experts in wood construction and a resource for Chinese construction professionals.

Respondents were also asked to identify which species they were familiar with from a list of treated softwood lumber species. As shown in Figure 5, Chinese pine (46), treated Finnish pine (45), US treated SYP (44), and treated Russian pine (42) were the most widely used species in the survey. Treated lumber species from the Western US and Canada were least used. While use of species from western US and Canada was lowest, respondents showed the greatest interest in using these species. These findings suggest that in China’s fast growing construction market, construction professionals are interested in learning more about lesser used species that may provide better cost efficiency and performance.

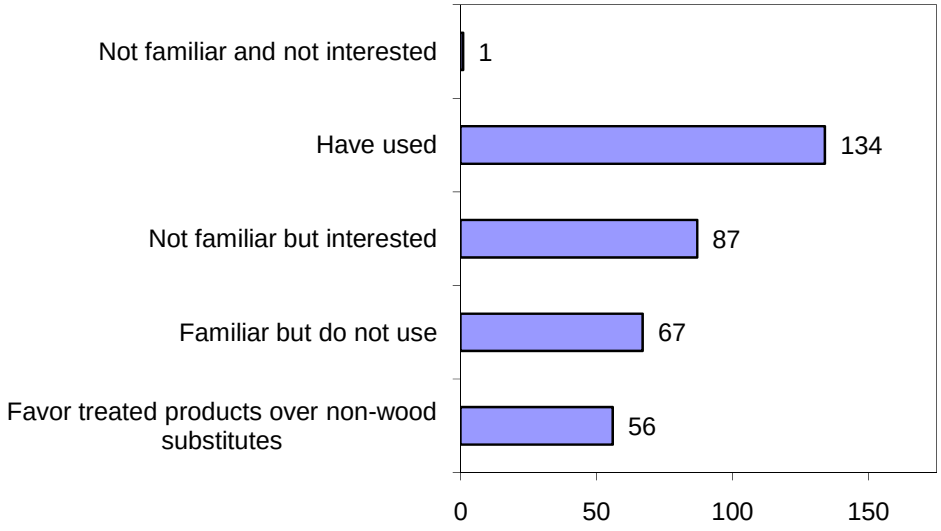

Figure 4: Respondent experience using preservative treated softwood lumber (N=345).

Table 8: Respondent experience with naturally decay resistant and preservative treated softwood lumber species.

Set 1	Non-users			Users		
Species	Not familiar and not interested	Not familiar but interested	Familiar but do not use	Have Used	Favor over non-wood substitutes	Total
Treated Russian pine (scotch pine)	86	63	28	42	8	227
Treated domestic Chinese pine	75	54	35	46	9	219
Treated Finnish pine (Nordic pine)	86	55	36	45	12	234
Treated Radiata pine	73	74	20	18	4	189
Treated US southern yellow pine	106	59	33	44	9	251
Locally treated southern yellow pine	72	79	25	31	5	212
Treated Canadian SPF	87	84	24	25	3	223
Treated Douglas-fir from N.A.	59	84	19	17	4	183
Treated hem-fir from N.A.	56	89	15	18	4	182
Naturally decay resistant species	83	61	41	30	6	221
Other materials	80	47	3	14	1	145

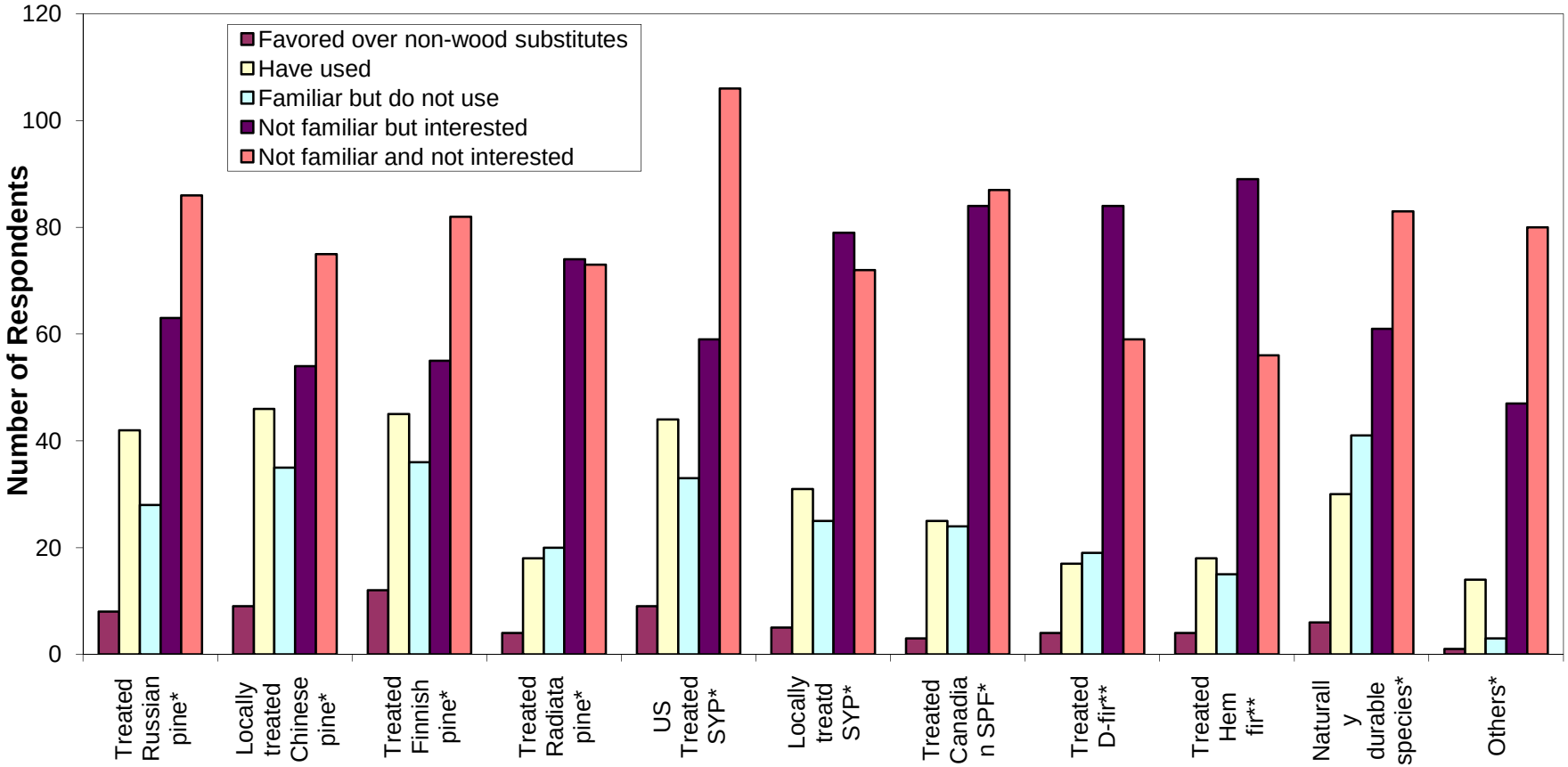

Figure 5: Number of respondents who indicated that they were familiar with various preservative treated and naturally decay resistant softwood lumber species (*=383 respondents, **=180 respondents).

Importance of various attributes of decay-resistant wood products

Respondents were asked to rate the importance of the product attributes listed in Table 9 for treated and NDRS lumber using a 1-7 Likert-like scale (1=not important, 7=extremely important).

As shown in Table 9, despite widespread perceptions that price dictates product selection, quality issues were rated highest of all the attributes included in the survey, although the results suggest that all of the product attributes were perceived as being important. However, willingness to pay is typically skewed in survey responses with consumers regularly reporting that they will pay more or downplaying price in their purchasing decision. Another factor that may affect responses is the respondent makeup. Earlier CINTRAFOR research (Cao et al. 2006) found that material specifiers do not typically make material selection and purchasing decisions nor are they financially responsible for the purchases (McNeil 2005). Therefore, low ratings for cost advantage and price stability do not necessarily mean that the Chinese users are willing to pay more for high-quality products.

Table 9: Average respondent ratings for various species product attributes.

Attributes	Mean	Std. Deviation
Product warranty	6.12	1.34
Consistent quality	6.11	1.31
Product long life	6.11	1.29
Treating with environmentally friendly preservatives	6.02	1.39
Market supporting systems	5.83	1.42
Material appearance (e.g. grain, color)	5.80	1.38
Treating to international standards	5.70	1.59
High strength properties	5.59	1.57
Product image (e.g. brand)	5.44	1.58
Price stability	5.31	1.61
Product availability (e.g. size, raw material supply)	5.21	1.56
Cost advantage (low cost)	5.13	1.53

Evaluations of attributes by species

Respondents who said they had used treated or NDRS species were asked to rate the physical properties and in-service performance of several products using a 1-7 Likert-likr scale (1=inferior, 7=superior). Service related attributes, including product warranties, market support, and treating standards were excluded from the attribute list. One-way ANOVA (Scheffe and Dunnett T3 tests) were used to test group differences.

Imported Southern Yellow Pine versus Domestically Treated Southern Yellow Pine

As shown in Figure 6, respondents rated US treated SYP highest of all species surveyed in quality categories including consistent quality, long product life, appearance, strength, and product image. Respondents also rated imported treated SYP similar to other imported species in terms of product availability and price stability (although no statistically significant difference was found). Despite the higher price of US treated SYP, consumers surveyed indicated that there is a market in China where high-quality is more important than low price and specifiers do recognize the difference in quality and performance between US treated SYP and other treated lumber species.

Survey findings clearly indicate that Chinese survey respondents perceive that there is a difference in quality and performance between US treated SYP and Chinese treated SYP. While survey respondents

rated Chinese treated SYP significantly lower than US treated SYP on all quality attributes ($p<.01$) they rated the two species the same in terms of cost (Figure 6). One possible explanation for this is that Chinese treaters charge the same price for Chinese treated and US treated SYP, but the margins for Chinese treated SYP are higher.

Although respondents indicated that they believe US treated SYP is higher quality and performs better than Chinese treated SYP, it appears that buyers are unable to distinguish between US treated SYP and other lower priced and lower quality competitors. A number of disreputable Chinese treaters and distributors reportedly market lower quality treated pine as US treated SYP and most Chinese consumers are unable to distinguish the difference. This misinformation threatens to undermine the long term market for US treated SYP. If projects that consumers believed were built with US treated SYP perform poorly, the entire market for US treated SYP could be affected.

The effects of substitution and misinformation on user perceptions warrant further study. It is also vital that US industry associations and suppliers continue to educate Chinese construction professionals about the differences in quality, performance, durability, and longevity between US treated SYP and Chinese treated SYP to help US suppliers differentiate their product from low-cost competitors.

US and Chinese treated SYP ratings compared to Russian, Radiata and Finnish Pine

As shown in Figure 6, US treated SYP was perceived to be superior to treated pine from Russia, radiata pine, and Chinese pine on all quality attributes. Respondents also rated it better than Chinese pine and Radiata pine in terms of price stability and product availability. Only Russian pine rated better than US treated SYP on product availability and cost advantage.

Red pine from Finland appears to be the most significant competitor for US treated SYP. Respondents rated Finnish red pine second only to US treated SYP on all quality attributes, and only slightly lower on price stability, availability and cost advantage.

The availability of various treated softwood lumber species clearly affects product prices and price stability. Survey respondents rated several species highly in terms of quality and performance, yet they generally rated these species poorly in terms of cost, availability, and price stability. For example, respondents rated Finnish red pine above average in terms of quality and image but lower in terms of price stability and cost advantage. With strong demand in Europe, Africa and the Middle East availability of Finnish pine in China is limited and prices are higher and less stable.

In contrast, respondents rated Russian pine and Chinese pine highly in terms of cost advantage but poorly on all quality measures (Figure 6). The proximity of Russian suppliers, a shared border, and a favorable tax structure encourage imports of Russian logs and lumber and the supply is good. Respondents rated Russian pine second only to hem-fir in terms of product availability. The advantage that Russian exporters enjoy should lessen since the Russian government imposed the new 6.5% VAT in March 2006 (Foreign Agricultural Service 2006) Finally, domestically treated Chinese pine ranked second to last in terms of availability, which is primarily due to domestic harvest restrictions and difficulties treating the species.

Western Softwoods

Treated softwood lumber from the Western US and Canada are relatively new to China. Several species were included in the survey to understand how these species compare to more commonly used species of treated softwood lumber.

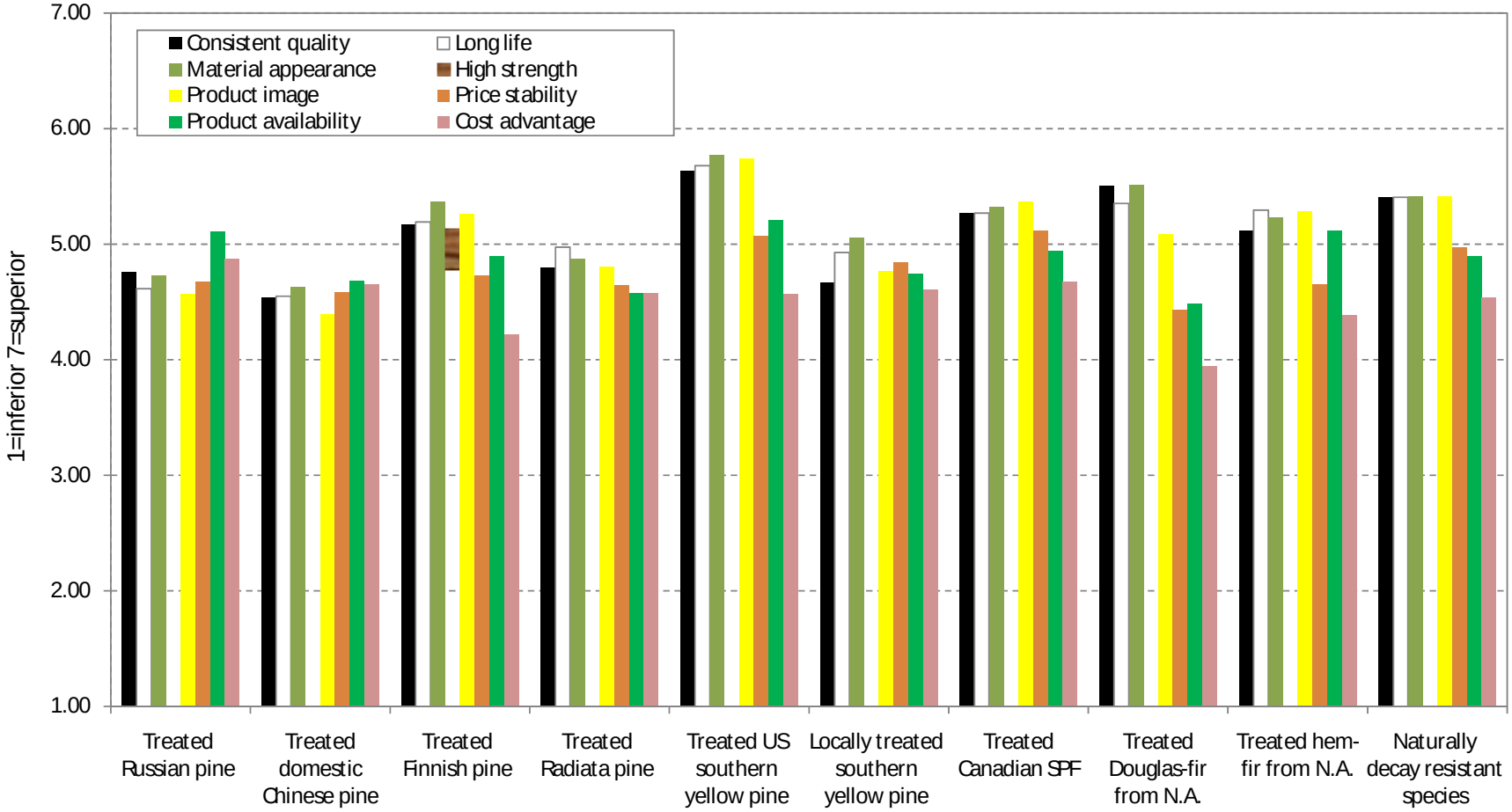

Figure 6. Average ratings of various species in terms of quality attributes.

Survey respondents rated the three western species similarly on most attributes except price stability and product availability. As shown in Figure 6, survey respondents ranked treated Douglas-fir, hem-fir, and Canadian SPF similarly on several quality attributes including consistent quality, long life, material appearance and strength – scoring only behind US treated SYP and pine from Finland on these attributes. The one exception was high strength where SPF rated significantly lower than the other western species.

Survey respondents rated Douglas-fir highly on all quality attributes except image, where it lagged behind US treated SYP. According to industry experts, Chinese consumers' experience with Douglas-fir dates to the early 20th century when Douglas-fir lumber and beams were widely used for structural purposes. While survey respondents rated Douglas-fir highly in terms of quality, they rated it below average on all three service related attributes (cost advantage, price stability, and product availability). Therefore, although survey respondents appear to view Douglas-fir positively, they clearly believe it is more expensive and the availability more limited than competing products. Since Douglas-fir lumber is primarily used as a framing material in wood frame construction, its availability has been constrained by the strong US housing demand. As US housing demand surged, the price of Douglas-fir lumber spiked, which is reflected in the low ratings for cost advantage and price stability

While survey respondents rated Douglas-fir and hem-fir highly in terms of quality attributes, Chinese treaters expressed very different opinions during interviews. Chinese treaters indicated that they resist using Douglas-fir lumber because the species does not absorb preservative treating chemicals as completely as SYP and requires end-treating if the lumber is sawn after the treating process. Even when the treaters were informed about the superior structural strength of Douglas-fir lumber they were not persuaded to use Douglas-fir lumber.

The Softwood Export Council and the American Forest & Paper Association (known overseas as American Softwoods) have begun promoting treated species from the western US, which may increase the demand for Douglas-fir. So far, according to US treated Douglas-fir suppliers, price has been the main obstacle to the species' widespread adoption.

Another western softwood used in limited volumes in China is hem-fir. The species mix is easier to treat than Douglas-fir, yet it is more expensive. In China, Canadian suppliers dominate the hemlock market and availability is reportedly consistent. As shown in Figure 6, survey respondents rated hemlock moderately well compared to other western species on all quality attributes. It also rated well compared to western species and locally treated and US treated SYP in terms of cost advantage and second only to Russian pine in terms of product availability. Therefore, survey responses indicate that end-users perceive that hem-fir is a good quality lumber species that is readily available at a competitive price.

Canadian trade organizations have heavily promoted SPF and these activities appear to have been effective. SPF is used in a wide variety of projects in China, and survey respondents rated SPF moderately on all quality attributes.

Chinese treaters expressed different opinions from survey respondents however. Treaters were very resistant to using hem-fir because the species absorbs treating chemicals readily and is therefore much more expensive to treat than other softwood lumber species.

The availability of hemlock and Canadian SPF in China is strong given Canada's weak domestic market for lumber and US homebuilders' preference for Douglas-fir. Respondents rated hemlock substantially higher than Douglas-fir and NDRS in terms of availability. They also rated Canadian SPF highest among western softwood species and SYP in terms of price stability. Respondents also rated SPF on par with treated Douglas-fir and treated Hem-fir on all quality attributes.

Although tropical hardwoods are the most commonly used NDRS in China, familiarity with incense cedar (used to produce pencils) is also very widespread and incense cedar is the leading softwood lumber export from the US. Western red cedar, found in Western North America, is not commonly used in China for construction. However, log export bans in several Southeast Asian countries have severely limited the availability of tropical hardwood lumber in China and tropical lumber prices have spiked. High prices and supply instability threaten the tropical lumber market in China which may create opportunities for suppliers of lesser known NDRS. Respondents rated NDRS quite high on all quality ratings. Respondents rated NDRS among the top four lumber species in terms of consistent quality, long life, appearance and image (Figure 6). NDRS also rated well for strength. Respondents rated naturally decay resistant lumber lower in terms of cost advantage compared to all species but similar to other North American lumber species. NDRS rated better in terms of price stability, trailing only Canadian SPF and US treated SYP.

US treated SYP compared favorably to western species. It led all competitors by a significant margin on all quality attributes except consistent quality, where it tied Douglas-fir. Respondents rated Chinese treated SYP substantially lower than all western softwood species on all product quality attributes, particularly consistent quality and long product life. Notably, Chinese treated SYP rated only moderately on supplier related attributes such as cost advantage, price stability, and product availability compared to all other species in the survey except Douglas-fir and hem-fir.

Impact of Profession on Attributes of Importance

To determine if respondents from different professions based their treated softwood lumber selection on different factors, respondents were grouped into six categories.

As shown in Figure 7, long product life, consistent product quality, environmental treatment, and lumber treated to international standards were the most important quality attributes for construction and design professionals when selecting a treated lumber product. Respondents rated warranties and market support as the most important service attributes. Surprisingly, respondents rated product availability, cost advantage, price stability, and product image least important. However, as mentioned earlier, the ability to accurately measure willingness to pay in surveys is difficult and results can be inaccurate.

Awareness about the importance of treating to environmental standards appears to be increasing. All groups except associations rated environmental treatment and consistent quality among the most important factors affecting their treated lumber selection decision.

Notably, construction firm representatives and traders rated consistent quality significantly higher than other construction professionals. They also rated product warranties highly. The only other groups who rated warranties as highly were representatives from associations and educational institutions. Developers also rated product durability, consistent quality and environmentally-friendly treating methods as the most important factors affecting their purchase decision. Price and price stability rated least important.

Manufacturers rated environmentally responsible treating processes and consistent quality higher than any other group except for construction firm representatives who rated consistent quality equally as important. Manufacturers also rated low price and price stability least important. This finding is surprising since many Chinese manufacturers are extremely price sensitive and they generally have few environmental controls in place. Chinese manufacturers may be becoming more aware of the importance of environmentally responsible products and manufacturing methods as China's government begins to adopt international standards for treating, pollution, and environmental protection. Adopting these standards is important to China if its manufacturers are going to continue to manufacture products for consumers

around the world who are becoming increasingly concerned with buying environmentally and socially responsible goods.

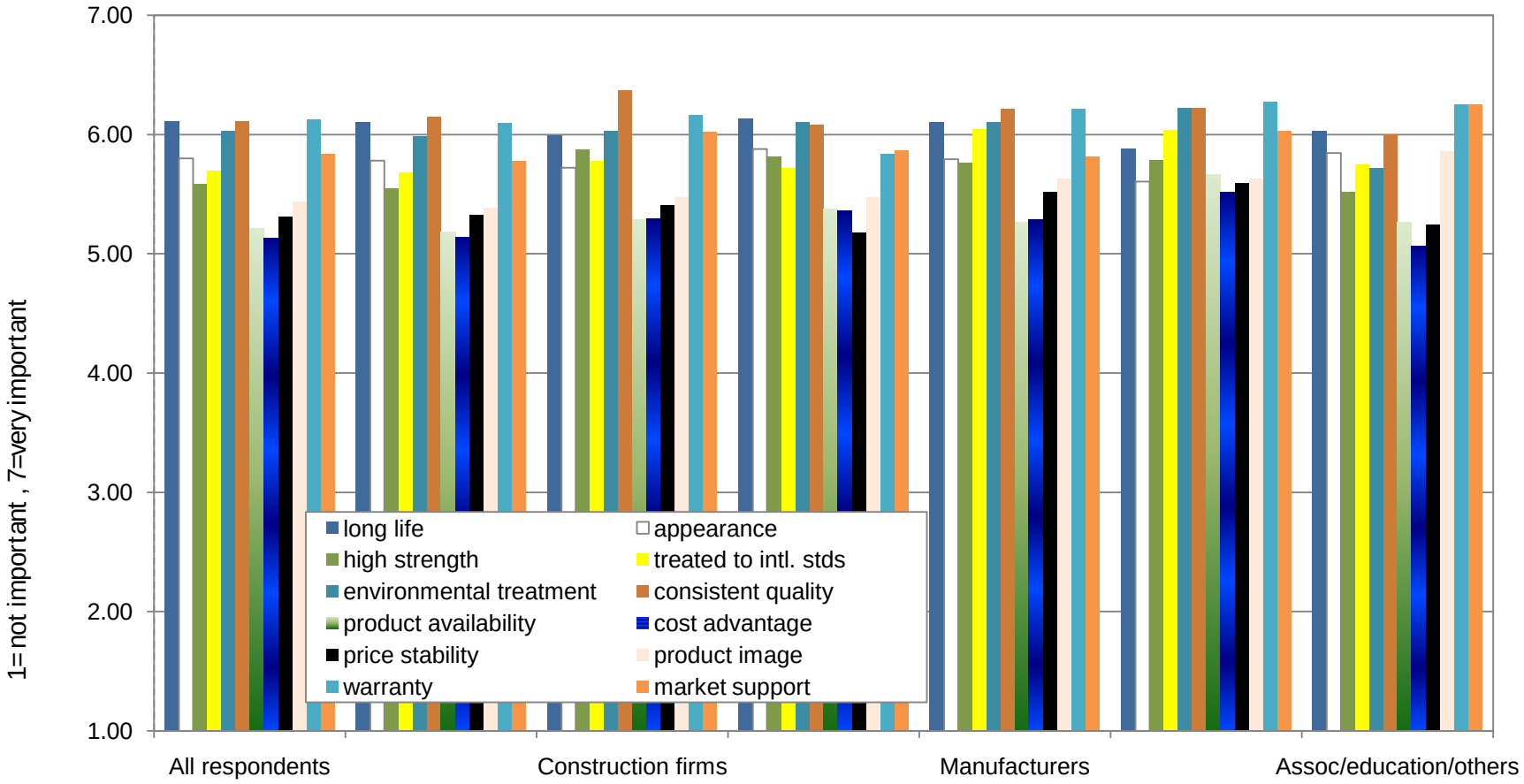

Figure 7: Average respondent ratings of importance of various quality attributes in the lumber selection process, by profession.

Vendor sources

According to survey respondents, distributors are the most commonly used source for construction and design professionals when they purchase treated softwood lumber (Figure 8). Due to the fragmented nature of the lumber industry and the lack of quality assurance systems, distributors are very important to both domestic and overseas suppliers. For US suppliers, Chinese distributors can simplify the business development process. They have an understanding of the Chinese lumber and construction market that helps them network and negotiate sales on behalf of the US supplier. For the Chinese customer, distributors can simplify the purchasing process by offering a wide array of products and species and they provide a local point of contact when sourcing products from overseas. For more information on the China distribution system for imported building materials, refer to CINTRAFOR Working Paper 102.

Survey respondents also indicated that local building materials markets and traditional lumber and building materials markets are leading sources of treated wood. Traditional lumber markets serve as regional distribution centers for hardwood and softwood lumber and, aside from distributors who sell direct to customers, they are major sources of logs and lumber for Chinese manufacturers. Building materials markets sell a wide range of building materials from lighting and plumbing supplies to moulding and lumber. While retailers at these outlets do not stock large volumes of lumber they can order larger volumes and they serve as distributors for softwood lumber grown in China.

Perceived life expectancy for preservative treated softwood lumber

On average, Chinese survey respondents said that they expect treated lumber to last 20 years, yet most Chinese suppliers and developers extend only 2-3 year warranties. Since local suppliers are not held to an industry standard, nor required by the government to provide longer warranties, developers typically search for the cheapest product available and treaters forego treated lumber quality for low price. Poor long-term performance of projects built using low quality treated softwood lumber is likely to negatively affect consumer attitudes and demand for treated lumber. US suppliers may differentiate their product from Chinese treated softwood lumber by extending longer warranties, which would add value for reputable developers who are searching for higher quality building materials.

Information Sources

As shown in Figure 9, the majority of survey respondents said they rely mainly on trade shows, the internet, demonstration projects and industry journals for their information about building materials.

The expense and extensive logistics required to develop demonstration projects is substantial. However, demonstration projects can be an effective means of showcasing US building materials. CanadaWood's Shanghai headquarters is housed in a wood frame demonstration project which is also used for technical seminars and classes. The American Hardwood Export Council (AHEC) also donated hardwood lumber to finish the interior of a concrete home at a Chinese development in Zhujajia, approximately 45 minutes from Shanghai. Since the developer managed the project, AHEC's financial commitment and involvement was reduced and the model home was used to showcase American hardwood flooring, furniture, and paneling applications. Unfortunately, the home's deck was built of treated Chinese pine and an opportunity to showcase US treated softwood lumber was lost. Coordination between US hardwood and softwood trade associations on future projects could provide more opportunities for both groups to showcase their products.

The internet has become a major source of information for Chinese construction professionals. Chinese language websites are valuable sources of information about treated softwood lumber products and species attributes. Several treaters and distributors of US softwood lumber also said that US lumber prices, product specifications, certificates, and supplier inventories available online would improve their ability to quote prices and finalize sales.

Interest in other US wood products

Survey respondents were also polled to see if they were interested in learning more about other US wood based building materials. As shown in Figure 10, respondents indicated strongest interest in softwood lumber for structural use, followed by softwood lumber for interiors and furniture. Given China's experience as a furniture producer, respondents were also interested in US hardwoods and veneers for furniture making and interiors. Fewer respondents were interested in engineered wood products (EWPs), which may be indicative of the relative newness of EWPs to China.

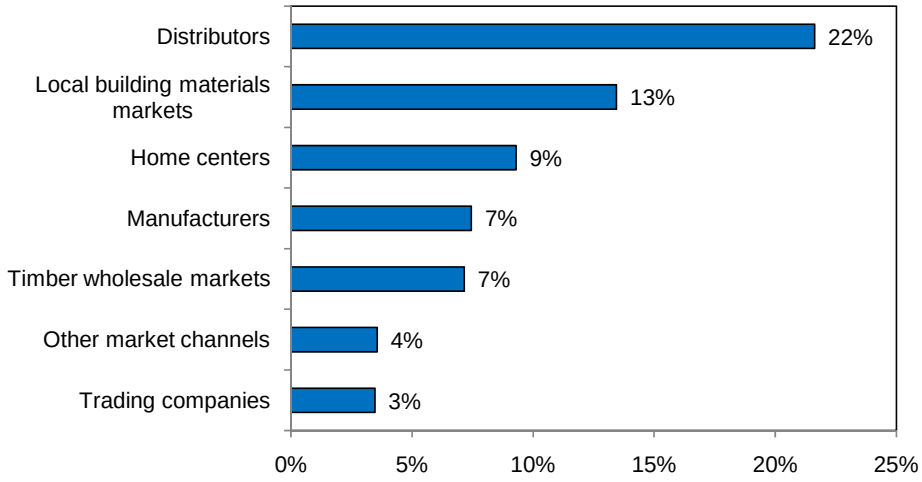

Figure 8: Sources of treated softwood lumber in China.

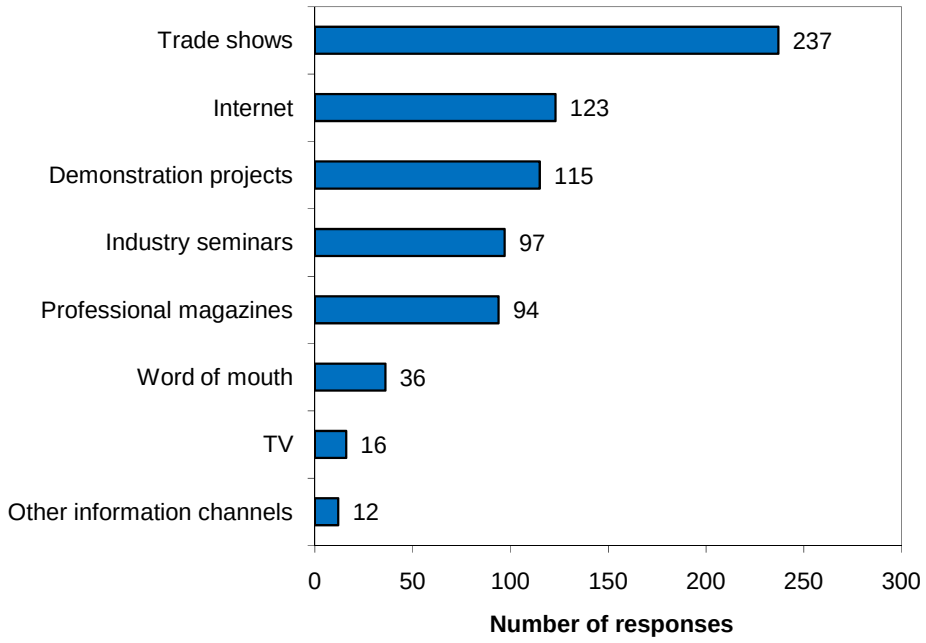

Figure 9: Number of respondents who cited various outlets for their information about building materials.

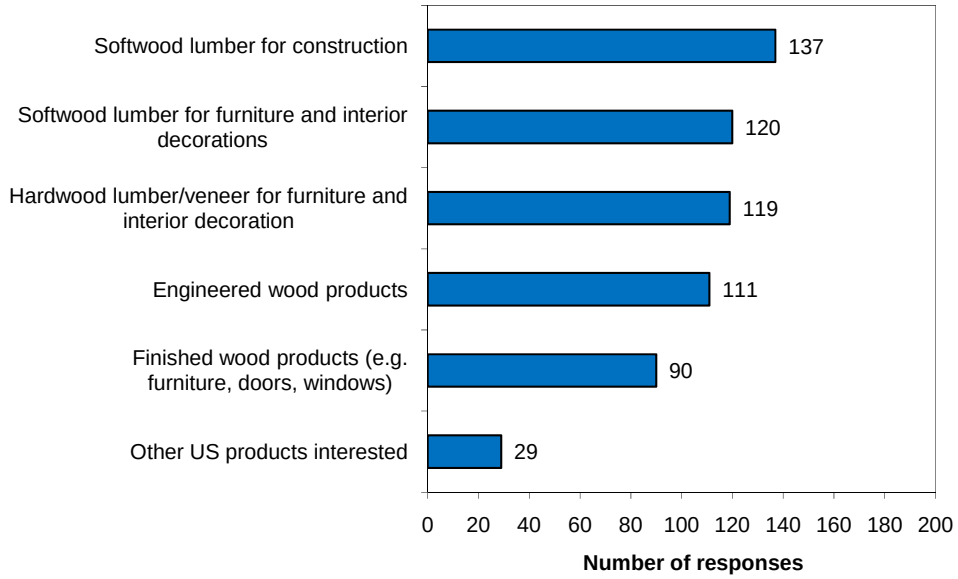

Figure 10: Number of respondents who reported interest in other US products (except for treated softwood lumber).

3.4 Product Positioning

To create a visual map of respondent ratings of treated softwood lumber species included in the surveys, data from the two surveys was aggregated. As shown in Figure 11 the eight product and service attributes included in the surveys were aggregated to create two new attributes: utility and economy, which together represent the aggregate "total value" users derive from treated softwood lumber. Total product value is typically known as "the total market offering" which is the relationship between customers' expectations of product benefits and the costs (Value = Benefit/Cost).

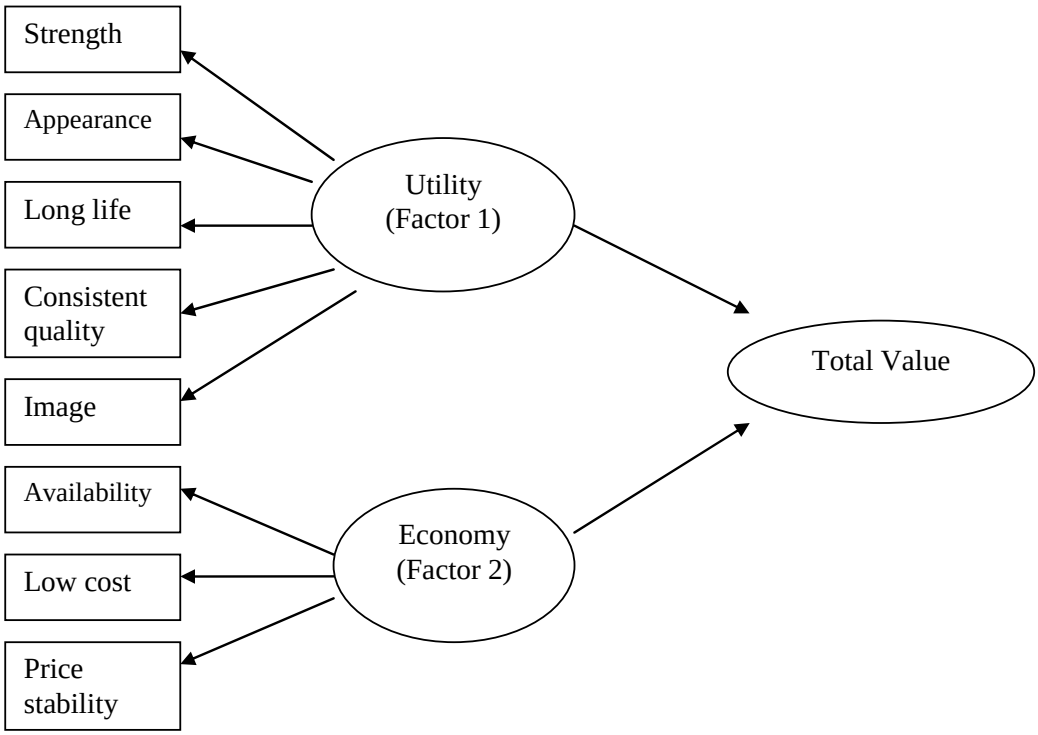

Figure 11: Model of factor loading for treated softwood lumber attributes.

The two attributes, Utility (X axis) and Economy (Y axis), were used to create a perceptual map with each treated softwood lumber species plotted according to its two factor scores. Based on the distribution of softwood lumber species' ratings on the utility and economy scales, a mid-point was identified and labeled as the "ideal point" between utility and economy. As shown in Figure 12, despite earlier results that suggested that respondents believed that while US treated SYP was a high quality product while price was higher than other species, when utility is considered relative to price, respondents rated US treated SYP better than all other treated softwood lumber species in terms of benefit received for the price paid.

Hem-fir, Douglas-fir, NDRS, SPF and Finnish pine also ranked well with SPF rated slightly more expensive than US treated SYP, and hem-fir, Finnish pine and Douglas-fir rated less expensive. These species are leading competitors with US treated SYP, since users believe that they provide similar utility at lower prices.

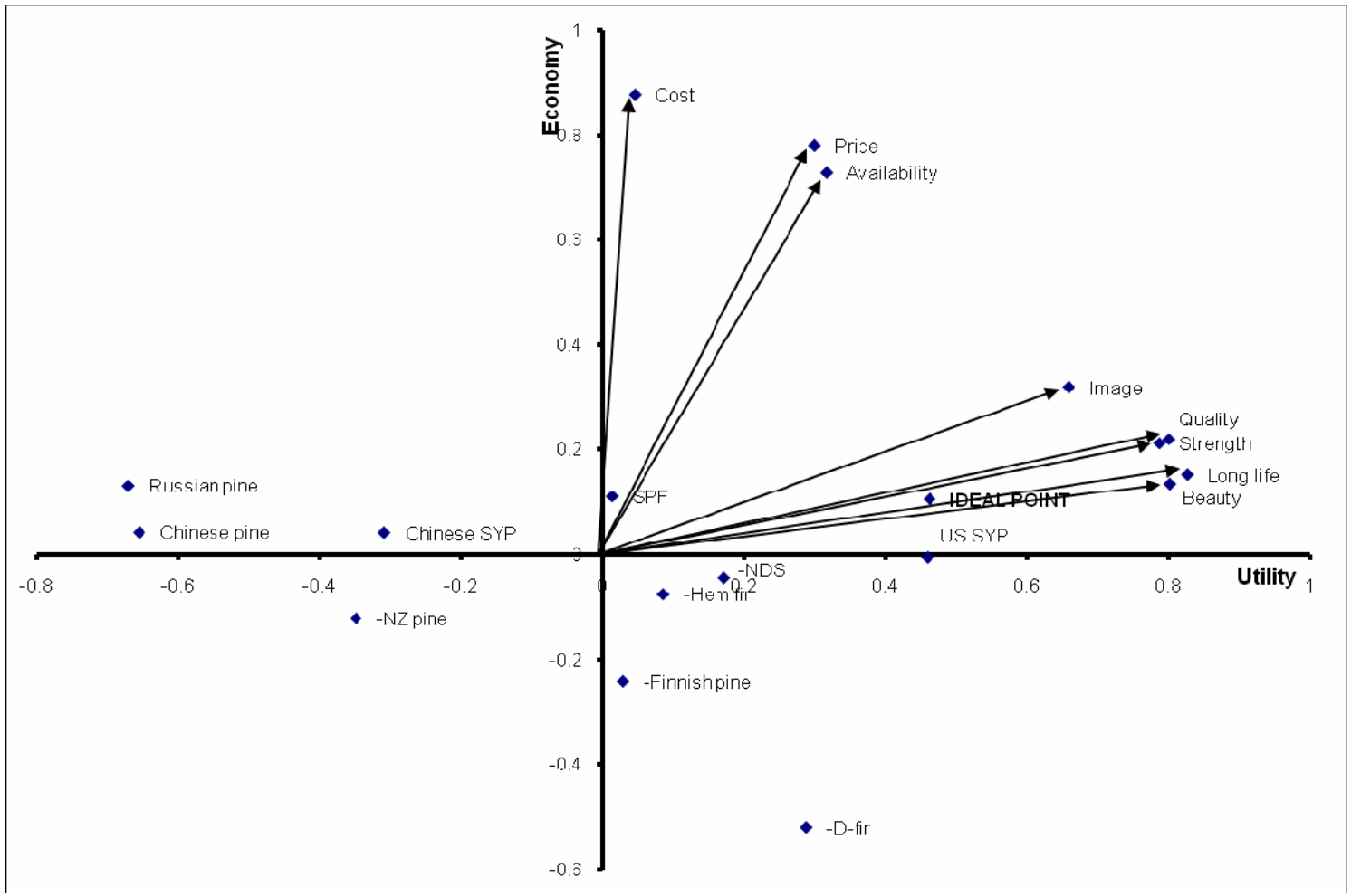

Figure 12: Perceptual map of respondent's rating of widely used treated softwood lumber species used in China.

4. Conclusions and Recommendations

4.1 Interior Finishing Market

As China's economy continues to grow and as disposable income rises, opportunities for high quality imported building materials are improving. Although price is still a primary consideration for most consumers, quality, design, and brand names are very important to wealthy Chinese and expatriates.

When the China government introduced turnkey housing in 2001 and announced that 85% of Shanghai's condominiums would be sold as finished units by 2010 analysts expected developers would undertake the finishing work or hire large, third-party contractors or home centers. They anticipated that this change would drive many small contractors out of business and simplify the distribution system. The rate of adoption has been slower than expected, yet by 2003 approximately half of the condominiums in Shanghai were sold as finished units. The transition to turnkey housing still faces some resistance from the large number of Chinese consumers who feel that they will get higher quality and lower priced products by purchasing directly from traditional building materials markets and hiring their own contractor to do the installation work.

Although turnkey housing has not been adopted at the rate government officials anticipated, finished housing has developed a niche in very expensive and very inexpensive segments. Consumer spending on interior design has steadily increased and now represents approximately 35% of total consumer spending.

Rising interest in creating attractive homes and a strong affinity for wood may create new opportunities for imported wood building materials. While some developers concerned about honoring government mandated two-year housing warranties are reportedly resisting turnkey housing, there are a number of developers of high-income housing who have found turnkey housing both feasible and profitable. In interviews, these developers highlighted the importance of incorporating internationally recognized brand names and imported products to attract wealthy clientele.

The majority of interior use wood products used in China are manufactured domestically. Tropical species also dominate. However, as logging bans in Southeast Asia continue, the scarcity of tropical logs and lumber will increase which may cause Chinese users to begin to use more sustainably managed and readily available timber. Chinese manufacturers already report rising prices and scarcity of tropical species.

Although changes in China's demographics and lumber supply may provide opportunities for US interior use wood products, so far US building materials suppliers have had only limited success selling to Chinese developers. Several developers suggested that the most effective way for foreign suppliers to get their products specified is to work with US architects. Developers often rely on the advice of architects for product suggestions and American architects in China are already familiar with many US wood species and suppliers, making it easier to have certain materials included in the specification list. Products specified in the architects' material list must still be approved by developers, but the endorsement of the architect is an important part of the purchasing process. A list of US architects working in China is included in Appendix A.

4.2 Treated Softwood Lumber in Landscaping

Over the past several years, as wooden landscaping products have become popular in high income residential developments and public areas, exports of US SYP have increased. Government contractors were among the first to value the durability of US treated SYP and government projects are now the single largest market for US treated SYP in China. Developers of luxury residential projects also use SYP for landscaping, bridges, and decks. However, the majority of residential projects in China continue

to use less expensive treated Russian pine. While the quality of Russian pine lumber is inconsistent, many developers are willing to forego quality for lower price. Recent regulatory changes in Russia that restrict log exports and changes in China that increase the tariff rate on Russian logs and lumber may create opportunities for US lumber.

Education has played a crucial role in the success of US treated SYP. US trade associations and Chinese distributors play an important role in educating designers and specifiers about the physical properties of US treated SYP, design considerations, and proper treating methods and chemicals. Seminars, trade shows, and publications have been important ways of differentiating US treated softwood lumber from lower cost competitors. Respondents surveyed for this project rated US treated SYP highly in terms of quality, durability, appearance and lifespan compared to competing treated and NDRS.

Differentiating US treated SYP from Chinese treated SYP is vital to preserving and expanding the market for US treated SYP. When US treated SYP started to develop a good reputation and as more developers started using treated softwood lumber, a number of Chinese companies began treating softwood lumber locally. Few of these treaters follow environmental or quality control standards. Many treaters dilute preservative chemicals to lower their production costs, to speed the treating process, or to lighten the color of the treated lumber. While the majority of the Chinese market will continue to be very price sensitive, a growing number of Chinese are demanding higher quality and better performing products.

Although the central government and the China Wood Conservation Center are developing standards for the wood treating industry, many industry analysts believe that even if these standards are adopted, regulation will likely be spotty and product quality will continue to be inconsistent. The lack of industry regulations and enforcement mechanisms seriously threatens the long term future of SYP in China. Poor treating practices, and Chinese treaters' quest to cut costs, has produced a large volume of very poor quality Chinese treated SYP.

If Chinese construction professionals do not understand that US treated SYP is a very different product from Chinese treated SYP, the poor performance of Chinese treated SYP may undermine the US treated SYP market in China. Often Chinese treated SYP lumber is sold as US treated SYP. If this continues and US treated SYP is perceived to be an expensive, yet inferior product, it will be difficult to regain disappointed customers. Further, if construction professionals believe that US and Chinese treated SYP are interchangeable, poor long term performance of Chinese treated SYP could seriously damage the reputation of higher quality US treated SYP. It is important for US suppliers and US softwood lumber associations to highlight the substandard treating processes that are being used in China and educate consumers about the importance of proper treating and the effects on the performance and longevity of preservative treated lumber.

According to survey responses, trade shows are the single leading source of information about building materials that construction professionals rely on. Active participation by US treated softwood lumber suppliers is vital to educating consumers about US softwood lumber. The American Forest & Paper Association and American Softwoods, the overseas designation for the Softwood Export Council, the Southern Pine Association, and APA-the Engineered Wood Association participate in a number of trade shows each year that are open to US wooden building materials exporters. The US-China Build Program, AF&PA, and American Softwoods also hold seminars throughout the year. A calendar of yearly activities is available at www.softwood.org/calendar.

While the volume of Chinese treated SYP has increased rapidly over the past few years it does not appear to have negatively impacted Chinese users' view of US treated SYP. Survey respondents rated the quality, appearance, strength, durability, and image of US treated SYP higher than any competing species included in the survey. They also said that US treated SYP had a much higher image than any of the

competing treated and NDR softwood lumber species. While respondents rated US treated SYP highly in terms of quality and image, they only rated the price of US treated SYP lumber higher than Russian and Chinese pine, two species that were considered low quality products. Often, users of treated Russian and Chinese pine lumber knowingly make the choice to trade price for quality. Since US treated SYP cannot compete on the basis of price, US suppliers should focus on selling to buyers where quality is more important than price and they should emphasize the consistent processes used in treating US SYP and the superior quality of the product.

When comparing US to Chinese treated SYP, respondents appeared to differentiate between the two products. Chinese treated SYP consistently rated substantially lower than US treated SYP on all quality measures (long life, appearance, strength, and consistent quality). At the same time, respondents said that they believed that the price of US treated SYP was consistent with the price for Chinese treated SYP and they thought US treated SYP was more readily available.

SYP from the US has established a niche in high income and government projects in China, yet a few central issues hinder widespread market expansion. These include: 1) scarcity of lumber available in metric dimensions. 2) poor access to information about US lumber prices and US suppliers by Chinese distributors and importers of US SYP, and 3) limited understanding among end-users about the quality difference between domestically treated SYP and SYP treated in the US, and 4) the inability for Chinese consumers to recognize the difference between US treated SYP and lower priced and lower quality treated softwood lumber species marketed by Chinese treaters and distributors as US treated SYP.

Immediate product availability greatly influences US companies' ability to compete in China's fast paced construction market. According to Chinese treaters, developers demand immediate delivery of treated lumber orders. US companies that stock product in China clearly have an advantage in the marketplace and greater market share than their competitors who do not have inventory in China. Although there is a cost associated with stocking product in China and US suppliers must find a Chinese partner that they can trust, the ability to fill orders quickly clearly affects sales.

Making SYP available in metric dimensions either by producing the lumber in the US or making SYP cants available in China is one strategy to expand market share by making SYP available to a wider group of users. Chinese users do not tend to be early product adopters, therefore suppliers must make the product as easy to incorporate into standard construction practices as possible.

According to survey responses, end-users have a generally positive image of lesser-used species such as Douglas-fir, hemlock, Alaska yellow cedar, and hem-fir. However, Chinese treaters expressed strong reservations about using Douglas-fir because it does not absorb preservative chemicals completely and the lumber ends need additional treating if they are sawn. Treaters expressed strong reservations about using hem-fir as well, but for opposite reasons. They said that hem-fir absorbs preservative treating chemicals too readily which increases the cost of treating.

However, as Chinese consumers become more affluent, and more concerned with appearance and performance, niche markets for western softwood species such as Alaska yellow cedar may emerge as well. As mentioned earlier, the Softwood Export Council and the American Forest & Paper Association have begun promoting Alaska yellow cedar in China and the State of Alaska recently signed an agreement with Chinese government to establish a fumigation and wood processing plant for Alaska logs in Fujian in South China, which may help to expand the market for Alaska yellow cedar.

Forming long-term partnerships with local distributors is recommended. Arguably, the most critical business decision facing US manufacturers and exporters of value-added wood products is identifying the proper distribution strategy. For most small to medium-sized companies, with limited capital and

international staff, this means choosing the right distributor. However, no matter where you do business in China, maintaining market presence is critical. Local distributors can be identified through trade shows, and through US wood products representative offices. Thorough due diligence about the reputation of potential distributors is imperative and companies are advised to be conservative when extending payment terms to new partners.

As discussed, attitudes about US treated species in general, and specifically US treated SYP are very positive. However, maintaining these attitudes requires that US companies and their Chinese distributors continue to educate Chinese construction professionals about the differences between US treated SYP and other treated softwood lumber products, to introduce their products to new consumers and provide service to existing customers, and to open new markets.

The US softwood lumber industry, particularly the southern pine industry, has been successful in developing the Chinese market for preservative treated softwood lumber. To a large degree, this success has been based on educational programs that have raised construction professional's awareness of the superior performance and durability of softwood lumber that has been properly treated to international wood treating standards. The results of this research clearly demonstrate that there is a brand awareness of US preservative treated southern yellow pine as the "gold standard" of treated softwood lumber products in the Chinese market. Like any successful branding effort, the rapid development of the preservative treated softwood lumber market has spawned low-cost domestically treated imitation products with inferior performance and poor durability. In a price sensitive market like China, where markets tend to move towards a commodity focus, it is hardly surprising that these domestically treated, low-priced products have gained a surprising degree of market success. However, a strategy to show that the slightly higher price of US treated softwood lumber is easily recouped from the higher durability and correspondingly longer life-span of projects built using US treated lumber could be easily implemented since most industry experts agree that domestically treated lumber will begin to decay within 3-5 years of installation whereas US treated SYP lumber has a life-span of over 20 years.

However, the success of these inferior treated lumber products threatens to undermine the entire market for treated softwood lumber if consumers associate the poor performance and low durability of this domestically produced inferior treated lumber with all treated softwood lumber. To the extent that US preservative lumber manufacturers and exporters allow the commoditization of treated softwood lumber, they stand the risk of having US treated lumber be subject to consumer perceptions based on the poor quality of domestic Chinese treated lumber. From a marketing perspective, it becomes important that the US industry adopt a branding strategy that allows consumers and end-users to differentiate high quality US treated lumber from low quality domestically treated lumber. Thus, it is imperative that the US treated lumber industry work with industry associations and their Chinese distributors to implement a promotion and education strategy to differentiate US preservative treated lumber from competing products.

The educational aspect of this strategy would emphasize the critical importance of proper preservative treating methods in ensuring superior product performance and durability in service. Along this line, it should emphasize the importance of adhering to internationally recognized wood treating standards to ensure product quality and provide superior long-term product performance. The educational strategy would also highlight the health benefits of using environmentally friendly treating chemicals, such as ACQ, in consumer end-use applications.

The promotional aspect of this strategy should focus on differentiating US treated lumber from domestically treated lumber by highlighting its superior environmental benefits, quality and durability. This could be done through a "Made in USA" type branding strategy but should include some type of trademark or product logo that would allow end-users to easily differentiate US treated lumber from other

products in the market. The trademark r product logo should also make reference to the product has been treated in conformance with a specific internationally recognized lumber treating standard.

Fundamentally, this marketing strategy would prevent the commoditization of US treated lumber in the Chinese market and ensure that the poor performance of domestically treated lumber in China does not adversely affect the reputation or demand for US treated lumber. Failure to do this would seriously jeopardize the market for US treated lumber in China.

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Appendix A: US Architecture Firms with Practices in China

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EDAW Inc
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Gensler International (Shanghai) Ltd.
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Appendix B: List of Leading Softwood Lumber Distributors in China

Company	Name	Title	Address	Tel	Fax	Cell	Email	Website
Bestwood (Taiwan Yi Tsai Wood Co, Ltd)	Wall Liu	Chief Rep.	No.7-C, Xifei Road , Jinfu Developing Area, Jiuting, Shanghai 201615	021-67626020	021-67626021			www.bestwood.com
Shanghai Yijin Wood Structure Project Co, Ltd.	Rose Du	Vice Gen Mgr.	No.8-C, Xifei Road , Jinfu Developing Area, Jiuting, Shanghai 201615	021- 67626352	021-67623553	13917383250 13321860153	rosedu@bestwood.com	www.bestwood.com
Shanghai XueLi Hua Wood Structure Co, Ltd.	Kevin Yao	General Mgr.	Rm.13AB, No.567, Zhonghua Road, Shanghai 2001010	021-64743375 021-63188420	021-64374673		xlh@newwoodscape.com xlhmaster@126.com	www.newwoodscape.com
United Forest Products (Shanghai) Co, Ltd.	Chuck Chen	General Mgr.	No.2158, Liu Xiang Road, Jiading District, Shanghai 201801	021-69156260	021-69153865	13818620257	chuck_chen@ufpcsh.com	www.ufpcsh.com
Shanghai Dabutong Wood Industry & Technology Co, Ltd.	Huiming Li, Xijia Wu	Board Chairman / Assistant	No.520, Zhongshan West Road, Chang Ning District, Shanghai 200051	021-62599888-800	021-52061286		sales@dabutong-muye.com	www.dabutong-muye.com
Shanghai Zhengshan Wood Co, Ltd.	Shisheng Zhang	General Mgr.	No.108, Chunquan Road, Pudong, Shanghai 201203	021-68790218	021-68790278	13917111165	zsszs369@yahoo.com.cn	www.zhshwood.com
Hoover Treated softwood lumber Products, Inc.	Eason Yang	Sales Mgr.	Room 701, No.112, Jiahe Road, Xiamen, Fujian Province 361009	0592-5136250	0592-5133951	13906007909	kevin@frtw.cn	www.frtw.cn
Beijing Silvan Technology Trading Co., Ltd.	Jixin Luo	Sales Mgr.	Shuiqingting Project Office, Huosha Road, Houshayu Town, Shunyi District, Beijing 101318	010-80419401	010-80419401-800	13070184636	SD@bjsilvan.com.cn	www.bjsilvan.com.cn

Company	Name	Title	Address	Tel	Fax	Cell	Email	Website
Beijing Wonder House Trading Co., Ltd.	Jingyun Yang	General Mgr.	Room 603，Unit 1, Building No.59, Ande Road, Dong Cheng District, Beijing 100013	010-84135681		13901112812 13311395075	hurdyang@vip.sina.com	
Shanghai Jinheng Building Material Co.,Ltd	Shouyu Xia	Division Mgr.	No.4 Riyong Road, Jiangqiao Industrial Park, Shanghai 201803	021-59146541	021-59118130	13391202555	jh.landscaping.mgr@vip.citiz.net	www.jinheng-sh.com
Pangbeijie Paint Trade Shanghai Co., Ltd	Xun Wang Yiming Li	General Mgr.	No. 4 Building No. 150 Liulin Road, Shanghai 200021	021-63873355	021-63878763			
Shanghai Plus Wood Co.,Ltd	Qiaoming Zhu	President	2/F, No.5, Lane 1765 Hong Qiao Rd., Shanghai, China 200336	021-62089033	021-62701478	13301658880	pluswood_sh@vip.163.com	
Shanghai Westwood Co., Ltd	William Chang	General Mgr.	Rm.2204 No.82 Everbright Convention & Exhibition Center, Caobao Rd.,Xuhui Dist., Shanghai, China 200235	021-26928548	021-64326893	13809087258	william@westwood-cn.com	
Xiamen SiYue Wood Construction Projects, Co, Ltd.	Ms. Eddy Wang		Xinhu Garden, 1376 Jinshang Road, Xiamen	86-592-6030380	86-592-5626882		eddywang2007@163.com	
Xiamen C&D Import and Export Company	Mr. Yan Zhengcong	Vice-GM	17 Fl, Sealight Bldg. Xiamen, China 361001	86-592-2263570	86-592-2131555	13906028037	yzc@chinacnd.com	www. chinacnd.com

Appendix C: Questionnaire

CINTRAFOR Survey on Anti-Rot Wood Use in China

4th Shanghai International Architecture & Planning Exhibition, June 15-17, 2006

Hello, my name is _____. I am conducting a survey on behalf of the University of Washington, American Forest and Paper Association, and Southern Pine Council of US. The purpose of this survey is to learn how you perceive anti-rot wood products and compare different types of anti-rot wood products along a list of attributes, based on your actual experience. Your participation is extremely important to our research! All responses will be kept strictly confidential and the results will be used in aggregate form only.

1) Are you familiar with anti-rot wood (including treated and naturally durable species)?

- ❑ Familiar but do not use
- ❑ Used it
- ❑ Favored products (over non-wood substitutes)
- ❑ Not familiar but interested
- ❑ Not familiar and not interested (Jump to Q8 if this is checked)

2) How familiar are you with the following anti-rot wood products?

	Not familiar & not interested	Not familiar but interested	Familiar but do not use	Used it	Favored products
Treated Russian pine (e.g. Scotch pine)	1	2	3	4	5
Treated Domestic Chinese pine	1	2	3	4	5
Treated Finnish Pine (e.g. Nordic red pine)	1	2	3	4	5
Treated New Zealand Pine (e.g. radiata pine)	1	2	3	4	5
Treated Southern Yellow Pine from US	1	2	3	4	5
Locally Treated Southern Yellow Pine (in China)	1	2	3	4	5
Treated Canadian SPF	1	2	3	4	5
Treated Douglas Fir (from North America)	1	2	3	4	5
Treated Hem Fir (from North America)	1	2	3	4	5
Naturally durable species (e.g. red cedar)	1	2	3	4	5
Others_____	1	2	3	4	5

- o None of the above (Skip Q5 if this is checked)

3) Which one of the following areas best represents (potential) end use of anti-rot wood products by your company (or customers)? (Please specify percentage if check more than one)

- ❑ Gardening and landscapes (e.g. decks, bridges, walkways)
- ❑ Outdoor furniture
- ❑ Indoor applications (e.g. saunas, indoor swimming pools, flooring)
- ❑ Structural wood construction
- ❑ Others: _____

4) On a scale of 1 – 7 (1=not important at all and 7=extremely important), how important are the following factors when selecting anti-rot wood products for your project?

Factors	Not Important			Neutral			Extremely Important
Product long Life	1	2	3	4	5	6	7
Material appearance (e.g. grain, color)	1	2	3	4	5	6	7
High strength properties	1	2	3	4	5	6	7
Treated to international standard	1	2	3	4	5	6	7
Treated with environmentally friendly preservatives	1	2	3	4	5	6	7
Consistent quality	1	2	3	4	5	6	7
Product availability (such as size availability, raw material supply)	1	2	3	4	5	6	7
Low cost (cost advantage)	1	2	3	4	5	6	7
Price stability	1	2	3	4	5	6	7
Product image (e.g. brand)	1	2	3	4	5	6	7
Product warranty	1	2	3	4	5	6	7
Market support systems (e.g. technical support, maintenance services)	1	2	3	4	5	6	7

5) Based on Question 2, please rate the following products that you are familiar with along the listed attributes, on 1-7 scale (1=inferior, 4=average, 7=superior).

➢**Treated Russian Pine (e.g. Scotch pine)**	**Inferior**			**Average**			**Superior**
Product long Life	1	2	3	4	5	6	7
Material appearance	1	2	3	4	5	6	7
High strength properties	1	2	3	4	5	6	7
Consistent quality	1	2	3	4	5	6	7
Product availability (e.g. size, raw material supply)	1	2	3	4	5	6	7
Low cost (cost advantage)	1	2	3	4	5	6	7
Price stability	1	2	3	4	5	6	7
Product image (e.g. brand)	1	2	3	4	5	6	7

➢**Treated Domestic Chinese Pine**	**Inferior**			**Average**			**Superior**
Product long Life	1	2	3	4	5	6	7
Material appearance	1	2	3	4	5	6	7
High strength properties	1	2	3	4	5	6	7
Consistent quality	1	2	3	4	5	6	7
Product availability (e.g. raw material supply)	1	2	3	4	5	6	7
Low cost (cost advantage)	1	2	3	4	5	6	7
Price stability	1	2	3	4	5	6	7
Product image (e.g. brand)	1	2	3	4	5	6	7

➢**Treated Finnish Pine (e.g. Nordic red pine)**	**Inferior**			**Average**			**Superior**
Product long Life	1	2	3	4	5	6	7
Material appearance	1	2	3	4	5	6	7
High strength properties	1	2	3	4	5	6	7
Consistent quality	1	2	3	4	5	6	7
Product availability (e.g. size, raw material supply)	1	2	3	4	5	6	7
Low cost (cost advantage)	1	2	3	4	5	6	7
Price stability	1	2	3	4	5	6	7
Product image (e.g. brand)	1	2	3	4	5	6	7

➢**Treated Radiata Pine (e.g. from New Zealand)**	**Inferior**			**Average**			**Superior**
Product long Life	1	2	3	4	5	6	7
Material appearance	1	2	3	4	5	6	7
High strength properties	1	2	3	4	5	6	7
Consistent quality	1	2	3	4	5	6	7
Product availability (e.g. size, raw material supply)	1	2	3	4	5	6	7
Low cost (cost advantage)	1	2	3	4	5	6	7
Price stability	1	2	3	4	5	6	7
Product image (e.g. brand)	1	2	3	4	5	6	7

➢**Treated Southern Yellow Pine from U.S.**	**Inferior**			**Average**			**Superior**
Product long Life	1	2	3	4	5	6	7
Material appearance	1	2	3	4	5	6	7
High strength properties	1	2	3	4	5	6	7
Consistent quality	1	2	3	4	5	6	7
Product availability (e.g. size, raw material supply)	1	2	3	4	5	6	7
Low cost (cost advantage)	1	2	3	4	5	6	7
Price stability	1	2	3	4	5	6	7
Product image (e.g. brand)	1	2	3	4	5	6	7

➢**Locally Treated Southern Yellow Pine (in China)**	**Inferior**			**Average**			**Superior**
Product long Life	1	2	3	4	5	6	7
Material appearance	1	2	3	4	5	6	7
High strength properties	1	2	3	4	5	6	7
Treated to international standard	1	2	3	4	5	6	7
Product availability (e.g. size, raw material supply)	1	2	3	4	5	6	7
Low cost (cost advantage)	1	2	3	4	5	6	7
Price stability	1	2	3	4	5	6	7
Product image (e.g. brand)	1	2	3	4	5	6	7

➢**Treated Canadian SPF (Spruce, pine, fir)**	**Inferior**			**Average**			**Superior**
Product long Life	1	2	3	4	5	6	7
Material appearance	1	2	3	4	5	6	7
High strength properties	1	2	3	4	5	6	7
Consistent quality	1	2	3	4	5	6	7
Product availability (e.g. size, raw material supply)	1	2	3	4	5	6	7
Low cost (cost advantage)	1	2	3	4	5	6	7
Price stability	1	2	3	4	5	6	7
Product image (e.g. brand)	1	2	3	4	5	6	7

➢**Treated Douglas Fir (from North America)**	**Inferior**			**Average**			**Superior**
Product long Life	1	2	3	4	5	6	7
Material appearance	1	2	3	4	5	6	7
High strength properties	1	2	3	4	5	6	7
Consistent quality	1	2	3	4	5	6	7
Product availability (e.g. size, raw material supply)	1	2	3	4	5	6	7
Low cost (cost advantage)	1	2	3	4	5	6	7
Price stability	1	2	3	4	5	6	7
Product image (e.g. brand)	1	2	3	4	5	6	7

➢**Treated Hem Fir (from North America)**	**Inferior**			**Average**			**Superior**
Product long Life	1	2	3	4	5	6	7
Material appearance	1	2	3	4	5	6	7
High strength properties	1	2	3	4	5	6	7
Consistent quality	1	2	3	4	5	6	7
Product availability (e.g. size, raw material supply)	1	2	3	4	5	6	7
Low cost (cost advantage)	1	2	3	4	5	6	7
Price stability	1	2	3	4	5	6	7
Product image (e.g. brand)	1	2	3	4	5	6	7

➢**Naturally Durable Species (e.g. red cedar)**	**Inferior**			**Average**			**Superior**
Product long Life	1	2	3	4	5	6	7
Material appearance	1	2	3	4	5	6	7
High strength properties	1	2	3	4	5	6	7
Consistent quality	1	2	3	4	5	6	7
Product availability (e.g. size, raw material supply)	1	2	3	4	5	6	7
Low cost (cost advantage)	1	2	3	4	5	6	7
Price stability	1	2	3	4	5	6	7
Product image (e.g. brand)	1	2	3	4	5	6	7

6) Where do you usually buy these materials from? (Please specify percentage if check more than one)

- ❑ Home centers (e.g. B&Q, Home Mart)
- ❑ Local building and decoration materials markets (e.g. Shanghai Yishan Road)
- ❑ Timber wholesale markets (e.g. Shanghai Furen Timber Market)
- ❑ Distributors
- ❑ Manufacturers
- ❑ Trading companies (importers)
- ❑ Others (please specify)_____

7) How long would you expect anti-rot wood products to last in your project? _____ Year(s).

8) Do you have interest in other US wood products? (Please check all that apply)

- ❑ Softwood lumber for furniture and interior decorations
- ❑ Softwood lumber for construction
- ❑ Hardwood lumber/veneer for furniture and interior decorations
- ❑ Engineered wood products (e.g. glulam)
- ❑ Finished wood products (e.g. furniture, doors, windows)
- ❑ Others (please specify) _____

9) Please identify the two most important sources of information you use for learning about wood building / decoration materials: (Please specify percentage if check more than one)

- ❑ Trade shows
- ❑ Industry seminars
- ❑ Professional magazines
- ❑ Demonstration projects
- ❑ Word of Mouth
- ❑ TV (e.g., Home Repair Shows)
- ❑ Internet
- ❑ Other (Please Specify) _____

10) What is the closest description of your company? (Please specify percentage if check more than one)

- ❑ Construction firm
- ❑ Property developer
- ❑ Architecture design firm
- ❑ Landscape design firm
- ❑ Interior design firm
- ❑ Treated lumber manufacturer
- ❑ Furniture manufacturer
- ❑ Building materials manufacturer
- ❑ Trader/distributor
- ❑ Trade association
- ❑ Educational institute
- ❑ Others_____

11) In which province/city does your company conduct the majority of its business?

_____

Thank You Very Much for participating in this survey. If you would like to see the results of this survey or obtain a copy of summary report, please provide us your business card and we will contact you as soon as possible.