C I N T R A F O R

Working Paper

110

Forest Certification and its Influence on the Forest Products Industry in China

Yuan Yuan
Ivan Eastin

December 2007

CINTRAFOR
Center for International Trade in Forest Products

C I N T R A F O R

Working Paper 110

Forest Certification and its Influence on the Forest Products Industry in China

Yuan Yuan

Ivan Eastin

December 2007

Center for International Trade in Forest Products
College of Forest Resources
University of Washington
Box 352100
Seattle, WA 98195-2100

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.

Technical Editor: Dave Berry

Executive Summary

Forest certification is becoming an important issue within the forest products industry and also a new trend in forest products markets. Although forest certification was initiated to confront the severe deforestation of tropical rain forests, certified forests are unbalanced in geographical locations, with 60% of certified forests being located in North America and 36% in Europe in 2006. The end markets for certified forest products, especially certified wood products, are also concentrated in European countries (particularly the United Kingdom, Germany, Belgium and the Netherlands) and North America, because the price premium for environmentally friendly products is only available in these mature and value-added markets. In manufacturing, countries such as Germany, Italy, the Netherlands, Poland, United States, Brazil, Japan and China are competitive in the area of certified wood products.

China is attracting more attention for its increased use of certified timber in wood products manufacturing. In accordance with its leading status in traditional labor intensive manufacturing industries, the Chinese forest products industry has an advantage in low cost labor, convenient infrastructure, and favorable export trading policies. The number of Chain-of-Custody (CoC) certified companies, mostly wood products manufacturers, soared between 2004 and 2006, reaching 200 by the end of 2006. Certification of forest farms in China, however, has been relatively slow and difficult, with only four forests (less than 1% of all the FSC certified forest area in the world) having obtained Forest Management (FM) certification by 2006, representing a total area of 439,630 ha.

This study consists of two sections: a case study of a certified state-owned forest farm and its downstream wood products manufacturers located in Northeast China, and an email survey of all FM/CoC and CoC certified companies in China, including manufacturers, forest farms with wood mills, and traders. Unless mentioned specifically, FSC is the default forest certification program in China because of its widespread use within the country (to the virtual exclusion of all other certification programs).

Case Study

Youhao Forest Bureau is currently the largest certified forest farm in China with two associated certified furniture manufacturers, Hualong and Huali factories, mainly supplying solid wood furniture for IKEA. The certification of Youhao's forest farms and the Hualong and Huali factories helped to maintain product orders from IKEA, which has committed itself to sourcing its wood materials from certified forests through the four steps of the IKEA Forest Action Plan (FAP). Although the high cost of certification determines that profits from certified wood products are often lower than non-certified wood products, both the forest farms and manufacturers view certification as a new trend in the forest products industry, and hope the niche market for certified wood products will grow in the future, assuring a higher price premium.

Governmental administration played an important role in the certification of Youhao through administrative commands and favorable policies. As a country with diverse forest resources, China's central and local governments actively initiated forest certification, took part in the process of certifying two important state-owned forest farms, organized training projects on forest certification in several more state-owned forest farms after Youhao and Baihe's certification, and drafted the "Criteria and Principles of Forest Certification for China". While these actions made certification favorable for state-owned forests, complicated forestry property rights reform and unstable tenure length represent significant obstacles to the certification of privately owned forests.

Survey Results

A survey of all the FSC (CoC) certified companies in China was conducted to investigate the basic issues related to forest and chain-of-custody certification and their influence on the international trade of forest products in China. Although there are only 200 certified companies, a general pattern on this new trend

within the industry was obtained. Out of the population of 200 companies, 41 usable responses formed the sample of certified companies, including 2 forest farms with wood mills, 31 wood products manufacturers, and 8 trading companies. Most of the certified companies in China are located along the eastern and southern coast of China, from Guangdong Province to Jiangsu Province. Nearly half of the companies (46.3%) are domestic private companies, and 29.3% are wholly foreign-owned enterprises. More than half of the companies (53.7%) have over 500 employees, indicating a labor intensive production process. Evaluated by annual sales, more than half of the companies (51.2%) achieved annual sales of more than US$13 million (RMB ¥ 100 million) in 2006, which can be viewed as medium to large sized companies.

Product mix of certified wood products

The mix of certified wood products made by survey respondents can be divided into ten major categories: indoor furniture and accessories, craft products, stationeries and toys, outdoor furniture and accessories, wood material, garden and BBQ tools, flooring, doors and windows, logs, pulp and paper, and others. Most of the certified wood products are small piece, uni-material, finished products. This is natural as large, mutil-material, semi-finished products would increase the complexity of production, management and the percentage calculation according to CoC requirements.

End markets for certified wood products

The two biggest export markets for certified wood products were Europe and the United States, accounting for 54.6% and 29.8% of exports respectively. The giant DIY chain stores such as Home Depot and B&Q are important retail markets for certified wood products. Furniture retailers, pulp and paper companies, public procurement by governments, and other users form a niche market for these products. A recent report showed that from 1999 to 2000, annual sales of all certified wood products by retailers in Britain increased from £351 million (1.8% of total forest products annual sales) to £629 million (3.4% of total forest products sales). No similar data was found for the United States.

Certified wood raw materials

The US is currently the most important source of certified wood raw materials for wood products manufacturers in China, with 24.9% of certified wood originating from the US. Other countries supplying certified wood raw materials are New Zealand (with 18.5%), Brazil (12.4%), and European countries (10.8%). Domestic forest farms in China supply about 14.5% of the raw material mix for domestic manufacturers. The species of certified wood is almost evenly distributed among conifer species, tropical broadleaf species and semitropical/temperate broadleaf species. More than half (56.4%) of the companies in China indicated that they are now facing a shortage of supply for certified wood raw materials.

Cost and benefit analysis

The costs and benefits of using certified wood products is inevitably the critical problem confronting all certified companies. The issue of profitability can be viewed from several different perspectives: the market share of certified wood products; the market growth rate; the increased cost of certified wood; the small price premium obtained for certified wood products; and the lower profit margin for certified wood products relative to non-certified wood products. The profitability of certified wood products will influence both the short-term and long-term marketing strategies of companies considering selling certified wood products.

The market for certified wood products in the world is relatively small, and the total sales of these products by all the certified companies in China were estimated to be around US$697 million. The market for certified wood products is growing, with nearly 39% of the sampled companies reporting that their sales increased about 22.7% between 2005 and 2006, while just 2.4% of companies' reported that their sales decreased. There are increased costs that contribute to the higher price of certified raw materials,

including the cost of certification (both the initial evaluation and a semiannual audit fee) and the cost of production updating and management adjustment for certification. The increased cost of using certified raw materials is the most significant cost factor, with the average price of certified wood being 22.3% higher than non-certified wood. The cost of certification varies dramatically between forest farms gaining forest management certification and wood products manufacturers obtaining CoC certification. The cost of certification for forest farms was reported to be about ten times higher than the cost of certification for manufacturers. The average cost of certification for all certified companies including the two forest farms was about $9,037 per year, while the average cost of certification without the forest farms was around $5,912 per year. However, it is important to note that the annual cost CoC certification is likely to decline over time as the initial adjustments in management and manufacturing practices that are required for certification are implemented and they become part of the routine operating procedures for the companies.

Certified companies obtained an average 6.3% price premium for certified wood products in European markets, a 5.1% price premium in the United States and a 1.5% price premium in Canada. About 24.4% of the companies reported that the profit margin for certified wood products was 6.7% higher than for non-certified wood products, while 39.0% of the companies reported a loss of about 5.6%. The profit margin for certified wood products is highly dependent on the price premium companies can achieve. A simple linear regression model was developed to estimate the profit margin based on the price premium. The regression model results suggest that as long as the price premium obtained for certified wood products exceeds 11% (relative to non-certified wood products), the profit margin for certified wood products will exceed that of non-certified wood products.

Attitudinal evaluation on certification

Certified companies expressed a positive attitude towards most of the survey statements regarding forest certification and its influence on the industry. Statements viewed positively included the belief that certification can help companies enter new markets (especially markets in Europe and North America); certification can help maintain a company's existing markets if new requirements on environmental issues are implemented; certification is helpful in enhancing the competitiveness and public image of companies; and companies were optimistic about the increased market share and profits that would be generated from selling certified wood products over the next two years.

This study focused on FSC certification in China because there were only four companies that had received certification from programs other than FSC (i.e. PEFC). Therefore, FSC is currently the dominant certification program in China for the forest products industry. The survey respondents were asked an open-ended question about their reasons for choosing FSC certification, and their reasons can be summarized into three main categories: specific requirements dictated by their buyers; specific strategies companies took for entry into new markets; and FSC's highly credible reputation.

Current problems

Some common problems that certified companies in China face relate to the cost and supply of certified wood raw materials. Lacking domestic accredited certification bodies not only increases the cost of certification, but also hinders the improved communication and training among foresters and manufacturers about certification issues. Due to the supply shortage of certified wood, companies have to communicate with importers more efficiently to obtain reliable information about the origin and supply of certified wood from foreign countries. Although domestic forest farms are in the process of being certified, which may alleviate the dependence on imported raw materials to some extent, the complexity and ambiguity of the forestry property rights reforms being considered and implemented in China will slow the privatization and consolidation of local forests, and further impede the process of certifying private forests.

Table of Contents

List of Figures

Page

List of Tables

Page

Chapter 1 Literature Review

Definition of Forest Certification

Forest certification is a set of regulations and standards created to govern and maintain sustainable forest management, along with forest products manufacturing, trading and consumption. Compared to governmental laws, forest certification is a non-governmental method for achieving sustainable forest management on a voluntary basis. A prerequisite for the system involves an environmentally conscious public. Following this, dedicated organizations' promotions and actions on different certification programs form a relatively competitive arena, where market incentives, such as market access, price premiums, and a positive public image encourage forest landowners, forest products manufacturers, forest product traders, and national and local governments to voluntarily participate in certification programs for both environmental and economic benefits. Most forest certification programs consist of two main components: Forest Management (FM) certification and Chain-of-Custody (CoC) certification.

Brief History of Forest Certification

Forestry emerged in the international policy arena during the 1980's as a result of growing international concern about the extent and rate of deforestation. In 1992 these concerns and efforts culminated in the discussion about forests at the United Nations Conference on Environment and Development (UNCED), which identified three factors indicating that actions at an international level were necessary:

1. intolerable deforestation and associated loss of environmental, economic and social benefits;
2. threats to the livelihoods, culture and rights of forest dwellers and indigenous people in many parts of the world who live in and around the forests; and
3. meeting the continuously increasing demand for forest products.

(Nussbaum & Simula, 2005, p. 4)

The focus of many environmental non-governmental organizations (ENGOs) was campaigning to raise public awareness and advocating boycotts of unsustainably harvested timber, particularly from tropical forests, in an attempt to reduce deforestation in these forests. Gradually many ENGOs realized that this approach was too simplistic, since if forests do not have value for indigenous people, they are more likely to be converted into other uses like agriculture rather than being protected in their natural state. Therefore, positive policies and incentives were needed to provide a linkage between sustainable forest management and the economic value of the forest.

Some early attempts were made to develop certification programs through existing institutions. In 1989, Friends of the Earth (FoE) and several other ENGOs, supported by the British government, proposed that the International Tropical Timber Organization (ITTO) carry out a project to study the possibility of labeling timber from tropical forests as a way to identify the products obtained from sustainably managed forests. However, some producer countries expressed concerns that ENGOs might call for a boycott of timber that was not labeled, and the initiative was ultimately abandoned. In 1993 the first forest certification program, the Forest Stewardship Council (FSC) was established. This assembly included a wide range of economic, social and environmental interests, including major ENGOs and global retailers. However, governments and a significant part of the mainstream forest industry were deliberately excluded from this assembly.

Following the development of the FSC program, a number of other certification programs began to emerge emphasizing the national context of forests and covering a wide range of forest types, including tropical, semi-tropical, temperate and boreal. These emerging programs were developed by different groups using a number of different approaches.

These emerging national and regional programs were faced with problems in gaining widespread acceptance in export markets, as well as the problem of mutual recognition between programs. The differences between these various initiatives and programs highlighted the political nature of the issue. Interest groups tended to support their own programs while remaining critical of those developed by other interest groups. Despite a series of meetings and workshops between interest groups, a generally agreed framework for mutual recognition between certification programs has not emerged. Nonetheless, in 1997 a number of national certification initiatives and programs in Europe decided to establish the Pan-European Forest Certification (PEFC)[1] program as a mechanism to allow mutual recognition. At the end of 2003, PEFC expanded their geographical scope to a global framework for assessing and recognizing different forest certification programs.

Major Forest Certification Programs in the World

According to Nussbaum and Simula (2005), there are currently seven major certification programs in the world, with two being international and the others being national or regional programs. Forests and wood products which are not independently third party certified, and process certification programs (such as ISO 14001), are not considered in this research report.

The two international certification programs are FSC (Forest Stewardship Council) and PEFC (Programme for the Endorsement of Forest Certification). There are critical differences between FSC and PEFC in certification approaches. FSC is an independent global program with international principles and criteria, while PEFC is a global umbrella organization for the assessment of, and mutual recognition of, national forest certification programs developed in a multi-stakeholder process.

The five national or regional certification programs include CertforChile (the national certification program in Chile), CSA[2] (Canadian Standards Association), LEI (Lembaga Ecolabel Indonesia), MTCC (Malaysian Timber Certification Council) and the SFI[3] (Sustainable Forestry Initiative).

According to the FAO "Forest Products Annual Market Review, 2004-2005", there were 241 million hectares of forest lands certified globally in May 2005, an increase of more than one third since 2004. The data from the annual review showed that the CSA endorsed by PEFC (27%), PEFC (24%), FSC (22%) and SFI (23%) were the dominant certification programs in the UNECE region.

The regional imbalance in certified forests is severe, with 60% of certified forests being located in North America and an additional 36% in Western Europe in 2006. Using FSC as an example (Figure 1.1), in September 2006 most of the FSC certified forests were located in Europe (49%) and North America (33%), with less than 20% located on other continents. Although forest certification was partly a reaction to tropical deforestation, the influence of certification has been much less in these areas than in temperate regions like Western Europe or North America where the forests are already in relatively good condition. In Western Europe, approximately half of the total forest area is certified, compared to about one third in North America (Canada and the US). In Africa, only about 1% of the whole forest area is certified while in Latin America and Asia the percentage of certified forest is less than 0.5%. The reasons for this phenomenon can be linked to a range of economic, social and political factors.

[1] It was changed into Programme for the Endorsement of Forest Certification (PEFC) in October 2003.
[2] CSA was endorsed by PEFC in March 2005.
[3] SFI was endorsed by PEFC in December 2005.

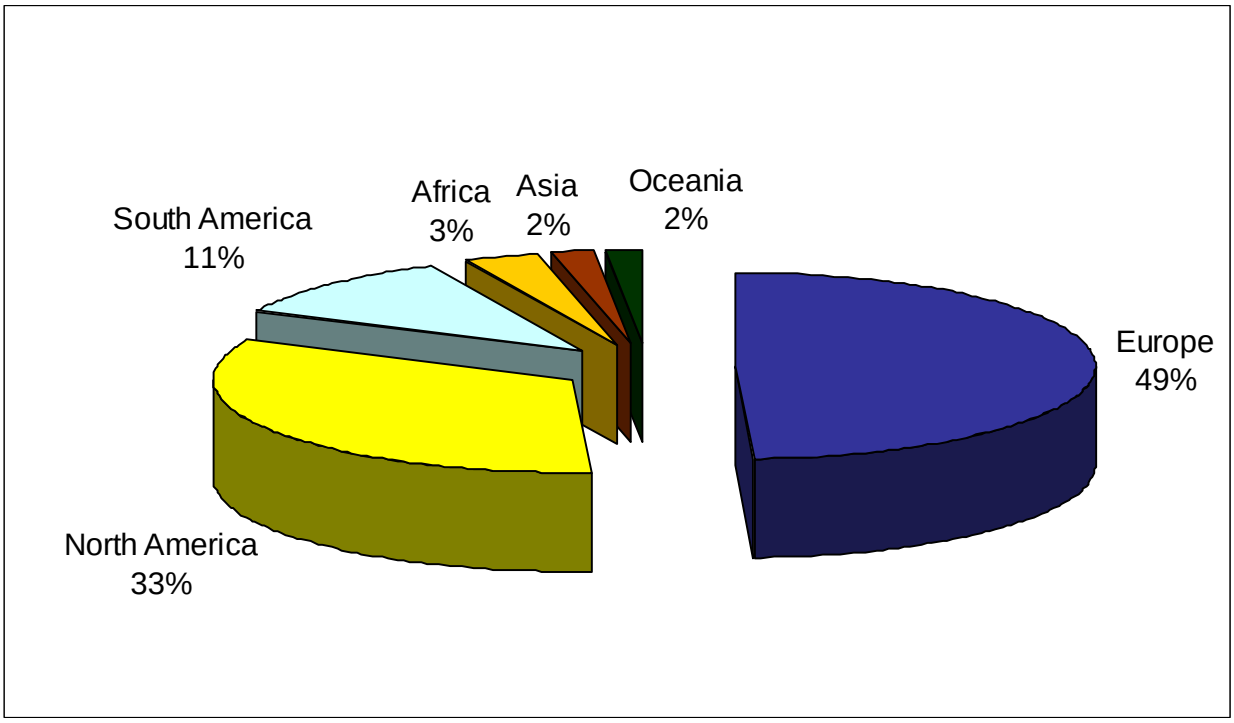

Figure 1.1. Geographic distribution of FSC certified forests in 2006
Source: FSC database, http://www.fsc.org/en/whats_new/fsc_certificates/certificate_lists

Some comparisons has been made regarding the different perspectives on certification among the four major certification programs: FSC, PEFC, CSA and SFI (Table 1.1) (Nussbaum & Simula 2005) Accordingly, FSC is considered to be the most stringent certification program among the four major programs in the world.

Table 1.1. Comparisons on different perspectives of forest certification among the four major certification programs

Source: Nussbaum and Simula. (2005). The Forest Certification Handbook. London: Earthscan.

Comparison Items	***CSA***	***FSC***	***PEFC***	***SFI***
Date established	1993	1993	1999	1995
Ownership and governance	CSA is an independent, non-profit, national standard-setting Canadian organization.	FSC is an independent, non-profit membership organization registered in Mexico and based in Germany.	PEFC is a non-profit membership organization based in Luxemburg.	SFI was initially developed by the American Forest and Paper Association. It was shifted to Sustainable Forestry Board and became an independent and non-profit organization in 2002.
Standards	The standards include three key requirements: systems, performance and public participation.	All FSC national standards have to be based on the FSC's global P & C.	Standards must be based on the Pan-European Operational Level Guidelines, be consistent with national law and incorporate the core International Labour Organization conventions.	The standard is not based on any C & I set, but draws upon the outputs from 1992 United Nations Conference on Environment and Development and covers technical, environmental and social issues.
Certification Approach	Certification is undertaken by accredited certification bodies. Objective audit evidence is collected from documents, field visits, discussions, observation and consultation. The final decision is made by the certification body independent of the audit team.	Certification is undertaken by accredited certification bodies. The audit must be preceded by a four-week consultation period. Information is collected from documents, field visits, discussions, and consultation. A report is produced by the audit team that is peered review by independent specialists. The final decision is made by the certification body independent of the audit team.	Certification is undertaken by accredited certification bodies. Auditors undertake documents review and field visits; but there is no general requirement for consultation or peer view of the reports produced. The final decision is made by the certification body independent of the audit team.	Certification is undertaken by an audit team led by a registered and experienced lead assessor. Information is collected from documents, field visits, interviews and at the discretion of the audit team, from consultation with external organizations. The audit team makes the final certification decision.
Arrangements for small-scale forest owners	The current standard can be used by small-scale forest owners.	Group certification is encouraged through group or resource manager programs.	PEFC allows group and regional certification.	During 2000, SFI entered into mutual recognition with the American Tree Farm System which allows small-scale forest owner certification.
Chain-of-Custody and Logo	CoC was added to the program in 2001. Logo can be used on or off products in accordance with CSA international logo-use specifications	CoC is included in the program. Logo can be used on or off products in accordance with FSC rules for logo use.	CoC is included in the program. Logo can be used on products with more than 70% certified content.	SFI does not operate conventional chain of custody, but use the certification of processors under SFI.

Certified Forest Products and Markets

According to FAO's annual market report (2005), the potential industrial roundwood supply from the world's certified forests in 2005 was estimated to be approximately 345 million m^3, which represents an increase of about 13% over 2004. This volume equates to 22% of the world's production of industrial roundwood, or about 37% of the industrial roundwood production of Europe (without the CIS) and North America, where 95% of certified forests are situated.

The supply and demand in real markets for certified forest products (CFPs) are in some ways complex and hard to identify accurately. The supply of certified wood as a raw material is mainly coming from Europe and North America. In some countries like Austria and Finland almost 100% of the forests are certified. These countries sometimes face the problem of an over supply of certified wood. For commodity wood products, downstream wood manufacturers and traders do not require certified wood. On the other hand, in some other countries or regions, an inadequate supply of certified wood is more often the major problem.

Demand for CFPs are primarily centered in European countries (such as the UK, Netherlands, Germany and Belgium) and in North America. Between 1999 and 2000, the annual sales from retailers in Britain increased from £351 million (1.8% of all the forest products annual sales) to £629 million (3.4% of all the forest products annual sales) (Lu, Zhao & Lin 2003).

Multinational companies are often targeted by ENGOs, and some of them have publicly declared their support for certified wood products and issued corresponding procurement policies. For instance, B&Q declared its exclusive support for FSC CFPs, with several flexible exemptions. IKEA issued their "Forest Action Plan" and at stage four, they aim for 100% of their wood materials to be sourced from FSC certified forests. Other retailers like Lowe's, Home Depot, FedEx Kinko's, Domtar and Arctic Paper have all recognized FSC as the highest level of wood material procurement policies.

Public procurement policies (PPP) are another source of demand for CFPs. In the UNECE and FAO policy forum (2006), a study was done to investigate the market effects of public procurement policies for wood and paper products in the UNECE region. Survey results showed that there were only four countries, the United Kingdom, Netherlands, Denmark and France, that had procurement policies targeting wood and paper products at the national level. Other countries like the United States and Canada have green procurement policies covering a more general range of products including wood and paper products. Many countries have procurement policies that have been passed at a sub-national level (e.g., city, state or prefecture). In the case of Denmark, some municipalities have developed supplementary guidelines for the purchase of tropical timber. To some degree in the Netherlands, many of the governmental organizations at the sub-national level follow national policies on a voluntary basis. In the UK, the central policies are not mandatory for timber purchases made by local authorities for publicly funded housing developments. It is government policy to make these requirements mandatory at the local level in the near future.

The Forest Certification Newsletter of WWF (Lu, Zhao & Lin 2003) gave two examples of how public procurement policies were actually implemented. One was the case of the local government of Lambeth in the UK, which was the first local government in the world to issue a procurement policy for FSC certified wood products. The other case is the London Heathrow airport tunnel project which purchased FSC certified plywood from Brazil in a £130 million project. According to the newsletter, the plywood panels were produced entirely with selected tropical hardwood veneers by Gethal Amazonas, a Brazilian company that supplies FSC-certified hardwood. The panels were used as the framework for thousands of concrete segments which form the exterior of the 1.3 km twin bored tunnels.

As for individual consumers, it is very challenging to measure the price premium consumers are willing

to pay, or actually have paid for certified forest products. Research in this field can be divided into two groups according to different methodologies. The first methodology is more commonly and easily implemented by using a survey to ask directly what price premium consumers are willing to pay for CFPs; the second way to measure the price premium is a quasi-experimental method, which sets up a real purchase situation (for instance, in a local furniture or DIY shop), manipulates the prices for certified and non-certified forest products and then observes the actual purchase behavior of consumers. The second methodology is gaining in popularity because researchers realize consumers' responses to surveys concerning the premium they are willing to pay are usually biased upwards, with most respondents indicating a higher premium than they would actually pay. But since it is very hard to manipulate complex purchase circumstances covering comprehensive product types, the first methodology is used more often because it is straightforward and easy to implement.

Ozanne and Vlosky (1997; 2003) conducted two surveys to estimate the price premium US consumers would be willing to pay for CFPs over a five-year period from 1995 to 2000. They chose five different product types covering a range of prices from $1 to $100,000 and found that on average US consumers were willing to pay a 12.5% premium in 1995 and 11.7% in 2000 for CFPs. A study conducted by WWF in 1990 (as cited by Ozanne & Vlosky 1995) on the premium for tropical wood products and timbers sold in the UK found that 66% of the consumers would be willing to pay higher prices, up to 13.6% more, for wood originated from sustainable sources. A study conducted in 1995 (as cited by Ozanne & Vlosky 1995) on the premium for tropical timber and wood products in Germany found that consumers were prepared to pay a 5% premium for certified wood products.

As stated above, consumers' responses to surveys about the premium they are willing to pay are often higher than what they would actually pay. This is understandable in that consumers normally tend to give socially favorable responses under public scrutiny. However, when making purchasing decisions without public pressure, the actual purchase behavior often differs from the stated responses. Although it is more convincing to test real world purchase behavior, given the difficulty of performing such tests there are few studies that have been done in this field. As Anderson, Laband, Hansen and Knowles (2005) pointed out, the most challenging task among such field studies has been the communication and coordination of logistics among all parties. Two experimental studies were conducted by Anderson and his colleagues but failed to report any numerical outcome. Another experimental study was also done by Anderson et al. in the Oregon State University and Auburn University bookstores. Pencils with an eco-label and those without an eco-label were sold either for the same prices or different prices (20% and 100% price premium). Research outcomes showed that when the prices were equal or at a 20% premium (a 5 cent premium), consumers were indifferent to the higher price. When the prices were increased by 100% (a 20 cent premium), fewer consumers chose the eco-label pencils. The results of this study echoed the observations of retailers of CFPs that there is only a small premium for CFPs in the market place.

Since certification increases costs, both for wood materials and for manufacturing, and is difficult to charge a price premium, it is problematic in regards to who will absorb the cost increase. It is impossible to reach a clear conclusion on this problem because of the complex relationships in bargaining power of the various members in the value chain.

Initiation and Development of Forest Certification in China

Forest certification started to draw attention from a variety of stakeholders in China during the late 1990s. Sponsored by the WWF/WB, the working group of forest certification was founded in Beijing in May 2001 by groups from government, non-governmental organizations, research institutes, forest farms, industry, and the media. Forest certification in China was officially initiated by the founding of the Certification and Accreditation Administration of the People's Republic of China in August 2001 and The Leadership Committee of Chinese Forest Certification in July 2001 (WWF newsletter 2002).

The first two areas of certified forestland in China were "Changhua Forest Farm"[4] in Zhejiang Province in 2001 followed by "Jia Yao Forestry Development Company" in Guangdong Province in 2004. In 2005 another two plots were certified by FSC, "Baihe Forest Bureau" in Jinlin Province and "Youhao Forest Bureau" in Heilongjiang Province (Figure 1.2). Currently a total of four plots covering 439,630 hectares of forest land have been certified in China mostly located in Northeastern China, accounting for just 0.6% of all FSC certified forest lands in the world.

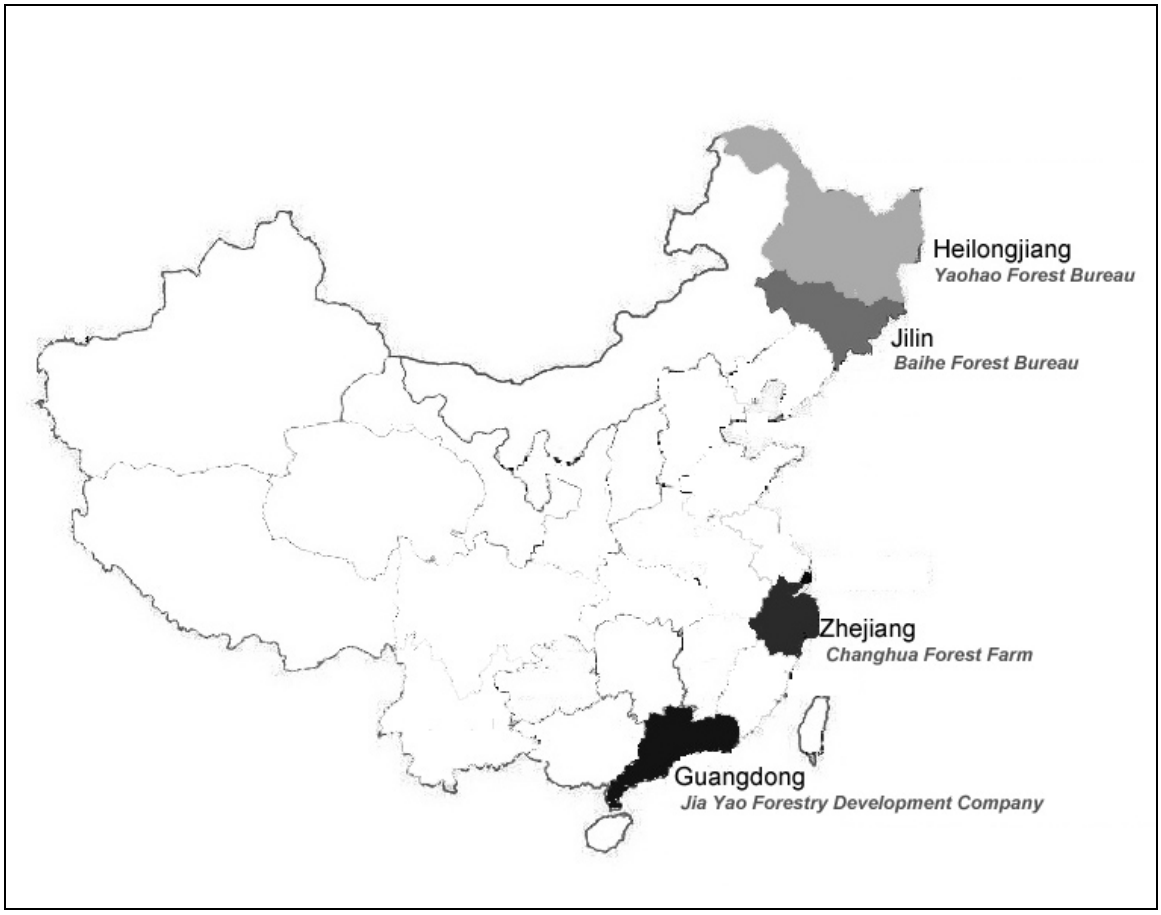

Figure 1.2. Geographic location of four plots of certified forests in China

Source: FSC database. http://www.fsc-info.org/

The first Chain-of-Custody (CoC) certification in China was issued to "Zhongyang Wood (Shenzhen) Company" in 1998, and since then CoC certification for wood products manufacturers and traders has experienced rapid growth especially for export oriented wood manufacturers and import and export traders located along the eastern and southern coast of China.

Figure 1.3 shows the recent trend of CoC certification from January, 1998 to November, 2006. From 2004 to 2006, the number of CoC certified companies almost doubled each year. By 2006 there were 200 forest farms, forest product manufacturers, and traders certified by FSC (both FM/CoC and CoC), comprising 4.1% of all FSC (FM/CoC and CoC) certified companies in the world.

[4] Changhua Forest Farm's certification expired on October 14, 2006, and they were re-certified on March 30, 2007.

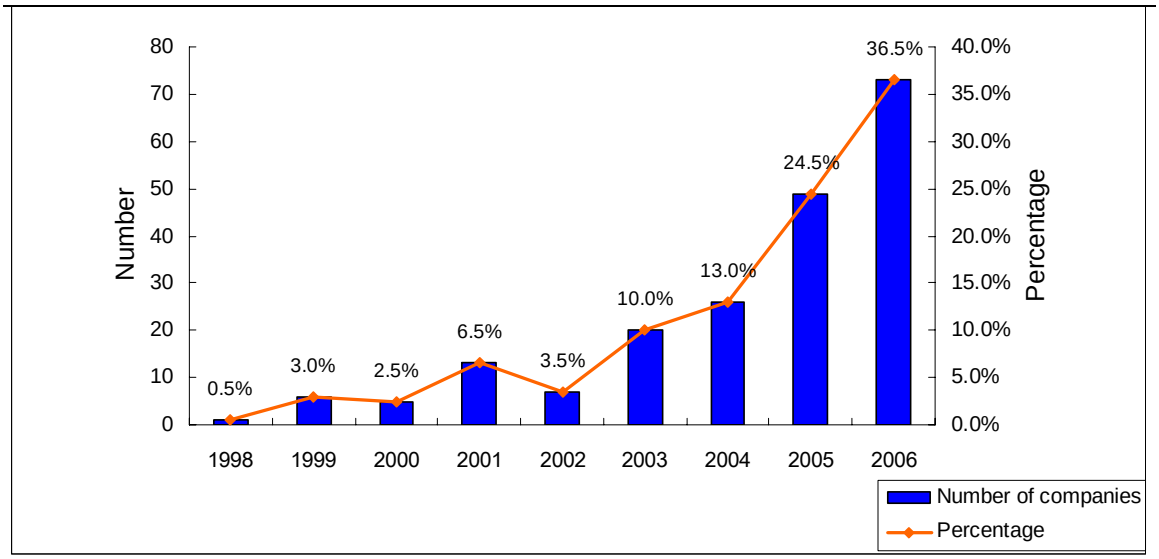

Figure 1.3. FSC (FM/CoC, CoC) certification trend from 1998 to Nov. 2006 in China
Source: FSC database. http://www.fsc-info.org/

Within the four certified forest farms in China, three are state-owned forests and only one is a private forest. The two largest certified forests are both state-owned forest farms located in famous natural forest areas: Xiaoxinan Ridge and Changbai Mount both in Northeast China. The certification of these two state-owned forest farms is closely related with cooperation between the central and local governments and the WWF. Although the Chinese government is working to extend certification to more state-owned forest farms in Southwest China and Southeast China, private forest farms are expected to be involved in certification as well. If successful, this could ease the shortage of certified wood raw materials in China. Nevertheless, limitations due to the complicated ownership patterns of forest lands and the recognition that reform of private forest property rights is still in its initial stages, we expect that it will be a long time before the privatization and consolidation of forests in China occurs (Table 1.2 referring to Ke & Wen 2005). The certification of domestic Chinese forests is currently only feasible for some state-owned forest farms under governmental administration and a few private forest farms.

Table 1.2. The process of reform of forestry property rights in China from 1950 to present

Time	***Condition of forestry property rights***
1950 – 1980	All forestry property rights are under two kinds of public ownership; state-owned forests and collective forests. No private ownership of forests existed during this period of time.
1981 – 1991	Some forestry property rights of collective forests were transferred to families. Families had ownership of the timber instead of the land and management rights for the land. Some property rights of state-owned forests were transferred to individuals through contracts for a specific period of time. The individuals under contract have the management rights for the land and partial ownership of the timber.
1992 – 1998	Joint-stock reform occurs on some of the collective forests. Families or individuals have ownership of a certain amount of stocks in a forest farm and receive returns based on the number of stocks they own. Former officials of the villages or towns normally became the managers of these forests instead of professional forest managers.
1999 – 2003	The tenure of forest land was extended to 70 years. Families or individuals had the disposal rights of the forest land, which meant that transactions of the management rights of forest land were allowed.
2003 – present	The reform of forestry property rights is still in process in China. At the same time, the reform of the agricultural tax system, institutions and social securities in the countryside are introduced and under development.

Forest Farms

According to the Global Trade Atlas (GTA) Navigator, China became the largest log importer in the world, reaching 32 million cubic meters in 2006, accounting for over 25% of global log imports. More than two-thirds of the imports came from Russia, reaching 21.8 million cubic meters, which was 44% of total Russia log exports in 2006. For sawn wood, China imported about 6 million cubic meters in 2006. With insufficient domestic forest resources, and with national restrictions on forest harvesting being imposed during the late 1990s, China has become highly dependent on wood raw material imports, especially from Russia for softwood logs and temperate hardwood logs. Figures 1.4 and 1.5 show the log and sawn wood import and forest products import in China from 2001 to 2006 based on the GTA database.

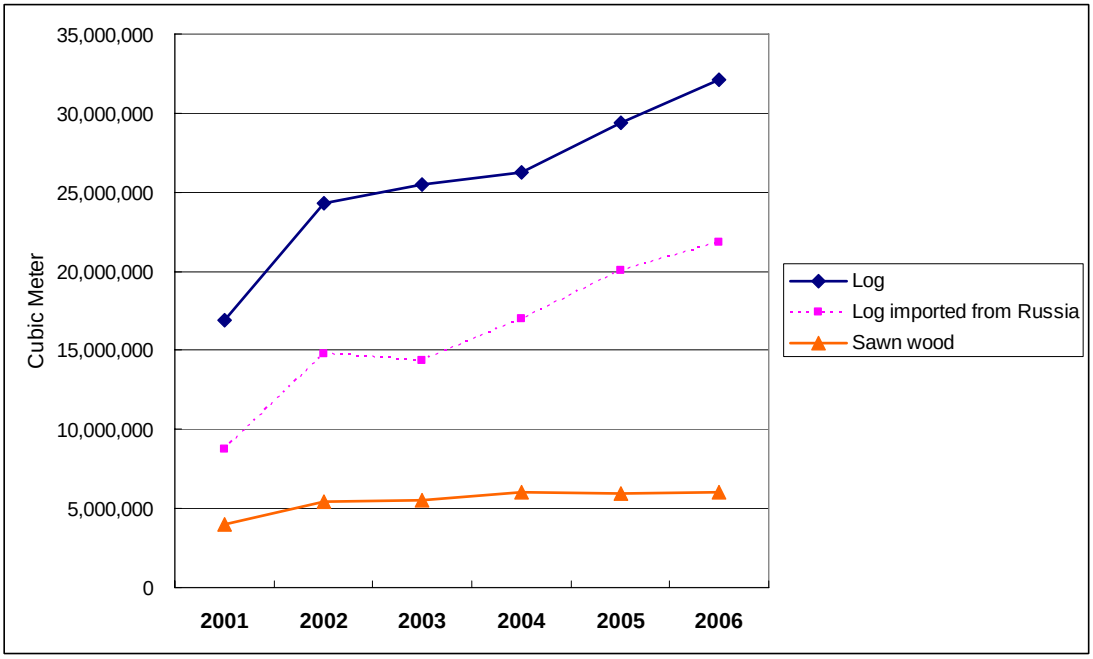

Figure 1.4. Volume of log and sawn wood imports into China

Source: Global Trade Atlas Navigator database. http://www.gtis.com/gta/

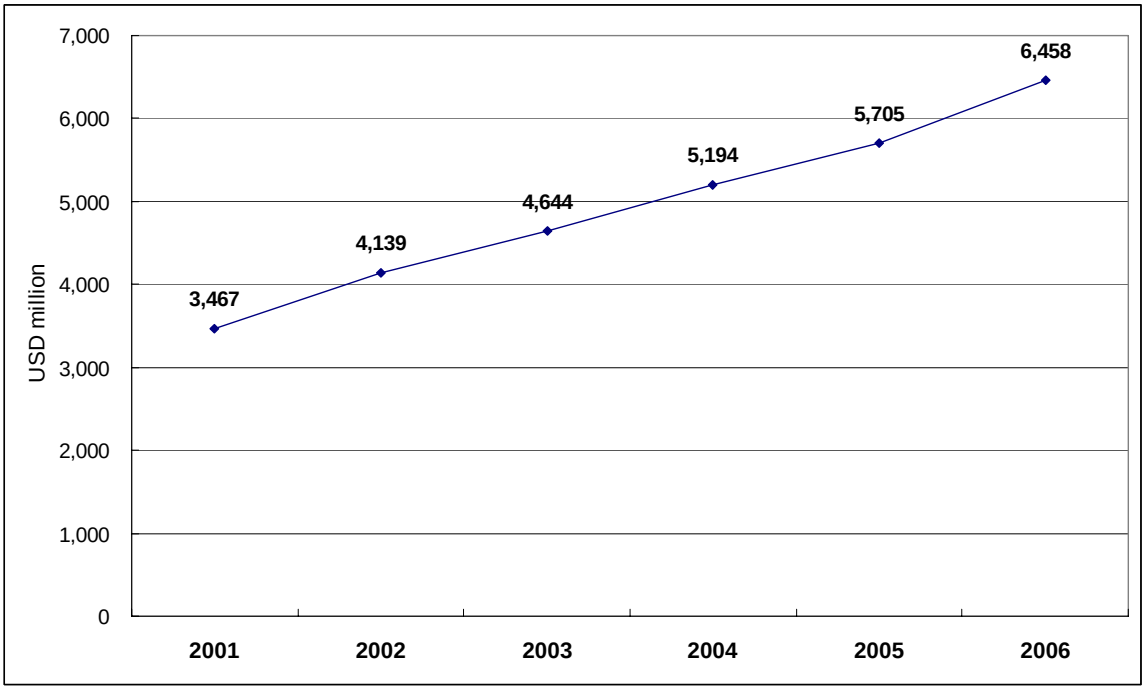

Figure 1.5. Value of wood products import into China
Source: FAO database. http://faostat.fao.org/site/382/default.aspx

Chinese forest farms are not competitive as log suppliers to the world markets; instead the Chinese forest farms mostly supply the domestic wood industry for domestic consumption. As for certified wood products, the main demand is from overseas markets especially in Europe and North America, and this partly explains the slow rate of development of forest management certification and the comparatively rapid development of chain-of-custody certification for the secondary wood products industry.

There are several drawbacks to forest management certification in China. The first is the high cost of certification, which includes the direct costs for evaluation and the semiannual audit fee for certification, as well as indirect costs such as training fees, increased costs for adjusting forest management practices, local community improvements, equipment updating, and protection of endangered species (Wang & Ma 2005). For a majority of the forest farms in China, which are located in rural areas and under primitive managerial conditions, the indirect costs are more expensive than the direct costs. There is also a lack of demand within the domestic market, as the Chinese wood products markets are currently not environmentally sensitive and consumers are unwilling to pay a premium for certified wood products. In addition, there are inefficient distribution channels between wood raw materials suppliers and secondary wood products manufacturers and wood products exporters. Finally, due to the complicated land tenure system in China, the large number of family-managed small forests increases the difficulty of certification, although the FSC now has a group certification program designed for small forest landowners.

By November 1st, 2006, there were four certified forests in China with Changhua Forest Farm's certification expiring on October 14th, 2006[5] (Figure 1.6). "Changhua Forest Farm" (referred to as Changhua), is a state-owned forest farm located in eastern China which was the first certified forest farm. "Jia Yao Forestry Development Company" (referred to as Jia Yao) was a joint venture company located in southern China with its mother company located in Hong Kong and Canada. "Baihe Forest Bureau"

[5] Changhua Forest Farm was recertified by FSC (FM/CoC) certification on March 30th, 2007.

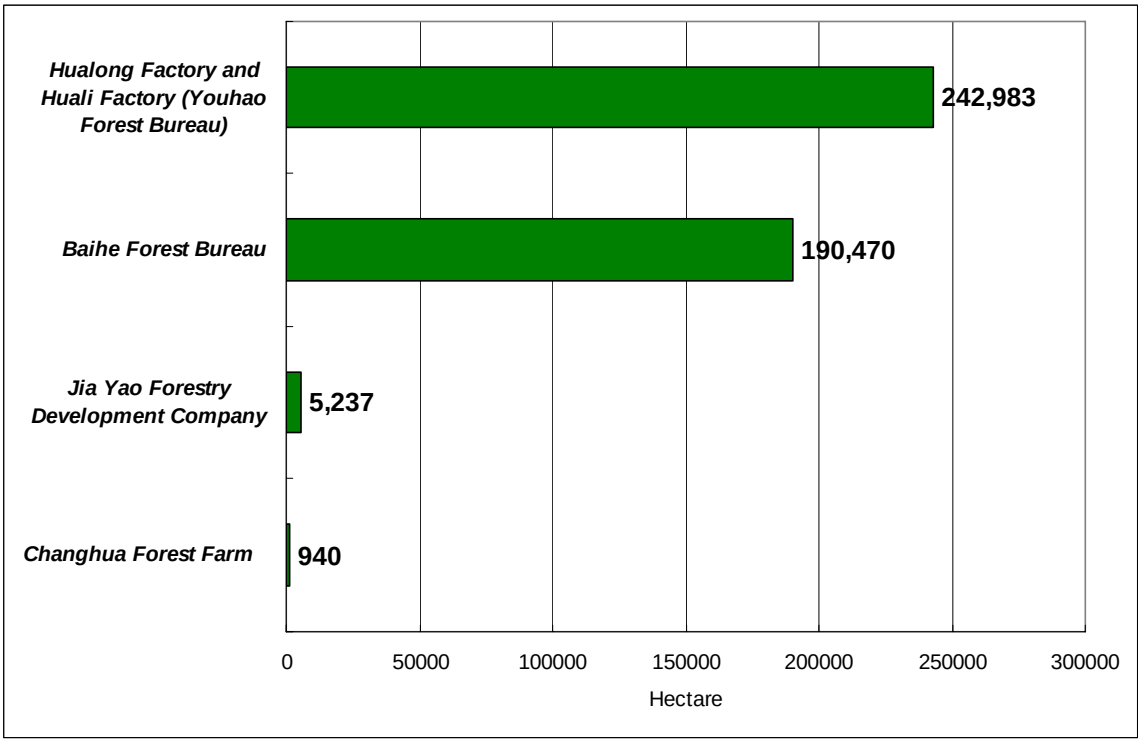

Figure 1.6. Certified forest farms in China

Source: FSC Database. http://www.fsc-info.org/

(referred to as Baihe) and "Youhao Forest Bureau" (referred to as Youhao) are two state-owned forest farms located in Changbai Mount forest area and Xiaoxin'anling forest area, respectively, in Northeast China.

Some common reasons were shared by these four forest farms as motivations for becoming certified. First, each of the forest farms had at least one existing customer who requested that they acquire certification. For Changhua, the downstream wood products manufacturer named "Sanxing Furniture" asked for certified wood for furniture manufactured for an overseas market (Wang, Zhang, Sun, Yu & Lei 2005). Jia Yao is one of the important wood suppliers for downstream wood board plants and paper mills owned by its parent company that supplies products to the export market. Youhao is a supplier for IKEA. Baihe is an important supplier of wood products to purchasers from Europe and the United States. Secondly, the direct cost of certification was mostly or partly paid for by their foreign customer. In Changhua's case, the cost of certification was paid for by the foreign purchaser. For Youhao's case, although IKEA did not pay for the direct cost of certification, it promised steady orders of approximately $6 million of wood furniture annually from their two downstream wood products factories (Zhao 2003). The third common reason was that the value chain for certified wood products is relatively simple, which is a critical factor in controlling costs. Nevertheless, this simplified value chain may also limit the flexibility of wood raw material suppliers and wood products manufacturers.

Forest Products Manufacturers

By May 2005, the number of CoC certificates issued worldwide totaled 5,979, of which 64% were FSC and 36% PEFC. The relative share of FSC-issued CoC certificates has decreased slightly while the share of PEFC certifications experienced higher growth (plus 45%) relative to FSC (plus 23%). PEFC mainly gained in France (248 more), Germany (184 more), the Czech Republic (111 more) and Switzerland (95 more). FSC, on the other hand, grew mostly in Japan (91 more), as well as in Germany (84 more) and

Switzerland (with 80 more).

Japan, with 256 certificates, is ahead of Brazil (177 certificates), followed by South Africa. China, currently ranked fourth, is also turning out to be a growing market for CFPs. This is mainly due to the relocation of production facilities by some companies, such as IKEA, to China. However, these companies are mostly supplying export markets in North America and Europe, rather than the Chinese domestic market or other Chinese export markets, which have not, so far, demanded certified products (UNECE/FAO 2005).

According to the FSC database, by November 1st, 2006, 200[6] companies had received FSC (FM/CoC, CoC) certification in China, including forest farms, wood products manufacturers and traders. Most of the companies are located along the eastern and southern coast of China, accounting for more than 80% of all certified companies in China (Figure 1.7). Guangdong province, along the south coast of China, has the largest number of certified companies with 28.1% of all certified companies being located there, mainly because it is the most developed wood products manufacturing center in China. Zhejiang province on the eastern coast of China has rivaled Guangdong in wood products manufacturing in recent years. In addition, some counties and towns in Zhejiang, such as Yunhe, are becoming a wood products manufacturing base for exporting. Hong Kong is changing from a trade center focused on manufacturing to one dealing with the importing and exporting of wood products, especially certified wood products. Jiangsu, Fujian, and Shanghai (also located along the eastern and southern coast of China) are the next three most important wood products manufacturing locales.

[6] There are four companies having no specific geographical location in China, therefore Figure 1.7 are the statistics based on 196 companies.

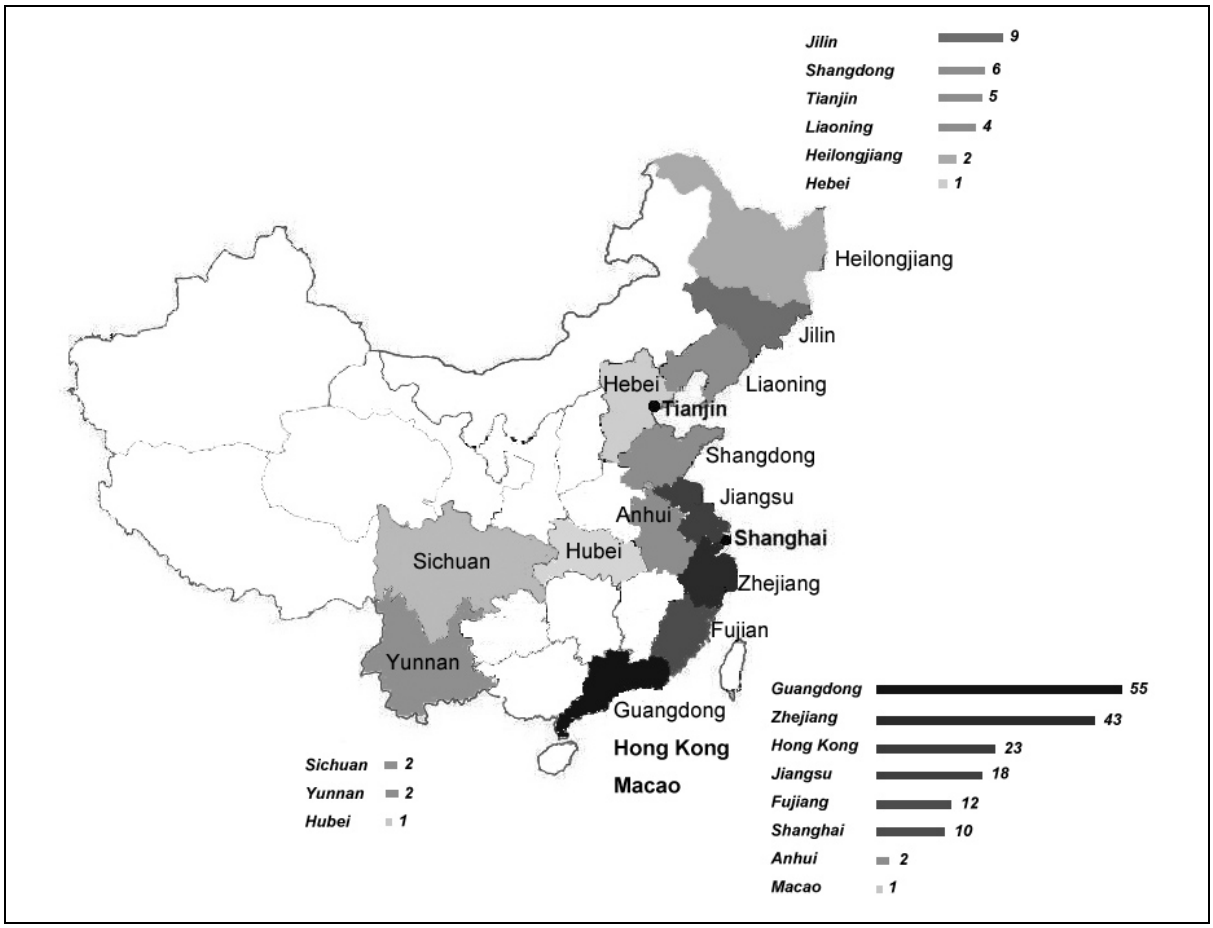

Figure 1.7. Geographic distribution of FSC (FM/CoC, CoC) certified companies in China
Source: FSC database. http://www.fsc-info.org/

The number of companies that have been certified in China increased rapidly between 2004 and 2006. Based on the FSC (FM/CoC, CoC) certification database, on Nov. 1st, 2006, there were 200 companies in total, with more than one-third (73) certified in 2006 (Figure 1.3). CoC certification in China began in 1998 as Zhong Yang Wood Co. in Shenzhen received its certification. The following five years were relatively stable for the number of certified companies, and by 2002 there were 32 companies certified. Although the number of certified wood products companies has grown much faster between 2003 and 2006, it only accounts for 4% of the certified companies in the world.

China is one of the low-cost manufacturing centers in the world and is targeting markets around the world for its lower priced export products. In the wood products sector, China has been the largest plywood producer since 2003, reaching 21.8 million cubic meters according to the FAO (FAO 2005). In addition, China has been one of the most important exporters of furniture and plywood since 2001. For plywood, China exported 8.3 million cubic meters or $2.9 billion in 2006 (GTA). For furniture, China is the largest furniture exporting country in the world dominating the US and some European countries' markets. Figure 1.8 shows the increased trend of furniture exports from 2000 to 2004 based on the data from the National Bureau of Statistics of China.

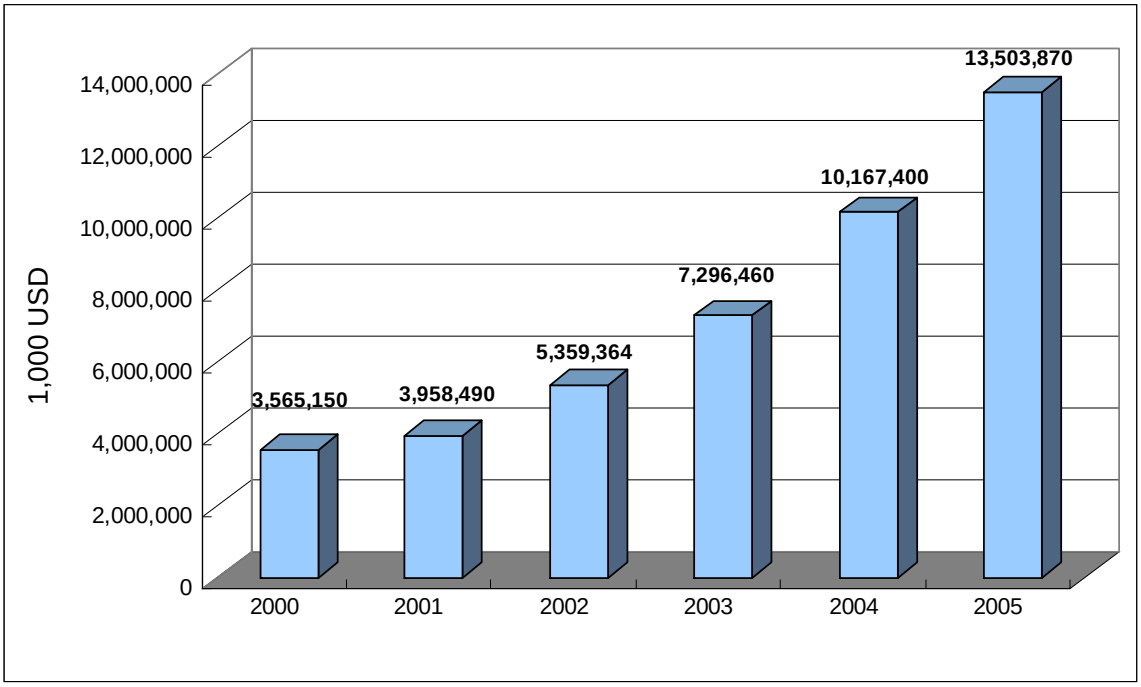

Figure 1.8. Furniture export from 2000 to 2005 in China

Source: National Bureau of Statistics of China database.

With a growing manufacturing base for wood products in China, there is the potential for certified wood products to become a trend, especially for export oriented wood products manufacturers. A survey was done in 2001 by a WWF forest certification working group of 17 companies that had been certified. The survey investigated most of the issues related to FSC CoC certification, including motivations for certification, certified product types and end markets, origins of certified wood raw materials, costs and benefits of certification and prospects of certification (Xu & Zhao 2001).

According to Xu and Zhao's (2001) research, most of the surveyed companies (9 companies) were located in Guangdong province and most of the companies (12 companies) were wholly foreign-owned companies. Most of the companies were medium size companies, with 4 of them having over 1,000 employees and 2 of them having over $25 million in annual sales. The certified wood product types were mainly furniture and other value-added wood products. The end-markets for their products were the United States, Canada, the United Kingdom, Germany, Belgium and Denmark. The certified wood raw material was mostly imported and originated from the United States, New Zealand, Indonesia, South Africa and Poland.

The authors had some difficulty in collecting accurate data of the costs and benefits of certification. However, based on the primary data, the researchers estimated the general cost increment and profit margin of certified wood products. For a medium size manufacturer (having 150 employees) the direct cost of certification included two components, $4,600 for the initial certification evaluation, and $4,000 for the semiannual audit fee. Cost increment was mainly attributed to the higher price of certified wood raw material, which could be 20% more expensive than the non-certified wood in some cases. Indirect costs incurred from management adjustments, production line updating, employee training and file system setting, was also a substantial factor for the cost increase of certified wood products. The price premium for certified wood products was not substantial compared to non-certified wood products with a 10% price premium at most. Therefore almost all the companies reported a reduced profit margin. Most of the companies increased their market share in oversea markets with a moderate increase rate (at most 20%).

The authors (Xu & Zhao 2001) analyzed the problems related with the certification of the forest product industry in China and provided some suggestions. First, manufacturers should find effective ways to control the increased cost caused by certification; second, manufacturers should find ways to add bargaining power to the price premium for certified wood products; third, there needs to be more efficient channels for information and communication related with certification; and finally, there needs to be domestic accredited certification bodies that can help local companies be certified for a lower cost and with greater efficiency.

A similar study found that in the US, certified wood products manufacturers (28 companies were included in the study) charged an average premium of 4.7% above the non-certified wood products (Stevens, Ahmad & Ruddell 1998). Forty percent of the certified companies in the US reported that the cost increase was less than 3%. In addition, 28 of all 54 certified companies viewed market access (28% of the responses) as the most important reason for certification.

The Value Chain of Certified Wood Products

There are currently two major types of value chains for certified wood products in China. One can be referred to as the southern model because it is developing along the eastern and southern coast of China, while the other can be referred to as the northern model because it involves the Chinese state-owned forest lands in the northeastern provinces of Jilin and Heilongjiang.

As Xu and Zhao's (2001) survey found, most of the CoC certified wood products manufacturing companies are located in Guangdong province (Figure 1.7) and manufactured wood products for export markets using imported certified wood raw materials are located in this region. Although there were two certified forest farms in southern China, they are small farms (Figure 1.6) and only supplied certified wood to their own captive downstream manufacturers. Therefore most of the certified wood products manufacturers in this region are highly dependent on imported certified wood raw materials and are occasionally confronted with supply constraints.

The northern model includes two state-owned forest farms located in Jinlin and Heilongjiang provinces which were certified by SGS under the FSC program in 2005. The certification of these two large forest farms was closely related to government administrations. According to Godfrey (2005) the two state-owned forest farms, Baihe and Youhao passed the certification process through the close cooperation between WWF, FSC, China's State Forestry Administration and the Chinese Academy of Forestry. Godfrey pointed out the hesitation the government initially showed to promoting certification because the certification costs were high and the economic benefits were uncertain. The central and local governments were finally persuaded to support certification when they realized that it was a good chance to cooperate with WWF and FSC to help build a national initiative for forest certification based on FSC standards. The certified forest farms directly supply their own downstream wood manufacturing plants that produce wood products for export markets.

The value chains for certified wood products described above lack maturity in the sense of having a stable and sustainable market mechanism. For the southern model, the unstable and costly supply of imported certified wood raw materials makes controlling the cost of certified wood products problematic. There are few large forest farms located along the eastern and southern coast of China, and the property rights of these forest farms are complicated and uncertain (Lü, Shi & Zhang 2005). With thousands of small, family-managed forest farms facing uncertain tenure, it is unlikely that they can be certified. It will take a long time before the property rights of forest lands are clarified and stable enough to initiate consolidation based on market mechanisms. The second problem with the southern model is the distribution channels of wood raw materials from the resources to the manufacturing base, which is a critical issue in terms of controlling costs. Since the forest resource is mostly located in northeastern and southwestern China and the manufacturing base is mostly located along the eastern and southern coast of China, the coordination

between resource and manufacturing requires relatively sophisticated distribution channels to reduce the high transaction costs. For the northern model, the central and local governments accelerated the process of certification using administrative methods. The non-market mechanism involved with government involvement may have both a positive and negative impact on the progress of certification in China. While the improved speed and scope of achieving certification in a relatively short period of time is a positive attribute of government involvement, the negative impact will be the lack of sustainable motivation based on profitability for some forest farms and wood manufacturers.

Chapter 2 Methodology

This research will be divided into two sections. The first presents a case study of a certified forest farm and its downstream manufacturers located in Northeast China. The second section presents the results of a survey of the FSC (FM/CoC, CoC) certified wood products manufacturers in China, including forest farms, manufacturers and traders.

Methodology of Case Study

The case study for this research project included the Youhao Forest Bureau, the Hualong and Huali factories and IKEA as the major economic stakeholders. China's State Forestry Administration was also included as the major governmental administration that supported the process of forest certification.

The information and data collected for this case study were from three sources. The first was the literature, news and reports related to the case, such as the forest management report of the Youhao Forest Bureau by SGS, the World Wide Fund Newsletter of forest certification, the online magazine "EuroBiz", and news from the websites of WWF, IKEA, China's Forestry Administration, Youhao Forest Bureau, Shengyu Wood Industry Group and the Hualong and Huali factories. The second was an unofficial interview with a senior staff member of the Forestry Team (Qindao) in IKEA who is one of 14 forestry specialists and foresters working for IKEA Global. The final source was an email survey consisting of thirty-five questions related to certification sent to Youhao Forest Bureau and the Hualong and Huali factories in March 2007.

The case study was revised based on comments received from the senior staff member of the Forestry Team (Qindao) in IKEA following her review of the first draft for accuracy and validity.

Methodology of Survey on Certified Companies in China

Survey Population

The survey population consisted of all FSC (FM/CoC, CoC) certified wood products manufacturers in China, including forest farms and traders. We obtained the population from the FSC database[7] where 200 certified companies with contact information were reported on the date of November 1st, 2006.

Survey Instrument

Our survey instrument was drafted during January and February of 2007. The survey consisted of thirty-five questions including multiple-choice, open-ended, and Likert-like scale questions. The whole survey was five pages long with a cover letter explaining the objectives of the research and instructions for completing the survey. A small gift worth approximately $4 was provided as an incentive to improve the response rate. A pre-test was done by a manager of a certified company and several peers working in business and academia. Revisions were made based on the results of the pre-test.

The survey was sent out during March 2007 through emails, which were considered an economic and quick way to access companies located in China (including Hong Kong and Macao). The electronic version of the questionnaire was provided in Word format, and responses could be emailed back. Alternative ways to reply to the survey included faxing and mailing. Phone calls were made following the first round of emails to those companies considered to be important to the survey's success. Phone calls were also made to those companies which did not provide their email addresses or for whom the email addresses were unusable. The survey was sent out four times in a row on Monday of each week in March, and a reminder letter was sent out on the fourth week. The responses obtained during the first two weeks (Mar. 4th to Mar. 17th) were considered as early responses, while the responses obtained during the last

[7]The website of FSC database is http://www.fsc-info.org/

two weeks (Mar. 18th to Mar. 30th) were considered as late responses.

Data Analysis

Survey data were coded, entered and analyzed using SPSS 13.0 and an Excel spreadsheet. Nominal, ordinal, interval (including pseudo interval) and ratio data were collected from the survey. Frequency, percentage, means, Chi-square, and comparison of means (independent t-test) were used to draw statistical conclusions of the data. A simple linear regression model was developed between the profit margin of certified wood products (Dependent Variable) and the price premium of certified wood products (Independent Variable) to allow for inference on the profitability of certified wood products.

Response Rate

At the end of March, the total responses to the survey totaled 41, making a gross response rate of 20.5%. There were 33 companies that did not have accessible email addresses. And there were two companies having multiple locations, which indicated a willingness to answer only one questionnaire on behalf of the company at large. Therefore, these known non-respondents were removed from the sample frame. The adjusted response rate was 25.3% after subtracting 38 companies, due to either their inaccessibility or having their headquarters answer only one questionnaire. According to former studies, the response rate for industrial studies of this type typically range from 15 to 30 percent (Vlosky & Ozanne 1998), therefore the response rate for this study is considered to be valid.

Non-Response Bias

Non-response bias is hazardous if the non-respondents share attitudes, beliefs and perceptions that are systematically different from those of the respondents, which will ultimately result in erroneous conclusions regarding the population. Normally non-response bias is caused by two factors. First, people with interest in the survey are more inclined to respond, and second, people with a higher education are more likely to return surveys. Comparing early responses to the late responses is one method to test for such bias (Armstrong & Overton 1977). In our study, the answers of the eight Likert-scale questions were used to test for non-response bias. An independent t test was performed between the early respondents and late respondents. No statistical significance (at $\alpha = 0.05$) was detected, therefore we conclude that there was no non-response bias and that the results of the survey can be generalized to the target population.

Chapter 3 Case Study on a Certified Forest Farm in China

Introduction

There were four forest farms that had been certified in China as of November 1st, 2006. As one of them, Youhao Forest Bureau was analyzed as an example to display the critical relationships among different stakeholders and also to reveal the obvious and potential problems that need to be solved in forest certification in China. First, for certification as a market method, there needs to be a complete value chain covering every step of the process beginning with the forests, from logs, to primary wood products manufacturers to secondary wood products manufacturers, to traders, to retailers and finally extending to consumers. In the case of Youhao forest farm, logs are supplied to the Hualong and Huali factories where they are processed into secondary wood products for IKEA, one of the largest furniture retailers in the world. Secondly, in Youhao's case, the central and local governments played an important role in gaining forest certification and later initiated the process of national forest certification under FSC standards in China. This was followed by the World Wide Fund for Nature (WWF) and the Forest Stewardship Council (FSC) pushing the certification process forward by connecting the market and governmental administrative power together.

Our analysis of this case will be focused on several issues. First of all, what were the relationships among the main economic stakeholders in the certification process? Second, how did the market mechanism operate through the value chain of certification? Finally, how did the governmental administration influence the process of certification?

Main Economic Stakeholders in Forest Certification

There were many stakeholders involved in the certification of the Youhao Forest Bureau and Hualong and Huali factories with respect to economic, environmental and social factors. The most important stakeholders were the Youhao Forest Bureau, the Hualong and Huali factories, IKEA, China's State Forestry Administration, the Chinese Academy of Forestry, the General Bureau of Forest Industry of Heilongjiang Province, Heilongjiang Academy of Forestry, WWF, WB, FSC, SGS, the German Investment and Development Company (DEG), local communities, and the mass media (Figure 3.1). Our analysis will focus on the economic stakeholders: the Youhao Forest Bureau, the Hualing and Huali wood manufacturing factories and IKEA (the retailer of CWP's), to demonstrate how certification is influencing the export oriented forest products industry in China.

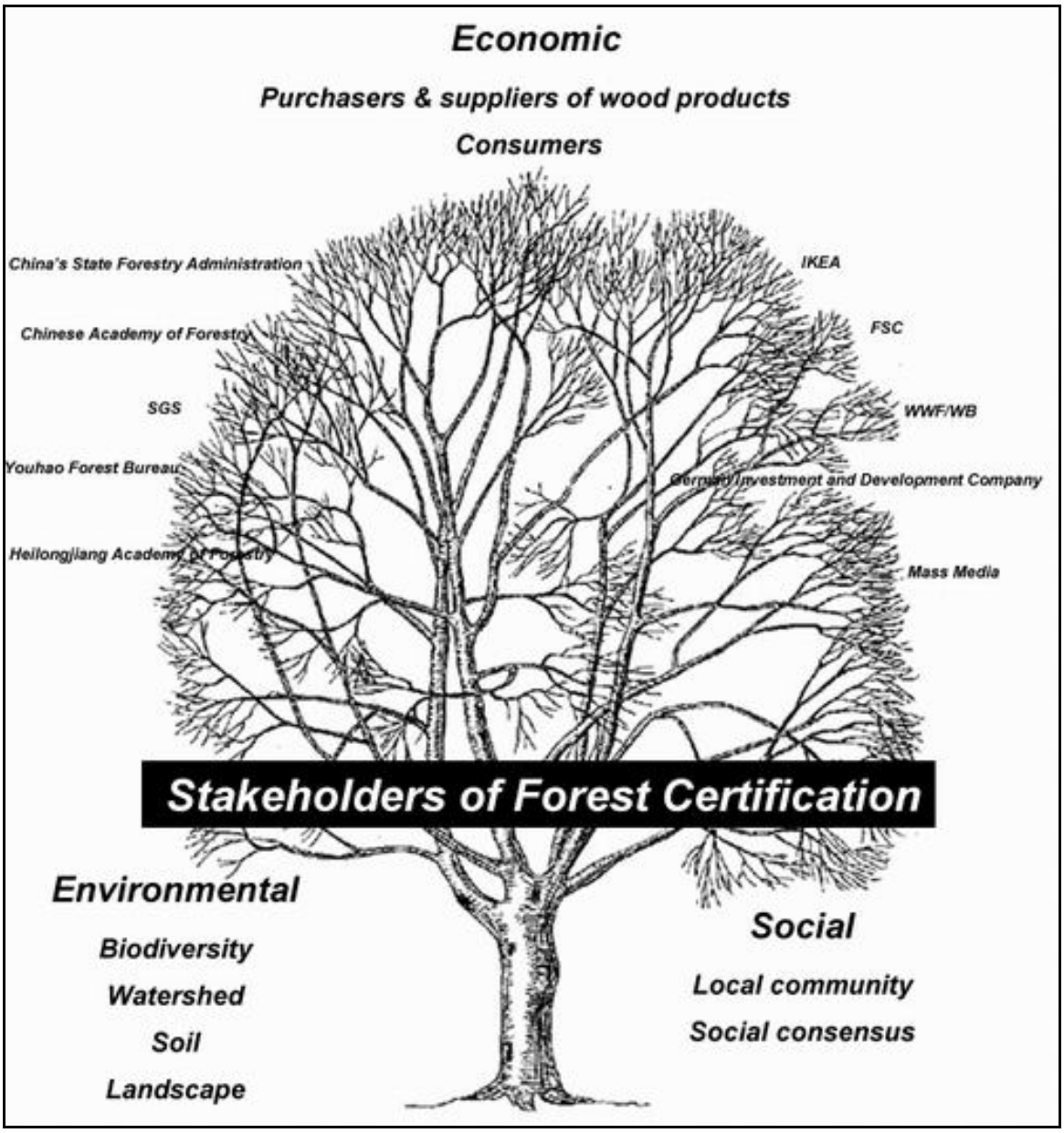

Figure 3.1. Stakeholders of forest certifications
Certified Wood Products Purchaser: IKEA

The Swedish furniture company IKEA is one of the largest and most well known furniture retailers in the world. It sells Scandinavian-style home furniture, furnishings and other housewares in about 253 stores in 35 countries. The annual sales of IKEA in 2006 reached $22.2 billion, a 22.7% increase from 2005. Most of their products (about 70%) are made from wood or wood products (IKEA 2007). IKEA is now sourcing about 10% of its wood from China, and they have a strong manufacturing base in China (WWF 2007).

IKEA announced their Forest Action Plan (FAP) in response to increasing pressure from ENGO's in developed countries, particularly in Europe. The FAP consists of four steps, beginning with the basic requirement for wood materials to the final goal of sourcing wood products only from sustainably managed forests (Figure 3.2) (IKEA 2007).

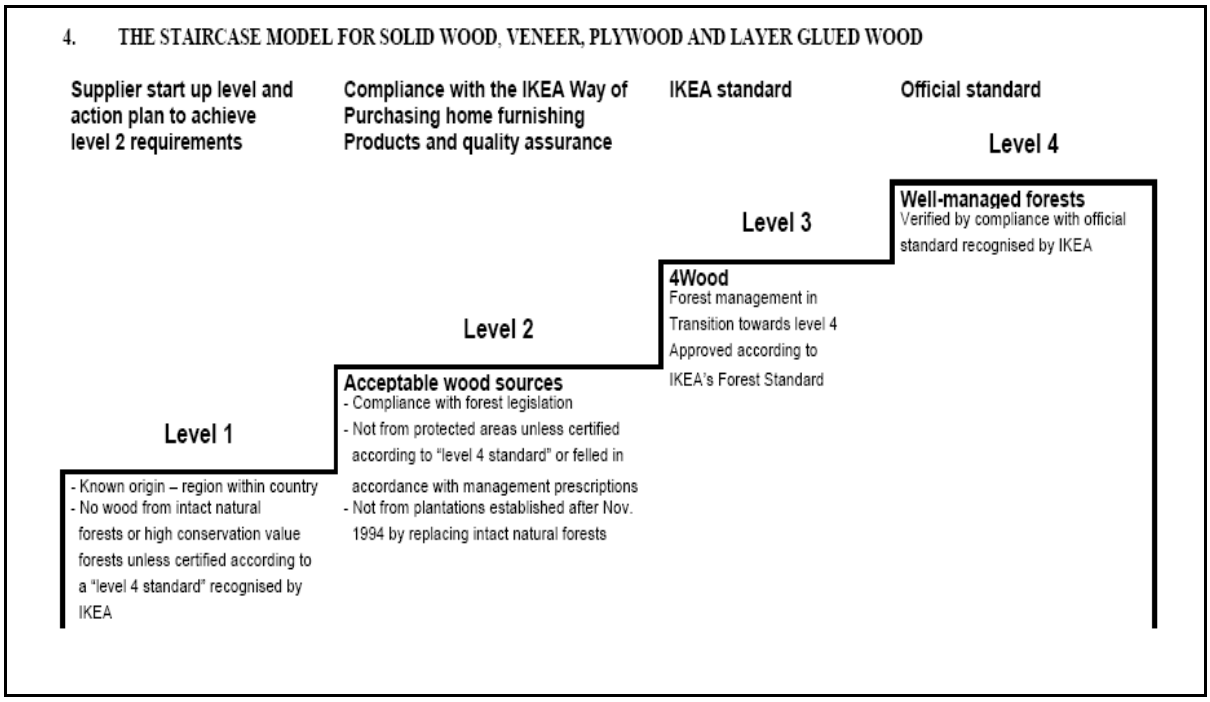

Figure 3.2. The four steps of the Forest Action Plan (FAP) of IKEA
Source: IKEA internal database

IKEA has very detailed requirements for its suppliers, such as providing IKEA with information about the origin of wood within 48 hours and requiring suppliers to keep this information on record for at least 24 months. In addition, IKEA enforces these requirements by checking all suppliers of wood products on a daily basis, sending suppliers questionnaires about their wood supply chains and randomly auditing their wood supply chains.

IKEA began cooperating with WWF and WB on forest certification projects in Russia, East Europe and China in 2002 as part of a three-year collaboration to jointly promote responsible forestry in these priority regions, and they renewed the project in 2005. As an important wood sourcing destination and wood products manufacturing base, the China project has been emphasized by IKEA, with a Forestry Team located in Qingdao, Shandong Province being in charge of this work.

During the project with WWF and WB, IKEA has participated in several projects, including forest mapping and identification of High Conservation Value Forests (HCVF) in selected prefectures, promoting legal compliance of wood sources, and conducting communication and education/training programs with potential suppliers. Also in 2002, the WWF and IKEA assigned Pi Environmental Consulting to develop a toolkit called "PathFinder" for help in the implementation of multi-stakeholder cooperation in forest certification (WWF 2007).

The certification of two large plots of state-owned forest farms in Northeast China represented a major step forward for China's forest certification program and in the successful cooperation between the WWF and IKEA. One of the two forest farms, Youhao Forest Bureau, is a direct wood supplier to IKEA with two downstream factories manufacturing wood furniture for IKEA.

Forest Farms: Youhao Forest Bureau[8]

The Youhao Forest Bureau is one of the state-owned forest farms under the General Bureau of Forest Industry in Heilongjiang Province. Youhao is located in the eastern part of Heilongjiang Province on the middle Xiaoxingan Ridge (Figure 3.3 and 3.4). The area covered with forest is 268,750 ha, and the area of certified forest is 242,983 ha (SGS 2005).

Figure 3.3. The geographic location of Youhao Forest Bureau

Source: General Bureau of Forest Industry of Heilongjiang Province.

[8] Some information under this subheading refers to the forest management report of Youhao Forest Bureau issued by SGS, http://www.forestry.cn.sgs.com/zh/forest_management_reports_cn

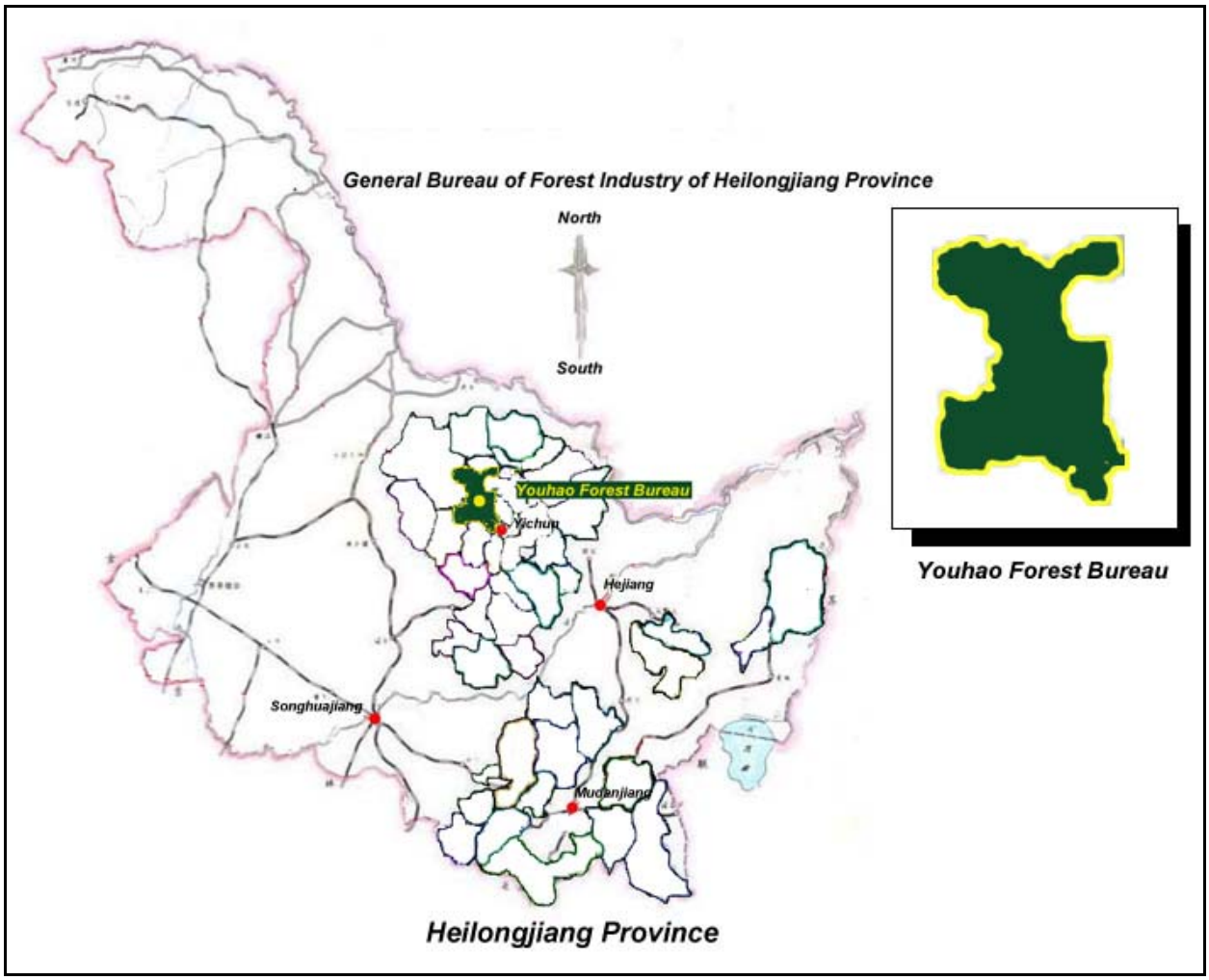

Figure 3.4. The geographic location of Youhao Forest Bureau

Source: General Bureau of Forest Industry of Heilongjiang Province.

The original climax biome in this forest bureau is Korean pine-deciduous mixed forest, but the indigenous vegetation is extinct because of continuous overharvesting and destruction in this forest bureau. At present, the main forest types are Korean pine forest, larch forest, deciduous mixed forest, birch forest and conifer-broadleaved mixed forest. The understory species in the forest are nut-tree and fern.

According to the principal technical regulations of forest resources planning and design issued by the State Forestry Administration in 2003, each forest bureau must carry out a forest resources inventory and develop a management plan every ten years. In 1994, the second forest inventory planning and design institute in Heilongjiang Province conducted the fourth forest resource inventory within the Youhao forest bureau. On the basis of the inventory data and maps, the institute made management prescriptions for the Youhao forest bureau and the time frame for the prescription was set for ten years (from 1996 to 2005). The annual allowable cut specified in this prescription was 180,000 m^3. In 1998, the Natural Forest Protection Project (NFPP) was fully implemented for the first time in China. According to the implementation project (2000) for the Natural Forest Protection Project within the key state-owned forest regions in Northeast and Inner Mongolia China, and the implementation project (2001) for the Natural Forest Protection Project within the state-owned forest regions managed by the Forest Industry General Bureau in Heilongjiang province, the forest inventory planning and design institute in Heilongjiang

province developed the "implementation project for Natural Forest Protection Project within Youhao forest bureau" in 2002. The time frame for planning was 2002 to 2010. The protection project indicated the adequate implementation of the forest zoning plan and the reduction of timber production as well. The final plan specified three categories of forest, namely, commercial forest, ecological benefit forest and key ecological benefit forest, and reduced the annual allowable cut to 170,000 m^3.

According to the forest resources statistics in 2003, the commercial forest area was 83,025 ha and its stock volume was 7,075,418 m^3. The area of commercial forest accounted for 36.6% of the total area of forest stands in the Youhao Forest Bureau and the stock volume of the commercial forests accounted for 39.6% of the total stock volume. The area and the stock volume of the ecological benefit forests were 107,112 ha and 8,136,757 m^3 respectively, with the area of the ecological forests accounting for 47.1% of the total area of the forest stands and the corresponding stock volume accounting for 45.5% of the total stock volume. The area and stock volume of the key ecological forests were 37,114 hectares and 2,670,339 m^3 respectively, with its area accounting for 16.3% of the total area of the forest stands and its stock volume accounting for 14.9% of the total stock volume in Youhao Forest Bureau.

The Youhao Forest Bureau is comprised of several departments, including the silviculture department, the resources department, the natural forests protection office, the departments of production, timber testing, and planning and other departments dealing with finance, pest treatment and timber sales. The number of employees in Youhao forest bureau is 5,847, which accounts for 8.7% of the total population of 67,000. This number is made up of employees from the committee of the Chinese Communist Party (53), government departments (363), the forest bureau (187), the People's Congress and the political consultation committee (24), the labor union (15), local community (1,315), and workers from the storage yard, road repairing, waterworks and forest inventory team (3,890).

Supported by China's State Forestry Administration, the General Bureau of Forest Industry of Heilongjiang Province, the Chinese Academy of Forestry, the Heilongjiang Academy of Forestry, the WWF, and IKEA; Youhao Forest Bureau passed FSC forest management certification under SGS evaluation and audit in April, 2005. There are two wood manufacturing factories (Hualong and Huali) managed by Youhao Forest Bureau that have been certified under Chain-of-Custody (CoC) as well. These factories are two of the major manufacturers supplying solid wood furniture to IKEA in China. Youhao Forest Bureau also supplies nearly twenty downstream wood products manufacturers, including Hualong and Huali factories.

Wood Products Manufacturers: Hualong and Huali factories

The Hualong and Huali factories are wood manufacturing companies under the management of the Youhao Forest Bureau. They are also subsidiaries of the Yuhao forest industry group, called Shengyu Wood Industry Group. Hualong was founded in 1999 with about $4 million in fixed assets and about 800 employees. It consists of seven branches, including sawn timber, glulam lumber, kiln drying, electricity generation and three furniture factories. The main products of the Hualong factory are sawn timber, glulam, finger-jointed board, block board, and solid wood furniture. Huali is also a major wood furniture manufacturer in Youhao, having $1.3 million in fixed assets and 500 employees. Both of these factories are suppliers of solid wood furniture to IKEA, with more than 90% of their production going towards supplying IKEA.

Following the forest management certification of the forest farms in Youhao Forest Bureau, the Hualong and Huali factories were certified with Chain-of-Custody certification in 2005. It is an advantage that Hualong and Huali can access the certified wood raw material directly from Youhao forest farms, while most wood products manufacturers located along the southern and eastern coast are highly dependent on imported certified wood. In addition to supplying the Hualong and Huali factories, the Youhao Forest Bureau is also supplying nearly twenty downstream wood products manufacturers. All certified wood that

the Hualong and Huali factories use for production are from Youhao's certified forest farms. The major species used for furniture manufacturing in the two factories are fir, spruce and birch.

Some amount of capital expenditure was spent to enhance the production capability, mainly in the purchasing of imported machines from Italy and Taiwan. To strengthen their cooperation with IKEA, Hualong and Huali also passed the environmental and social standards developed by IKEA called IWAY. The main products Hualong and Huali supply for IKEA are side tables, wardrobes, drawers and dining tables made of solid wood (Figure 3.5).

Figure 3.5. Some certified wood products of IKEA supplied by the Hualong and Huali Factories
Source: IKEA website

There are three important principles for chain-of-custody certification. The first principle is called "Segregation" which states that certified materials should be physically separated from non-certified materials without any chance of mixing. For example, there should be separate manufacturing lines, kilns, and areas for assembling completed products. The second principle is called "Identification", which states certified materials and products should be clearly labeled throughout the process of production, storage,

and transportation. Some examples of identification include the bar-coding of certified logs, using different colors of labels for certified and non-certified materials and products, or using different packages for certified and non-certified materials and products. The third principle is called "Documentation" which dictates a system of detailed documentation covering procedures, operating information and records of certified materials and products. For example, records of all certified raw materials received and processed, procedures setting out the rules of segregation in the storage area, and information on the certification status of both orders and invoices should be well documented. These specific requirements of chain-of-custody pose many difficulties during the production process, especially when the raw materials, manufacturing process, and products are very complex. The Hualong and Huali factories partly avoid these difficulties because all the materials from Youhao's forest farms are certified, and over 90% of their products go towards supplying IKEA's orders. This simplifies their material control and production lines. Figure 3.6 shows some pictures of the log yards and workshops in Youhao's forest farms and in the Hualong and Huali factories.

Figure 3.6. Log yards and workshops in Youhao Forest Bureau and Hualong and Huali factories
Source: Shengyu Wood Industry Group, http://www.hljshy.cn/

Market Mechanism within the Value Chain of Forest Certification

Forest certification is considered a market-based mechanism to resolve the conflict between conservation and wood use. In this sense, sustainable forest management and wood products manufacturing are following economic principles while balancing their relationship with the environment. It is crucial to include the market mechanism within forest certification when trying to achieve environmental benefits, or it will hardly influence the business-based forest industry in the long run. Issues such as how and to what level environmental welfare should be sacrificed to further economic benefits and developing a clear definition of sustainability are proving to be controversial. Certification programs differentiate themselves by how they interpret these questions. Among the four most influential forest certification programs in the world, FSC, PEFC, CSA and SFI; FSC is widely considered to be the most stringent with regard to standards for the environmental, economic, and social issues of certification (refer to Table 1.1 for detailed differences between these programs).

The market mechanism within forest certification covers the entire value chain from producer, to retailers to the consumers of certified wood products. At the same time, governmental administration and pressure from the general public and ENGO's also play an important role in the certification process. The market mechanism includes such issues as, consumer willingness to buy certified wood products (demand), producer willingness to use certified wood products (supply), the way certification impacts the relationship between the costs and benefits of wood products, and the way certification impacts the relationship between each part of the value chain?

In Youhao's case, the value chain of certification is relatively simple. A simple straight distribution channel instead of a complex web of channel relationships provides them with an advantage in controlling costs and simplifying the production process. On the other hand, this simplicity may add risk if any unit along the value chain changes or encounters production delays.

Although IKEA has declared in its Forest Action Plan that the ultimate goal (Step 4) of their wood sourcing system is for all of their wood materials to be sourced from certified forests (FSC is currently the only certification program recognized by IKEA), it will not allow the display of FSC certification labels on IKEA products. One possible reason for this policy is that IKEA does not want to display other labels on its products (although FSC is not a commercial label) because doing so may create confusion in consumer's minds regarding the IKEA brand label. Another reason may be that IKEA's goal is to become a 100% certified wood products seller, allowing IKEA to develop its own "Green Products" brand. The umbrella of IKEA's brand will not only cover forest certification, but other environmental standards and programs. In addition, IKEA may be sensitive to the fact that having the FSC label on some products but not others would highlight that fact that not all of their products are made from certified wood products, which could influence consumers purchase decisions and undermine IKEA's efforts to promote themselves as an environmentally responsible company that only uses wood from sustainably managed forests.

Some research has suggested that the development of the environmental market was not driven by the demand side but rather by ENGO's pressuring of well known companies who were sensitive to the impact of a poor environmental image on their public image. The cooperation between IKEA and the WWF not only includes forest certification, but also illegally sourced timber, especially illegal logs coming from Russia and Indonesia being used in China (Figure 3.7). These environmental policies have certainly increased the cost of wood materials for IKEA in the short-run, but will help to protect IKEA's public image as an environmentally responsible company.

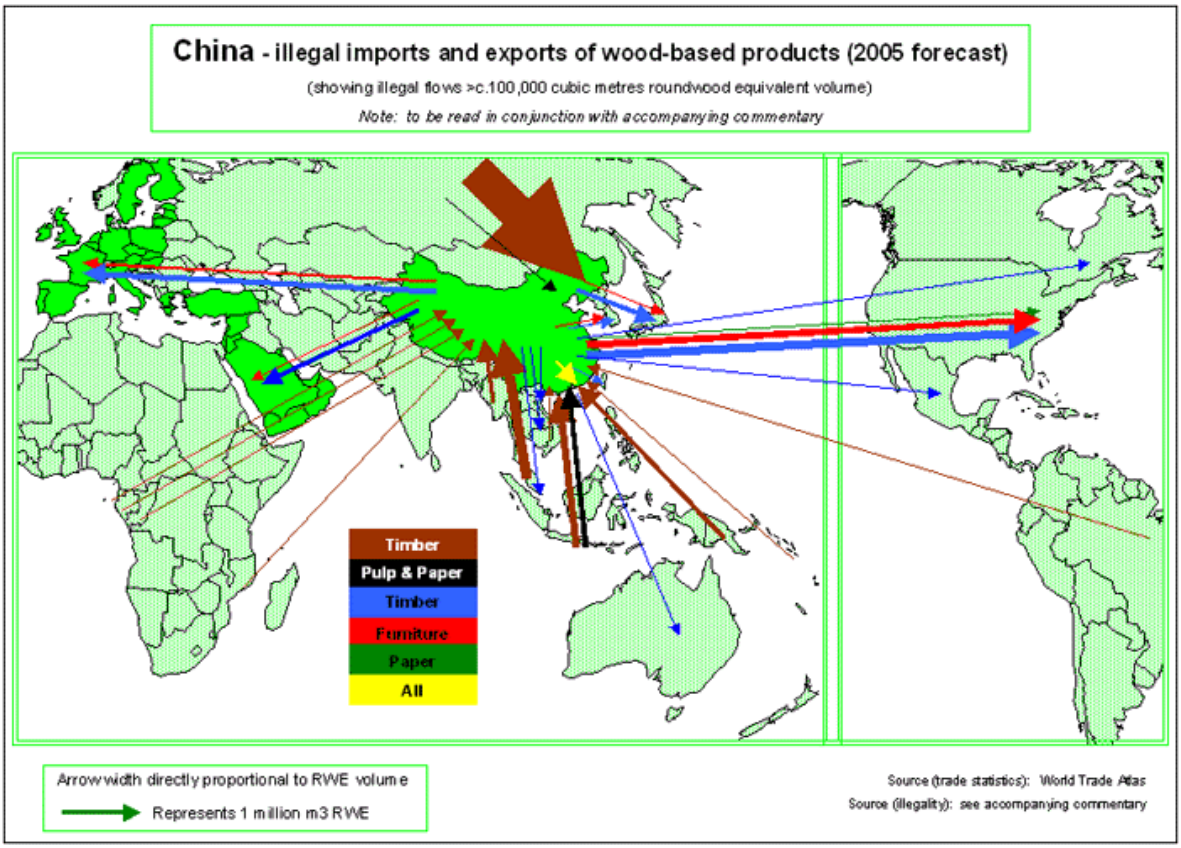

Figure 3.7. China's sourcing and re-exports of illegal timber from Russian and other countries
Source: Global Timber. http://www.globaltimber.org.uk/graphs/ChinaIllegalImpExp2005.gif

There are two important manufacturing bases for wood products in China, with one located along the eastern and southern coast of China from Jiangsu Province to Guangdong Province, and the other located in Northeast China from Liaoning Province to Heilongjiang Province (Figure 3.8). The former are focused on final products like furniture, paper and craftwork, while the latter is focused on primary wood products like sawn timber, wood panels and veneer. The long distance between Youhao forest farms and the final products manufacturers located in the southeast makes market access more difficult. In addition, poor transportation linkages between the two regions hinders the transport of certified wood products from the northeast to the southeast. Although many certified wood products manufacturers located along the eastern and southern coast of China are now facing shortages of certified wood raw materials, very few of them can access the certified wood from Youhao. Currently the Youhao Forest Bureau does not have a domestic market for its certified wood except for its own wood mills, although the certified wood market along the eastern and southern coast of China is growing. The Hualong and Huali factories are facing a similar problem in that there are few purchasers of certified wood products. Although IKEA is their major customer, both the Youhao and Hualong and Huali factories are concerned about becoming too reliant on a single customer and are interested in diversifying their customer portfolio.

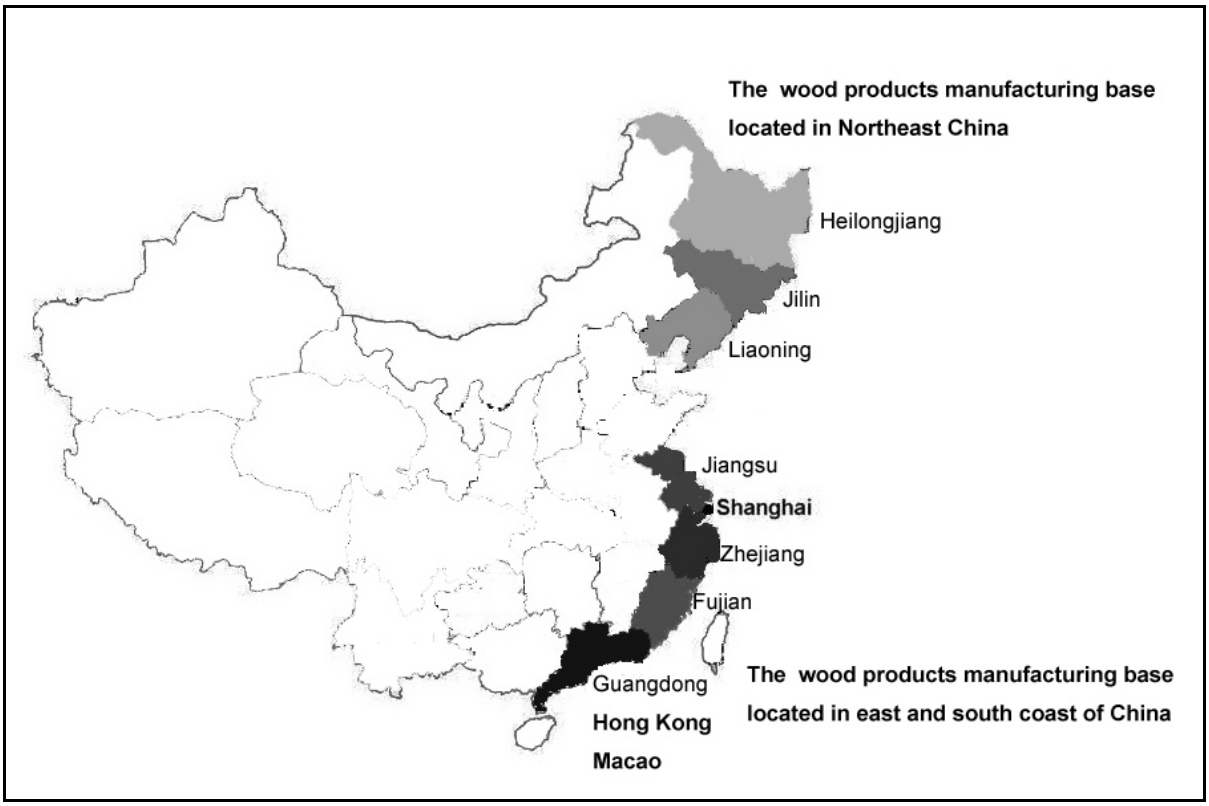

Figure 3.8. Two important wood products manufacturing bases in China

Forest Management certification and Chain-of-Custody certification increase costs by adding the direct expenses of the evaluation and audit of certification, in addition to the indirect costs of administrative adjustment and new equipment. According to Simula, Upton and Bass (cited by Wang & Ma 2005) depending on the size of the forest, the direct cost of the evaluation fee of the certification ranges from $0.01 to $1.41 per hectare. For a 100,000 ha forest in a tropical area, the total cost for six years of certification was $140,903, or $23,484 per year. In Xu and Zhao's (2002) survey of CoC certified companies in China, for a medium sized company with around 150 employees, the evaluation fee for certification was $4,600 and the semi-annual audit fee was $4,000. Therefore for a five year CoC certification, the total direct cost was $44,600, or $8,920 per year. For forests under relatively low-level management the indirect cost will be even more than the direct cost. For wood products manufacturers, the increased costs (reaching 20% according to Xu & Zhao 2002) of certified logs account for the most significant part of the cost increase.

A brief survey was done through email on the basic issues related with the certification of Youhao Forest Bureau and Hualong and Huali factories in March 2007. The results showed that the cost of certification, including the evaluation and audit fees, was about $200,000 total, or $40,000 per year, resulting in a 30% increase in price for the certified logs. The evaluation fee for each hectare of forest was $0.52, falling on the lower side of Simula's cost range. The high cost of certification puts pressure on both the forest farm and their downstream manufacturers. Since the whole certification project was supported by the central and local governments as well as the WWF and IKEA, both groups are actively seeking funds from outside parties. For example, IKEA has promised to help fund the project by helping train employees.

According to the survey, Hualong and Huali only receive a 10% price premium from certified wood products in European markets, with no price premium in the North American market. The forest farms

and wood mills initiated the forest certification process because they felt it was necessary for them to maintain their current markets and gain access to new markets. IKEA is currently ordering about $6 million of wood furniture from the wood mills per year, about 10% of which uses certified wood. The percentage and the absolute value of certified wood products will increase with the adjustment of production, adaptation to new orders, and growth in the demand for green wood products. The forest farms and wood mills are seeing an increased possibility of accessing new markets within China and internationally. Therefore both companies are actively promoting their certification through a variety of promotional strategies including the internet and newspapers.

Government Administrative Involvements

Due to massive industrialization in China over the past one hundred years, most of China's forests have been converted into low quality forests, including secondary forests, open forests, forest plantations, shrublands, agricultural areas, and degraded wastelands. Over-utilization has been manifested in serious biodiversity loss, soil erosion, frequent flooding, decrease of natural forest area, and a shortage of forest products. The deforestation began in the 1950's when the first round of industrialization started in China; however historical data for changes in area for this period time are unavailable. Referring to the National Bureau of Statistics of China, the forest cover rate in 1995 was 13.4%. National and local laws, policies, regulations and projects on reforestation and afforestation have helped to increase the forest cover rate. According to recent statistics, forests in China cover about 18.21 percent of the land, although it is still relatively low compared to an international average of 34 percent.

Forest resources in China can be generally divided into four types based on geographic location, including northeastern forests, southwestern forests, northern forests, and southern collective forests respectively (Figure 3.9). Most of the state-owned large forest farms are located in the northeastern and southwestern forest areas, and most of the collective forest farms are located in the southern forest areas.

The Chinese government enacted several new forest laws, regulations and conservation projects in 1998 following the Yangtze River flood. These include a logging ban in natural forests, the Natural Forest Protection Project (NFPP) and the Nature Reserve System in order to decrease the degradation of natural forests in China. According to the State Environmental Protection Administration of China (SEPA), there were 2,349 natural reserve areas covering all categories and all types of ecological conditions, including 1,205 natural forest conservation areas in 2006 (SEPA 2006). Figure 3.10 shows the geographic location of the natural reserve areas in China. As mentioned previously, the Youhao Forest Bureau is one of the state-owned forest bureaus included in the NFPP.

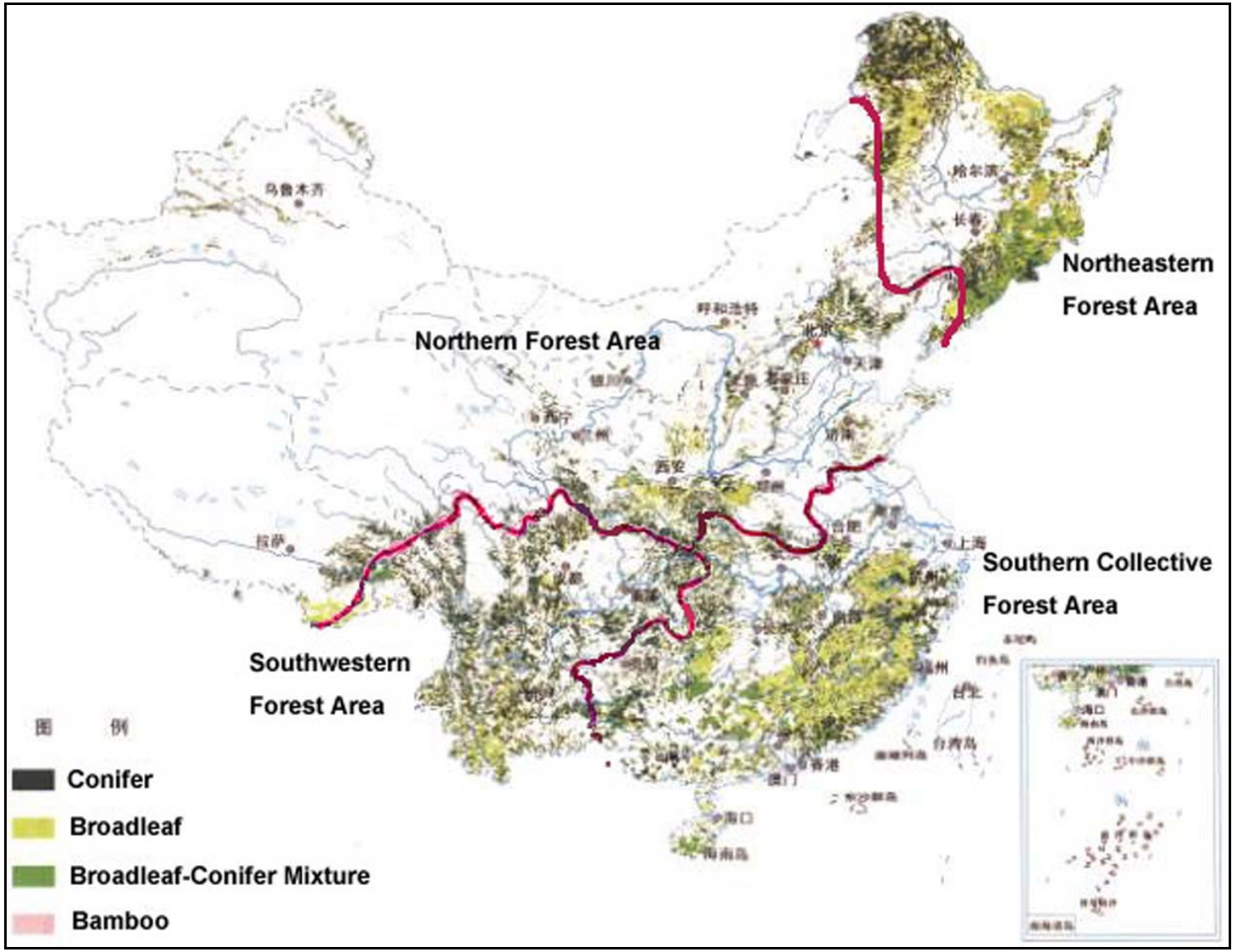

Figure 3.9. Four major regions of forest resources in China
Source: Sichuan Agriculture University, http://jpk.sicau.edu.cn/sljl/images/clip_image008.jpg

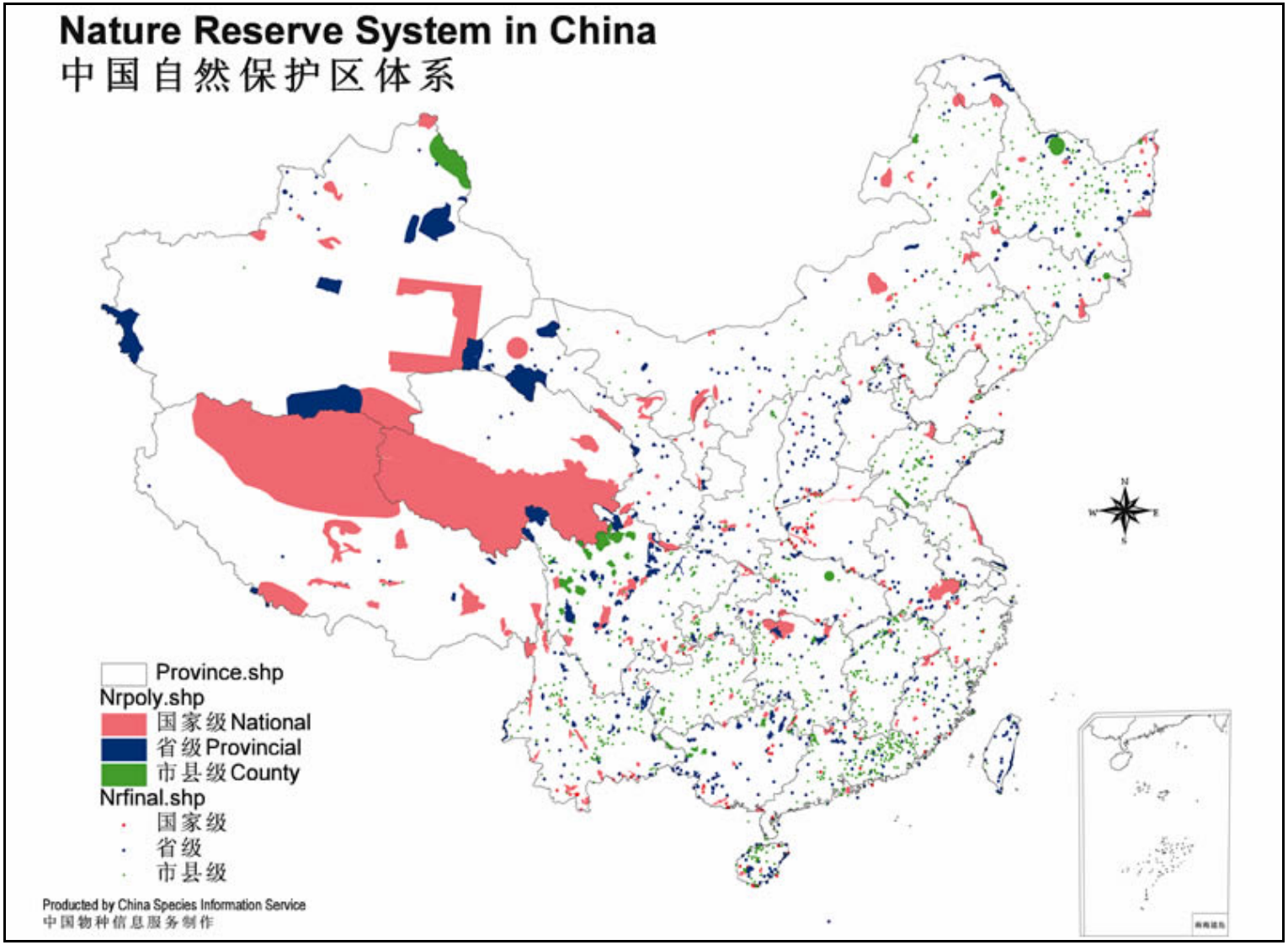

Figure 3.10. Nature Reserve System in China

Source: Wild Life Conservation Society and Institute of Zoology (Chinese Academy of Science), http://www.chinabiodiversity.com/protected-area/1.1-1en.jpg

The Chinese government introduced forest certification onto its working agenda in 2001 when the first working group was formed in Beijing supported by the WWF and FSC. The leadership committee of forest certification consisting of officials from China's State Forestry Administration was founded later. This committee benchmarked the official initiation of forest certification in China. Several reasons can be used to explain the rationale for central and local governments to take on the issue of forest certification. First, the governments were interested in having China adopt internationally accepted standards of forest management; in addition forest certification is a complementary market mechanism to the mandatory regulations such as NFPP. Second, they felt that cooperation with the WWF and FSC could help China learn to develop its own national forest certification program under international principles and gain mutual recognition from FSC and other international certification programs. Third, they felt that engaging in dialogue with influential ENGO's would provide the Chinese forest industry with new insights into developing trends within international forest products markets. Finally, the government viewed forest certification as an effective tool for improving their environmental image.

Youhao Forest Bureau is one of the first two certified state-owned forest farms located in the northeastern forest area. The other is called Baihe Forest Bureau and is located in Jilin province. The certification of these two large state-owned forests embodies the certification of Chinese state-owned forest farms partly under governmental administrations. According to news released from the State Forestry Administration, the state-owned forest farms located in the southwestern and southern areas are now starting to give training to their major staff on the issue of forest certification (State Forestry Administration 2006). And in November 2006, another state-owned ecological benefit forest called Beijing Badaling Forest Farm located in the suburb of Beijing was certified as a result of efforts by relevant governmental bodies.

For most of the private forest farms in China without governmental administrative influence, there are still significant obstacles to certification. The small individual or family owned forest farms after the first forest property reform in 1980 are far from forming large privately owned forest industry or forest investment management companies because of the unstable and unclear property rights and tenure length (Refer to Table 4.20 for more details on this issue). As a result, they are unable to afford the cost of certifying their forest operations.

Discussion

In the case we are investigating, we can observe some common characteristics related to forest certification in the forest products industry in China. First, the industry and business of certified wood products is driven by demand in foreign markets, while there is little demand for certified wood products in the domestic market. Second, the high costs related to certification are still a problem and adversely affect the profitability of forest farms and wood products manufacturers, mainly because the price premium for certified wood products is not substantial or stable. Third, the motivation for certification has been mostly driven by interest in accessing new markets and future investment.

However, the whole value chain of certified wood products originating from Youhao Forest Bureau through the Hualong and Huali factories and to IKEA is not typical of the whole wood products industry in China. Most manufacturers located along the eastern and southern coast of China cannot source their wood raw materials directly from local forest farms; relying instead on importers for certified wood from foreign countries. Normally their supply of certified wood is more expensive and less stable than in Youhao's case. For Youhao, the simplified value chain for certified wood products brings both positive and negative impacts. On the positive side, it is easier to separate the certified wood through the production line and reduce costs by having simplified production lines and by cutting out the middle men in the supply chain. On the negative side, the forest farms and downstream factories face the risk of overreliance on a single purchaser.

The involvement of governmental administrations could be viewed both positively and negatively in this

case as well. The governmental administration helped the large state-owned forest farms gain certification in a relatively short time period. There were beneficial policy and financial supports provided by the central and local governments as well. On the other hand, governmental involvement blurs the economic mechanism behind certification by introducing non-economic factors. Once the administrative commands and supports from government are removed and the economic benefits are not strong enough, motivation for the business bodies to maintain certification will disappear.

Chapter 4 Survey on Certified Forest Products Companies in China

The second stage of this esearch involved a survey about forest certification that was sent through email to all FSC Chain-of-Custody (CoC) certified companies in China during March of 2007. Forty-one usable responses were included in the analysis to explore the issues related to forest certification and its influence on the forest products industry in China.

Sample Demographics

The eastern and southern coasts of China are the most important manufacturing centers for export commodities, including wood products. Guangdong is the leading province for wood products exports, accounting for up to 50% of the export shipments of wood furniture (Cao, Hansen, Xu & Xu 2004). Zhejiang province is growing rapidly in wood products production and exporting, following Guangdong as the second most important wood products manufacturing base along the eastern coast of China. Hong Kong is now transferring most of its manufacturing capacity to mainland China, primarily Guangdong, and specializing in trading and other services. In addition, Fujian, Jiangsu and Shanghai are important locations both in wood products production and export, with Shanghai being the largest domestic market for wood products. The geographic distribution of certified wood products companies covers the range of the wood products industry, and can be roughly divided into two major geographic regions. The first includes the eastern and southern coast provinces which are the most important production center for certified wood products, while the second is the northern provinces and municipalities including Jilin, Liaoning, Heilongjiang, Hebei, Shangdong and Tianjin (Figure 1.7).

Respondents to the survey were located in 13 of the 17 provinces where certified wood products companies are located. Compared to the population (Figure 4.1, 4.2), Zhejiang, Hong Kong and Fujian are underrepresented in the survey respondents. As for Hong Kong, the reason for the low response rate was because the respondents were asked to report the geographic locations of their manufacturing operations as opposed to the headquarters of the companies. Overall, the sample appears to be representative of the population of certified companies in terms of geographic distribution.

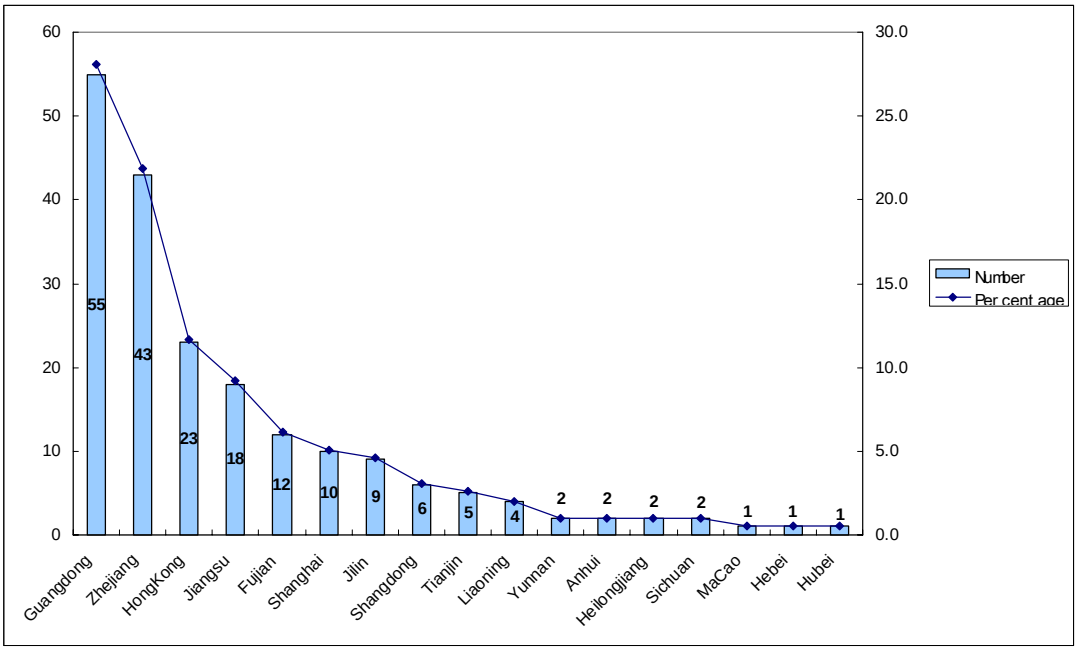

Figure 4.1. Geographic distribution of FSC (FM/CoC, CoC) certified wood products companies (population)

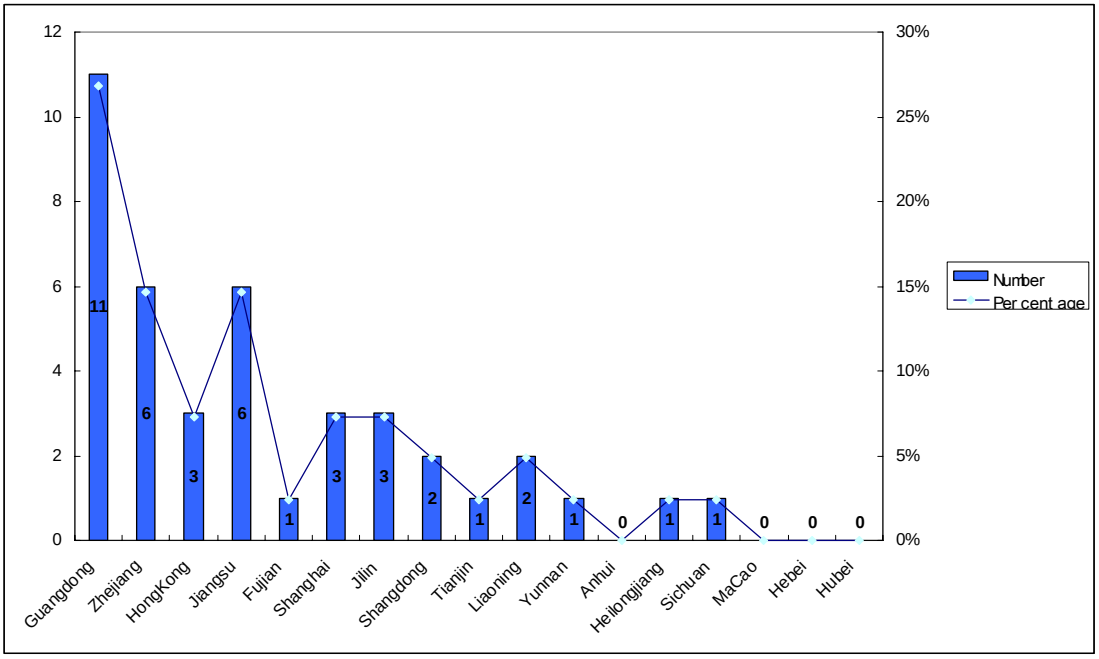

Figure 4.2. Geographic distribution of FSC (FM/CoC, CoC) certified wood products companies (sample)

Nearly half (46.3%) of the respondent companies were domestic private companies (Table 4.1), followed by wholly foreign-owned enterprises (29.3%), joint venture companies (14.6%) and state-owned enterprises (9.8%). There have been great changes since 2001 when most of the certified wood products companies were wholly foreign-owned companies and there were no domestic private companies at all according to Xu and Zhao's (2002) survey of CoC certified companies in China. The certification of domestic private companies indicates the broader influence of this new trend within the forest products industry in China.

Table 4.1. Business types of FSC (FM/CoC, CoC) certified wood products companies

Business Type	Frequency	Percentage
Domestic private company	19	46.3%
Wholly foreign-owned enterprise	12	29.3%
Joint venture company	6	14.6%
State-owned enterprise	4	9.8%
Total	**41**	**100%**

Of the 41 companies included in the study, there were two certified forest farms with their downstream wood mills located in Northeastern China (Table 4.2). Most of the FSC (CoC) certified companies are wood products manufacturers[9](31 companies, 75.6%). There were 8 companies (19.5%) that specialized in trading and other services. Compared to the population demographics, the sample has a similar proportion with respect to the major business that certified companies are involved in (Figures 4.3 and 4.4).

[9] The companies specialized in wood products manufacturing with trading divisions are grouped into "manufacturers".

Table 4.2. Major business of FSC (FM/CoC, CoC) certified wood products companies

Major Business	Frequency	Percentage
Forest farms & manufacturing	2	4.9%
Manufacturing	19	46.3%
Manufacturing & Trading	12	29.3%
Trading	6	14.6%
Other	2	4.9%
Total	**41**	**100%**

Considering the number of employees of the responding companies (Table 4.3), there were 12 companies (29.3%) with more than 1,000 employees, 10 companies (24.4%) with between 500 and 1,000 employees, 13 companies (31.7%) with between 100 and 499 employees, and only 6 companies (14.6%) with less than 100 employees. The large number of employees illustrates the labor intensive characteristic of the forest products industry.

Table 4.3. Number of employees of FSC (FM/CoC, CoC) certified wood products companies

Number of employees	Frequency	Percentage
Less than 100	6	14.6%
100 – 499	13	31.7%
500 – 1000	10	24.4%
More than 1000	12	29.3%
Total	**41**	**100%**

More than half (51.2%) of the companies earned over RMB ¥ 100 million (US$12.6 million) of total annual sales in 2006 (Table 4.4), which qualifies these companies as being medium to large sized. There are only 2 (4.9%) companies that reported less than RMB ¥ 10 million (US$1.3 million) of annual sales in 2006. The rest of the companies (44.9%) are small to medium-sized companies with annual sales between RMB ¥ 10 million (US$1.3 million) and RMB ¥ 100 million (US$12.6 million).

Table 4.4. Annual Sales of FSC(FM/CoC, CoC) certified wood products companies in 2006

Annual sales (2006)[1]	Frequency	Percentage
Less than ¥ 10 million (US$1.3 million)	2	4.9%
¥ 10 million (US$1.3 million) - ¥ 40 million (US$5.0 million)	3	7.3%
¥ 40 million (US$5.0 million) - ¥ 70 million (US$8.8 million)	5	12.2%
¥ 70 million (US$8.8 million) - ¥ 100 million (US$12.6 million)	10	24.4%
More than ¥ 100 million (US$12.6 million)	21	51.2%
Total	**41**	**100%**

[1] Average exchange rate between RMB ¥ and US$ in 2006 was 7.97 (US$1 = RMB ¥ 7.97) according to The People's Bank of China database.

The average percentage of export sales to total annual sales in 2006 for the certified wood products companies was 87.6%. Out of 39 responses, 19 companies (48.7%) are wholly export companies, and 19 companies (48.7%) had export sales of between 50% and 100%. This result underlines the fact that certified wood products are mainly supplying export markets.

Main Reasons for Forest Certification

In this study we investigated the main reasons which motivated companies to obtain certification. Out of 64 answers, 28 (43.8%) of them reported that it was a requirement from their foreign buyers of wood products (Table 4.5), and another 28 (43.8) reported it was a proactive marketing strategy in response to a perceived market trend (i.e., a green market). Five responses (7.8%) reported that it was a direct requirement from their parent companies, and only three responses (4.6%) reported it was the requirement of domestic buyers of wood products. These results suggest that the primary motivation for obtaining certification for most wood products manufacturers in China is the chance to take advantage of opportunities in foreign markets.

Table 4.5. Main reasons for forest certification

Main reasons for certification	Frequency	Percentage
The requirement from the foreign buyers	28	43.8%
The marketing strategy our company actively takes to keep up with the new trend	28	43.8%
The requirement from the parent company	5	7.8%
The requirement from the domestic buyers	3	4.6%
Total	**64**	**100%**

Product Mix of Certified Wood Products

The type of certified wood products being produced and exported can be roughly divided into 10 categories: indoor furniture and accessories (including indoor furniture, furniture parts, household articles, bathroom accessories, kitchenware products, mirrors, , wooden blinds, curtain rods, wooden fans, clothes racks, display racks etc.), craft products, stationeries and toys (including craftwork, photo frames, wood case, wood chopsticks, pencil, palette, wooden manikins, wooden easel, wooden toys etc.), outdoor furniture and accessories (including outdoor furniture, hanging chairs, hammocks, umbrellas, gazeboes, tents, birdhouses, wood flowerpots, outdoor lanterns, etc.), wood materials (including sawn timber, plywood, particleboard, block-board, finger joint board, MDF, engineered wood, veneer, dowels, sawdust etc.), garden and BBQ tools (including hammers, axes, scissors, chisels, BBQ trolleys, BBQ tools, etc.), wood flooring, doors and windows, logs, pulp and paper, and other wood products (including cosmetic appliances, wood tools, wood boxes, wooden cues, wood spindles, wood ceilings, health care products, etc.). Most of the certified wood products are small piece, uni-material, final products, which entail less complexity in material classification and control in the chain of custody process relative to large piece, multi-material, and semi-finished products. In Xu and Zhao's (2002) study, some manufacturers complained about the complicated percentage calculation for certified wood products which restricted the certification of complex products made using multiple wood components.

Comparisons of the product mix between the population and the sample is provided in Figures 4.3 and 4.4. The sample appears to be consistent with the population product mix, although the proportion of wood materials was lower and the proportions of flooring products and garden/BBQ tools were somewhat higher in the sample.

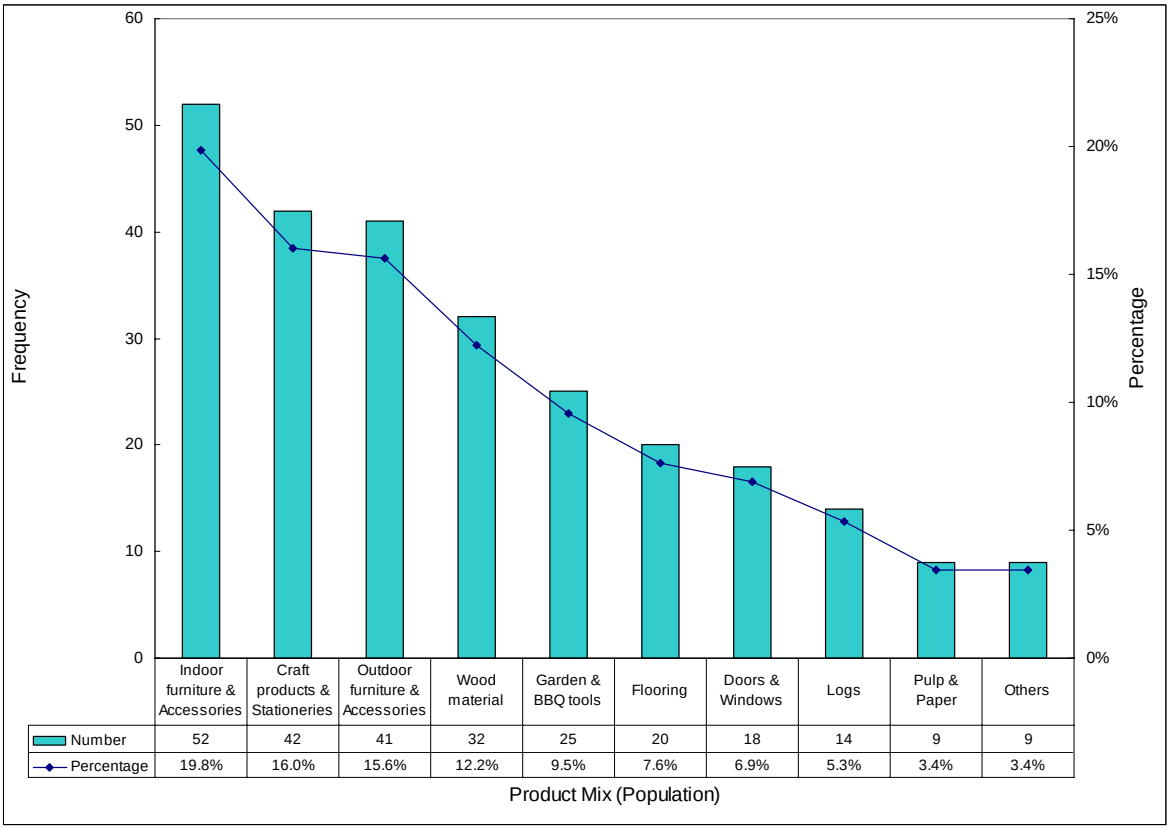

Figure 4.3. Product mix of certified wood products (Population)

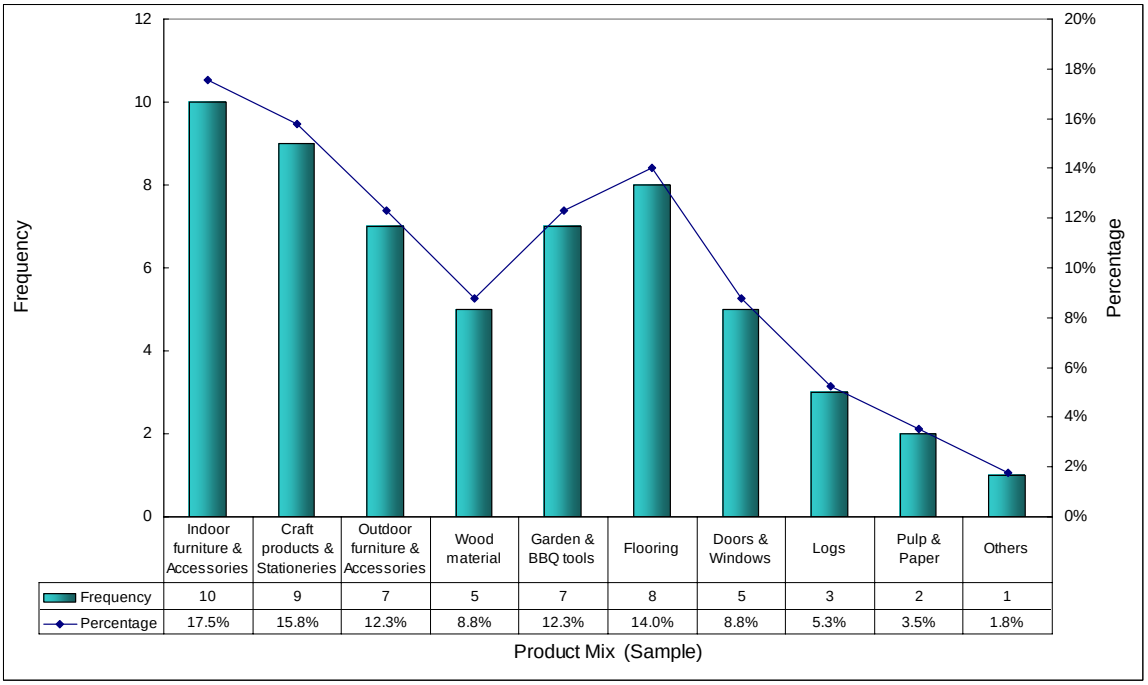

Figure 4.4. Product mix of certified wood products (Sample)

This makes sense since it is more difficult to obtain a price premium for primary wood products whereas it is much more likely that consumers in the United States and Europe markets would be willing to pay a price premium for wood products such as flooring and garden/BBQ tools.

Major Markets for Certified Wood Products

Europe and North America are the most important end markets for certified wood products, which in our study account for 83.5% of all end markets (Table 4.6). Thirty five companies reported exporting certified wood products to Europe, and the average proportion of their sales to this market was 54.6%. Another 30 companies reported exporting to the United States, and the average proportion of their sales to this market was 29.8%. A total of 11 companies reported exporting to Canada, and the average proportion of their sales to this market was 8.4%. Beside these three major markets, Australia, Japan, China, and Taiwan were minor markets for certified wood products.

Three companies (3.3%) reported they had markets in China, and all of them are raw material manufacturers and traders, manufacturing or selling logs and other wood raw materials to manufacturers in China to make products for export. Therefore it appears that a consumer market for certified wood products has not yet developed in China.

Table 4.6. End markets and average proportion of sales for each end market of certified wood products

End markets	Frequency	Percentage	Average proportion of sales for each end market[1]
Europe	35	38.4%	54.6%
United States	30	33.0%	29.8%
Canada	11	12.1%	8.4%
Australia	5	5.5%	1.6%
Japan	4	4.4%	0.6%
China	3	3.3%	2.8%
Other	3	3.3%	2.2%
Total	**91**	**100%**	**100%**

[1] The average proportions were calculated without the missing data.

Certified Wood Raw Material Supply

With only four domestic certified forest areas in China, most certified wood is sourced from foreign countries (Table 4.7). The United States is the most important supplier of certified wood, with 20 companies reporting this origin, and the proportion of certified wood from the United States is 24.9%. New Zealand and Brazil are the second largest sources for certified wood, with 14 companies reporting these two origins. The average proportion of the certified wood from New Zealand is 18.5%, and for Brazil it is 12.4%. Besides these three countries, Canada, Indonesia, China, European countries and South Africa also supplied certified wood to Chinese wood manufacturers. A total of 8 companies reported that they sourced certified wood from domestic forest farms with the proportion of total supply being 14.5%, which to some degree indicates the geographic advantage of local certified forest farms. With respect to Russia, although it is the largest source for wood raw material imports, the volume of imported certified wood from Russia is negligible.

The most frequently reported certified wood species are broad-leaf (hardwood) species from semitropical and temperate areas (Table 4.8), with 29 companies reporting their usage for an average proportion of 39.4% of all species. Another 23 companies reported using conifer (softwood) species for an average proportion of 35.1% of all the species, and 20 companies reported the usage of tropical hardwood species for an average proportion of 25.5% out of all the species.

The previous study by Xu and Zhao (2002) indicated there was a shortage of certified wood raw materials in China. In our study we asked the respondents about the supply of certified wood. Out of 39 responses, 22 responses (56.4%) reported there was a shortage of certified wood, and 17 (43.6%) reported no shortage of certified wood. With the majority of the respondents facing a supply shortage, this can be considered a problem which could lead to increased and unstable prices for certified wood, difficulties in production management, and reduced competitiveness in the market.

Table 4.7. Origins of certified wood raw materials and average proportion for each origin

Origin of certified wood	Frequency	Percentage	Average proportion of certified wood from each origin[1]
United States	20	22.7%	24.9%
New Zealand	14	15.9%	18.5%
Brazil	14	15.9%	12.4%
Canada	11	12.5%	8.5%
Indonesia	8	9.1%	8.1%
China	8	9.1%	14.5%
Europe	7	7.9%	10.8%
South Africa	4	4.6%	1.4%
Other	2	2.3%	0.9%
Total	**88**	**100%**	**100%**

[1] The average proportions were calculated without the missing data.

Table 4.8. Types of species of certified wood raw materials and the average proportion for each species

Types of species	Frequency	Percentage	Average proportion for each species[1]
Temperate hardwood	29	40.3%	39.4%
Softwood (conifer)	23	31.9%	35.1%
Tropical hardwood	20	27.8%	25.5%
Total	**72**	**100%**	**100%**

[1] The average proportions were calculated without the missing data.

Table 4.9. The existence of shortage of certified wood raw materials

The existence of shortage of certified wood	Frequency	Percentage
Yes	22	56.4%
No	17	43.6%
Total	**39**	**100%**

Distribution Channels for Certified Wood Products

The most common distribution channel used to export certified wood products is through distributors and wholesalers, which were the distribution channels for 33 companies in our sample. Retailers are the next most frequently used channel, with 20 companies having this channel to export their certified products. Trading companies in China are currently declining in importance because more companies now own the export rights for their products. Therefore only 9 companies reported using this channel. In addition, 9 companies sell their certified wood products to other wood products manufacturers either in China or foreign countries, which is not surprising given the strong outsourcing trend occurring in the developed countries.

Companies often use mixed channels to export their certified wood products depending on the market characteristics in different countries. Out of 41 respondents, 26 companies reported using multiple channels (more than one channel), and as many as three channels to maximize the market share for certified wood products.

Table 4.10. Distribution channels for certified wood products

Distribution channels	Frequency	Percentage
Distributors & Wholesalers	33	45.8%
Retailers	20	27.8%
Importing & Exporting companies	9	12.5%
Wood products manufacturers	9	12.5%
Other	1	1.4%
Total	**72**	**100%**

Cost and Benefit Analysis of Certified Wood Products

A strong motivation for companies to acquire certification is the opportunity to gain entry to European and North American markets, while it appears the profitability of certified wood products is, to some degree, less important for the time being. However, increased profitability will eventually influence the companies' marketing strategies for certified wood products. Ultimately the prospect of higher profits generated from certified wood products will encourage companies to compete in this market segment.

Sales of Certified Wood Products

Companies were asked to estimate their annual sales of certified wood products in 2006, and 36 valid answers were collected. The annual sales ranged from $0 to $100,000,000[10], with a mean of $3,484,595 (Table 4.11). The sum of annual sales in 2006 of all the sampled companies totaled $125,445,420. If we estimate the total sales of certified wood products in China using the average sales, the total market is approximately $697 million. The average and sum of certified wood products sales in 2006 indicate that this is still a small market.

Table 4.11. Annual sales (2006) of certified wood products (Value: USD)

Statistics	Minimum	Maximum	Mean	Sum
Value[1]	0.00	100,000,000	3,484,595	125,445,420

[1] The average exchange rate of 2006 (US$1 = RMB ¥ 7.97) was used to exchange RMB to USD.

Companies were asked to estimate the percentage of sales of certified wood products out of their total export and domestic wood products annual sales in 2006. Approximately 18.1% of respondents total wood products sales were certified in 2006. These sales of certified wood products were mostly going to export markets, with the average proportion of certified wood products sales accounting for almost one fifth (19.1%) of export wood products sales, while the certified wood products proportion of domestic wood products sales was negligibly small (0.2%). This fact again supports the observation that the domestic market for certified wood products has not yet developed in China. (Table 4.12, Figure 4.5)

Table 4.12. Average proportion of sales of certified wood products in 2006

Proportion of sales of certified wood products in 2006	Average proportion
Percentage of total wood products annual sales that was certified	18.1%
Percentage of export wood products sales that was certified	19.1%
Percentage of domestic wood products sales that was certified	0.2%

[10] The average exchange rate of 2006 (US$1 = RMB ¥ 7.97) was used to exchange RMB to USD.

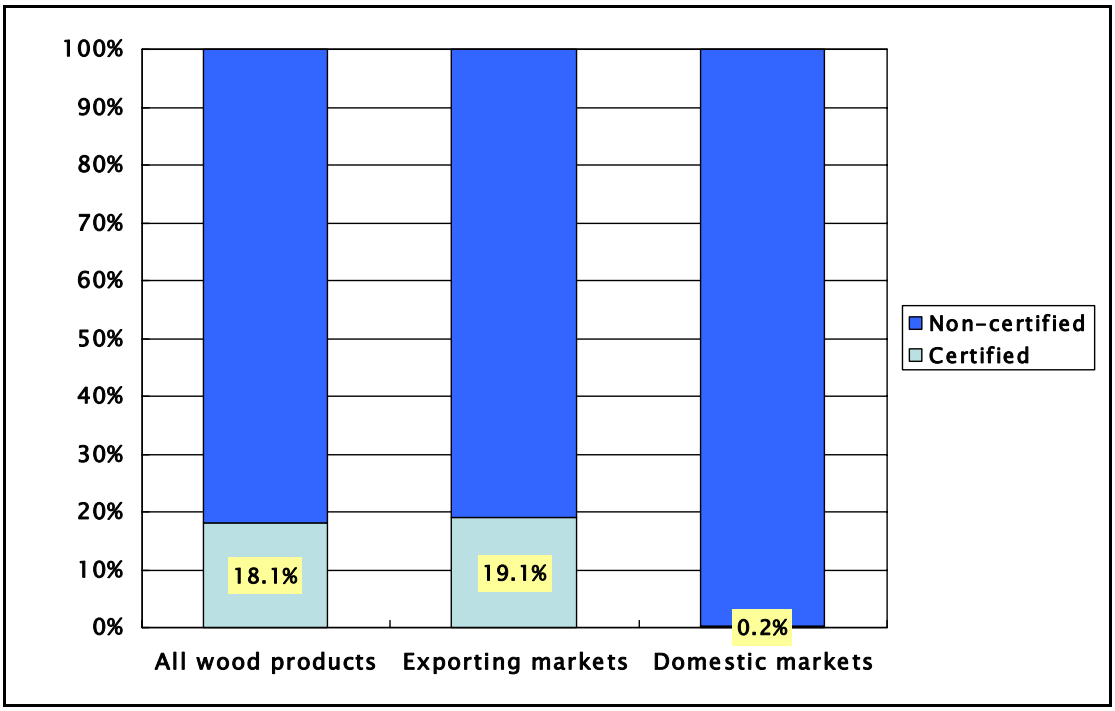

Figure 4.5. Average proportion of sales of certified wood products in 2006

Of 41 responses, 16 companies (39.0%) reported an increase in their sales of certified wood products between 2005 and 2006, with an average increase of 22.7% (Table 4.13). Only 1 company (2.4%) reported a decrease of sales between 2005 and 2006 and they failed to give an estimation of their sales decrease. In addition, 12 companies (29.3%) reported no change in sales between 2005 and 2006, while 12 companies (29.3%) reported they did not know or this information was not available, mainly because these companies had only received their certification in 2006 and were thus unable to make a comparison between 2005 and 2006.

Considering the 29 companies that were able to make a valid comparison of sales between 2005 and 2006, more than half of the companies (55.2%) reported increased sales of certified wood products with an average increase of 22.7%, while only one company's sales of certified wood products had decreased. In addition, 41.4% of the companies' sales of certified wood products remained stable.

Table 4.13. Sales fluctuation of certified wood products from 2005 to 2006

Sales fluctuation from 2005 to 2006	Frequency	Percentage	Average increase (decrease) rate
Increase	16	39.0%	22.7% [1]
Decrease	1	2.4%	NA[1]
Neither increase nor decrease	12	29.3%	
Do not know or not available	12	29.3%	
Total	**41**	**100%**	

[1] The average rates were calculated without the missing data.

Increased Costs of Certified Wood Products

There are three major factors behind the increased cost of certified wood products. The first two factors can be considered to be direct costs: the increased cost of buying certified wood raw materials and the cost of obtaining FSC (FM/CoC, CoC) certification. The third factor can be considered an indirect cost: the cost incurred by management adjustments, equipment upgrading, employee training, and establishing a product tracking system. This study investigated the cost increases associated with certified wood products by asking the companies to rank how important each of these three factors were using a 3-point scale where 1 indicates the most significant factor and 3 indicates the least significant factor. In addition, we asked the companies to estimate the percentage of cost increase of certified raw materials, and the cost of certification evaluation and audit fee per year.

The results indicate that most of the companies (36 out of 41 companies, or 87.8%) considered the increased cost of certified wood raw materials to be the most significant cost factor, mainly because the cost for forest management certification is high and much certified wood is imported from other countries (Table 4.14). A total of 25 companies (61.0%) reported that the costs of certification, including the cost of evaluation and the audit fee, were a moderately significant factor. Finally 24 companies (58.5%) reported the indirect costs incurred from management and production changes were the least significant factors in the cost increase of certified wood products.

Table 4.14. Factors for cost increase of certified wood products

Factors for cost increase	Most significant factor (1)		2		Least significant factor (3)		Mean
	Freq.	%	Freq.	%	Freq.	%	
Increase cost of certified wood raw materials	**36**	**87.8%**	2	4.9%	3	7.3%	1.20
Cost of evaluation and audit fee of certification	2	4.9%	**25**	**61.0%**	14	34.1%	2.29
Cost from management and production, etc.	3	7.3%	14	34.2%	**24**	**58.5%**	2.51

As stated above, the increased cost of certified raw material was rated as the most significant factor in the price premium for certified wood products. Table 4.15 shows that the average percentage of cost increase for certified wood raw materials was 22.3% compared to non-certified wood raw materials, with the highest increment of 200% and lowest increment of 0%.

Table 4.15. Statistics on percentage of cost increase for certified raw materials

Statistics	Minimum	Maximum	Mean
Percentage	0.0%	200.0%	22.3% [1]

[1] The mean was calculated without the missing data.

The cost of certification can be divided into two components. The first is the initial evaluation fee for certification which is normally valid for five years, while the second is the semiannual audit fee which companies pay twice a year to ensure compliance with the requirements of the certification program. A total of 36 companies estimated that the initial evaluation fee for certification ranged from $627 to $250,941 with an average cost of $18,393 (Table 4.16). In addition 37 companies estimated the total annual cost of the audits for certification ranged from $376 to $37,641 with an average of $5,359. The

wide range of certification costs was caused by the much higher costs reported by the two forest farms with forest management (FM) certification which was almost 10 times higher than the cost of chain-of-custody (CoC) certification. In reviewing the data, we can estimate that the average cost of forest certification is $9,037 per year.

Table 4.16. Statistics of cost of evaluation and audit fee of forest certification (all companies): USD

Statistics	Minimum	Maximum	Mean
Evaluation fee[1]	627	250,941	18,393[2]
Audit fee (per year)[1]	376	37,641	5,359[2]

[1] The average exchange rate of 2006 (US$1 = RMB ¥ 7.97) was used to exchange RMB to USD.

[2] The means were calculated without the missing data.

However, if we exclude the two forest farms and only calculate the cost of certification for the manufacturers and traders with CoC certification, the average cost of evaluation of certification decreased to $8,404, and the average audit fee of certification per year decreased to $4,231. Based on these costs, we can calculate the average total cost of forest certification per year is $5,911. However, it is important to note that the annual cost CoC certification is likely to decline over time as the initial adjustments in management and manufacturing practices that are required for certification are implemented and they become part of the routine operating procedures for the companies.

Table 4.17. Statistics of cost of evaluation and audit fee of forest certification (two forest farms excluded) Value: USD

Statistics	Minimum	Maximum	Mean
Evaluation fee[1]	627	50,000	8,404[2]
Audit fee (per year)[1]	376	30,000	4,231[2]

[1] The average exchange rate of 2006 (US$1 = RMB ¥ 7.97) was used to exchange RMB to USD.

[2] The means were calculated without the missing data.

Price Premium for Certified Wood Products

In our study we identified four markets: Europe, the United States, Canada and China, and asked the respondents to estimate the percentage of price premium for certified wood products compared to non-certified wood products in each of these markets. The average price premium for European markets was estimated to be 6.3%, the highest within the four end markets (Figure 4.6). For the United States, the respondents reported an average price premium of 5.1%. Canada returned a 1.5% price premium and for China the price premium was 2.8%. However it is important to note that only three companies reported selling certified wood products in the domestic Chinese market.

From the results we observe that the price premium for certified products was substantially lower than the increased costs associated with the certification process. Even for European markets which are considered to be the most environmentally sensitive markets in the world, the price premium is lower than 10%. North American markets provide an even lower price premium for certified wood products, which is much lower than the 12.5% price premium reported in the consumer willingness-to-pay literature for certified wood products in the United States (Ozanne & Vlosky 1997).

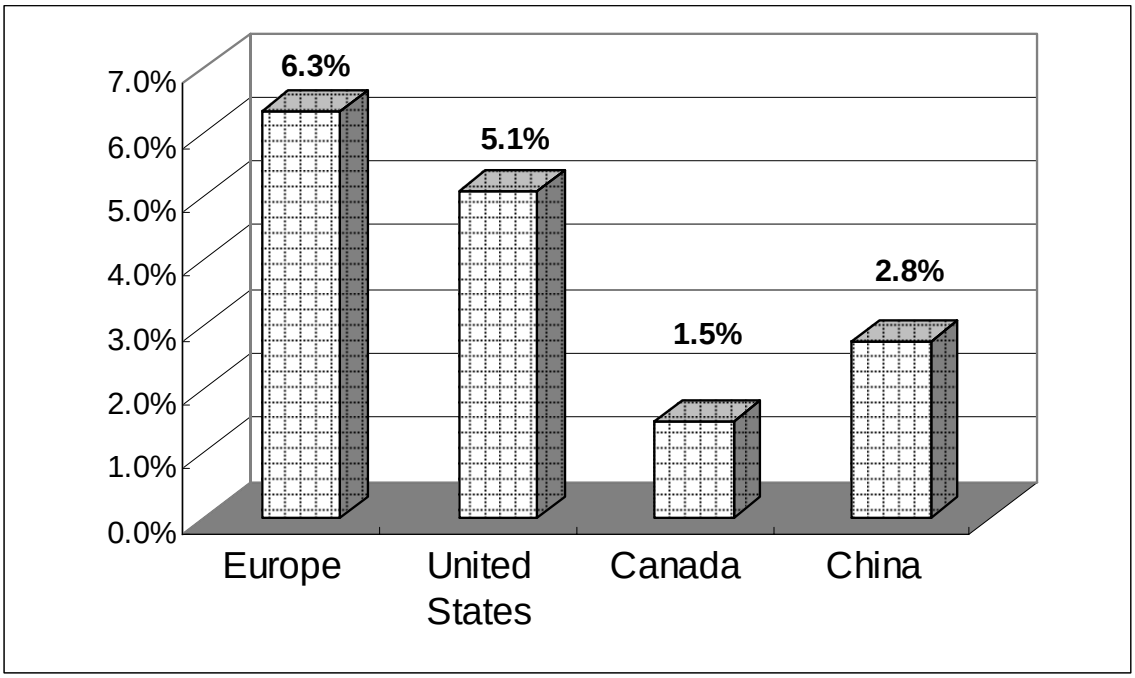

Figure 4.6. Price premium for certified wood products compared to non-certified wood products in the four end markets

Profit Margin of Certified Wood Products

Considering the 41 respondents, 10 companies (24.4%) reported an increased profit margin for certified wood products compared to non-certified wood products with the average increase being 6.7% (Table 4.18). Another 16 companies (39.0%) reported a decreased profit margin for certified wood products compared to non-certified wood products with the average decrease being 5.6%. Finally, 15 companies (36.6%) reported an unchanged margin for certified wood products. The average profit margin for all companies was -0.7%, indicating the average profit margin for certified wood products is slightly lower than for non-certified wood products.

Although nearly one-fourth of the companies reported an increased profit margin for certified wood products, the profitability of certified products is still not clear and depends on the selling price, cost control, management improvement and raw material supply. For the more than one-third of the companies that reported a lower profit margin, this niche market seems full of uncertainties. Although market entry is a main motivation for many companies gaining certification, only a promise of future profitability will keep these companies in this market segment for the long term.

Table 4.18. Profit margin fluctuation of certified wood products

Profit Margin Fluctuation	Frequency	Percentage	Average increase (decrease) rate
Increase	10	24.4%	6.7%[1]
Decrease	16	39.0%	5.6%
Neither increase nor decrease	15	36.6%	NA
Total	**41**	**100%**	

[1] The average rates were calculated without the missing data.

Attitudinal Evaluation on Forest Certification

Eight attitudinal judgments were evaluated to further investigate respondent's perceptions of the benefits of certification. Respondents' attitudes to the statements were evaluated using a 7-point Likert-like scale ranging from strongly disagree (1) to strongly agree (7). The statements covered issues such as market entry, market maintenance, competitiveness, public image, and the future demand for certified wood products.

Statistical results show that for most of the statements, companies generally have a positive attitude toward certification (Table 4.19). Generally, survey respondents felt that certification can help them enter new markets, or maintain current markets (especially in foreign markets); can increase the competitiveness of their products; and can enhance the public image of their companies. Respondents also felt that the future market growth and profitability for certified wood products would increase. In contrast, respondents felt that certification would not increase their competitiveness in the domestic Chinese market.

The overall positive attitudes towards certification can help explain the rapid acceptance of FSC certification in recent years. This indicates that the wood products manufacturers in China who are targeting overseas markets are quite receptive to the new market trend of CoC certification.

Table 4.19. Responses of eight 7-point Likert scale judgments on certification related issues

Judgments	1	2	3	4	5	6	7	Mean[1]	p-value[2]
Certification helps our company to enter target markets.	0	0	0	3	3	19	16	6.17	**0.000 (+)**
Certification helps our company to maintain target markets.	0	0	0	5	9	16	11	5.80	**0.000 (+)**
Certification helps our company to be more competitive in target markets.	0	0	0	2	6	19	14	6.10	**0.000 (+)**
Certification helps our company to increase the market share of our products in foreign markets.	0	0	1	2	4	17	17	6.15	**0.000 (+)**
Certification helps our company to increase the market share of our products in domestic markets.	1	14	7	11	5	3	0	3.34	**0.003 (–)**
Certification helps our company to enhance its public image.	0	0	0	7	8	15	11	5.73	**0.000 (+)**
I believe the annual sales of certified wood products will increase in the next 2 years.	0	1	1	6	11	16	6	5.41	**0.000 (+)**
I believe the annual income of certified wood products will increase in the next 2 years.	2	1	4	5	12	12	5	4.95	**0.000 (+)**

[1] Scale: "7 = Strongly Agree", "6 = Agree", "5 = Somewhat Agree", "4 = Neutral", "3 = Somewhat Disagree", "2 = Disagree" and "1 = Strongly Disagree"

[2] The *p*-value is based on one-sample *t*-test for departure from the scale center of 4.

In addition, two open-ended questions were asked, one question asked about the main reasons why certified companies chose FSC certification over other certification programs, and the other asked about the overall attitudes (positive or negative) companies have of FSC certification and its influence on the international competitiveness of the forest products industry in China.

For the first question, excluding two companies that are both certified by FSC and PEFC certification programs, 18 companies reported the direct requirement from their purchasers, 13 companies reported that it helped them enter oversea markets and 12 companies mentioned that FSC is the most credible, highly recognized and international certification program in the world. Three respondents consider FSC certification as a part of the environmental responsibility for their companies.

As for the overall evaluation of FSC certification and its influence on the international competitiveness of the forest products industry in China, 31 companies viewed it as a positive factor which would help the industry enter new markets (especially markets in Europe and the United States), increase market share, be more profitable, build a better public image, take environmental responsibilities and improve product quality. Four companies view it as a neutral factor. Two companies gave their comments explaining both the short term influence and long term influence, wherein the short term influence could be negative because of cost increases and the narrow coverage of FSC currently in China, while the long term influence could be positive if it finally helps companies gain market share in oversea markets. One company reported that it was a varying situation dependent on how well the company could cope with the complexity of issues surrounding certification, and only when companies could successfully manage the situation would environmental and economic benefits be achieved at the same time.

Current Problems of Forest Certification

Companies were asked to describe (using an open-ended question) the problems they were facing related to certification. By summarizing these responses, the problems related with certification can be divided into four categories.

The first category of problems companies face is the issue of promoting FSC in order to publicize it to a broader group of people including buyers, consumers, policy makers and the general public. Another is the lack of local accredited certification bodies and relevant training organizations that are knowledgeable about the FSC certification program which brings high costs and inconvenience to local companies that must apply to foreign accredited certification bodies.

The second category of problems refers to the high cost of certification. As calculated previously, the total cost of evaluation and audit fee of certification is around $5,911 per year, which is a heavy burden especially to small scale factories. As more and more companies become certified, especially manufacturers located along the eastern and southern coast of China, domestic accredited certification bodies are needed to bring down the overall cost.

The third category of problems is related to the supply of certified wood raw materials. Since more than 90% of the companies reported using imported certified raw materials, the origin and supply of certified wood is of great concern. The results show that 56.4% of companies reported they were facing a shortage of certified wood, which results in increase raw material costs and increased complexity in manufacturing cost control and production management. The high price of imported certified wood (approximately 22.3% higher than non-certified wood) adversely affects the cost of certified wood products and reduces their competitiveness.

The fourth category of problems can be viewed as an extension of the third category, where companies are concerned about the small number of certified domestic forest farms that could help alleviate the shortage of supply and bring down the cost of certified wood raw materials.

Comparisons between Certified Wood Products Manufacturers and Traders

In this study, we divided the sample frame into three different groups: forest farms with wood mills, wood products manufacturers (some manufacturers also have trading divisions), and traders (some traders also have other service divisions such as design). The subcategories include 2 forest farms with wood mills, 31 manufacturers and 8 traders. Since there is a lack of cases in the group of forest farms with wood mills, comparisons are made only between manufacturers and traders to see if there are significant differences related to certification.

Fourteen related items were compared between these two groups of certified companies (Table 4.20). The results show that wood products manufacturers are more likely to face a shortage of certified wood than traders ($\chi^2 = 3.75$, $p = 0.053$), partly because manufacturers are directly dealing with the supply of certified wood through the whole production process, which makes them more sensitive to supply shortages than traders. The price premium that manufacturers obtain for certified wood products is lower than what traders receive ($t = -1.76$, $p = 0.082$), which leads to a lower profit margin for manufacturers relative to traders ($t = -1.75$, $p = 0.088$). The reason for this is the increasing cost of certified wood products as they pass through the supply chain, which means the increased cost of manufacturers is passed to traders, with traders adding additional cost due to their own certification. Therefore the traders aim for a high price premium in order to cover their costs. Other possible reasons for the differences can be explained by the different bargaining power each party can have through the supply chain, and it suggests that the traders have more bargaining power than do the manufacturers.

Table 4.20. Comparisons between certified wood products manufacturers and traders on forest certification

Items of comparisons	Mean		Statistical results	p – Value[1]
	M_1*	M_2*		
End markets of certified wood products	NA	NA	$\chi^2 = 0.96$	0.92
Origin of certified wood	NA	NA	$\chi^2 = 4.06$	0.54
Species of certified wood	NA	NA	$\chi^2 = 1.74$	0.42
Existence of shortage of certified wood	NA	NA	**$\chi^2 = 3.75$**	**0.053**[2]
Sales of certified wood in 2006 (USD)	802046.13	12964240.90	$t = -0.98$	0.36
Percentage of ***total*** wood products annual sales that was certified	0.17	0.25	$t = -0.71$	0.48
Percentage of ***export*** wood products sales that was certified	0.18	0.26	$t = 0.62$	0.54
Percentage of ***domestic*** wood products sales that was certified	0.00	0.00	$t = 0.53$	0.60
The significance of three factors for cost increase of certified wood products (Table 4.14)	1.19	1.00	$t = 1.00$	0.32
	2.32	2.38	$t = -0.25$	0.81
	2.48	2.63	$t = -0.55$	0.59
Percentage of cost increase for certified raw materials	0.23	0.23	$t = -0.02$	0.99
Cost of evaluation and semiannual audit fee of certification (USD)	6321.78	15170.96	$t = -1.32$	0.23
	2681.35	9461.42	$t = -1.58$	0.16
Price premium for certified wood products	**0.05**	**0.08**	**$t = -1.76$**	**0.082**[3]
The fluctuation of profit margin of certified wood products	**–0.02**	**0.03**	**$t = -1.75$**	**0.088**[4]
The evaluations to eight statements based on 7-point Likert scale (Table 4.18)	6.13	6.25	$t = -0.35$	0.73
	5.65	6.25	$t = -1.58$	0.12
	6.06	6.13	$t = -0.18$	0.86
	6.16	6.00	$t = 0.41$	0.68
	3.39	3.00	$t = 0.71$	0.48
	5.65	5.88	$t = -0.54$	0.59
	5.29	5.63	$t = -0.74$	0.47
	4.71	5.50	$t = -1.32$	0.20

* M_1 refers to the means of certified wood products manufacturers, and M_2 refers to the means of certified wood products traders.

1 The significance level $\alpha = 0.10$.

2 Chi-square stats show that the percentage of companies facing shortage of certified wood supply within manufacturers is higher than the percentage within traders.

3 The price premium manufacturers can get for certified wood products is lower that traders can get.

4 The profit margin manufacturers can get for certified wood products is lower that traders can get.

Statistical Inference on Profit Margin of Certified Wood Products

The profit margin for certified wood products is an issue important for most companies, since profitability will ultimately determine the marketing strategies for certified wood products.Profit margin is fundamentally influenced by two factors: the price of certified products and the cost of certified raw material inputs. In our study, the percentage of the price premium for certified wood products relative to non-certified wood products was investigated based on the four end markets: Europe, the United States, Canada and China. Since China lacks a domestic market for certified wood products, only the other three markets will be investigated for a relationship between price premium and profit margin. For the purpose of data analysis, the average price premium for these three end markets was calculated. The cost increase of certified wood products can be caused by many reasons, and in our study, the most salient ones (the cost increase of certified raw materials and the cost of evaluation and audit fee of certification) were investigated. However, we could not estimate the cost increase of certified wood materials compared to non-certified wood materials because of insufficient data related to the indirect costs incurred through certification.

Using exploratory data analysis, a positive relationship between profit margin and price premium was estimated (Figure 4.7):

$$\mathbf{Y^* = -0.036 + 0.327\ X^{**}}$$

Y* is the percentage of change in the profit margin for certified wood products compared to non-certified wood products, with the negative value reflecting a decreasing profit margin compared to non-certified wood products; the positive value reflecting an increasing profit margin compared to non-certified wood products.

X** is the average price premium for certified wood products that each company can get across all three end markets compared to non-certified wood products.

The results of the linear regression analysis shows that a 1% increase in the price premium would lead to a 0.3% increase in profit margin compared to non-certified wood products. Analysis of the regression equation indicates that the slope parameter is significantly different from “0” (at the 1% level), and the intercept parameter is also significantly different from “0” (at the 1% level).

Using this equation, it appears that when the price premium equals 11.0%, the profit margin for certified wood products will be the same as non-certified products (when X = 0.110, Y = 0.00). This means that only when the company can get an average price premium of more than 11% will the profit margin for certified wood products be higher than non-certified wood products. In the case that there were no price premium for the certified wood product, the profit margin would be 3.6% less than for the same non-certified wood product (when X = 0, Y = -0.036).

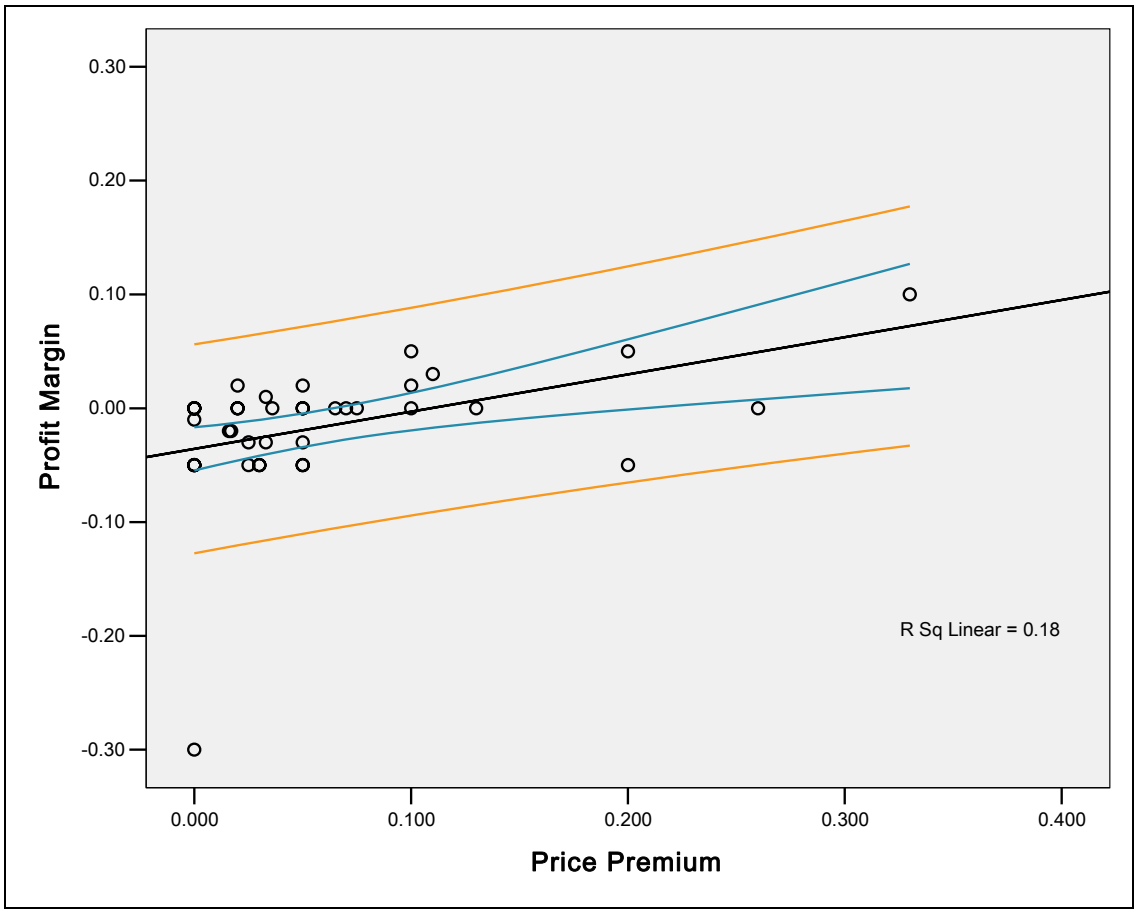

Figure 4.7. Simple linear regression between profit margin and price premium of certified wood products

Chapter 5 Conclusions

The survey on FSC Chain-of-Custody certified wood products companies in China was conducted in March 2007 through an email questionnaire consisting of 35 questions. From a population of 200 certified companies that were sent the survey, 41 usable responses were returned, resulting in an adjusted response rate of 25.3%.

Demographic analysis on these 41 certified companies shows that most of the certified companies (73.2%) are located along the southern and eastern coasts of China, extending from Guangdong province, Hong Kong, Fujian province, Zhejiang province, Shanghai, to Jiangsu province, where the manufacturing base is one of the most important in China, especially for light industry. Nearly half of the certified companies (46.3%) are domestic private companies, which is a significant difference compared to Xu and Zhao's study in 2001 when no domestic private company was certified, indicating that local wood manufacturers in China are adopting the new trend of certification. The majority of certified companies (75.6%) in China are wood products manufacturers or manufacturers with a trading branch, while only two wood manufacturers have their own certified forest farms (both are located in Northeast China). The scarcity of the domestic certified wood supply makes most of the companies dependent on imported certified wood. More than half of the certified companies are medium to large sized companies with more than 500 employees and annual sales in excess of US$13 million (RMB ¥ 100 million). Certified wood products companies are highly export oriented with 87.6% of total annual sales being to export markets in 2006.

For wood products manufacturers in China the primary motivation for certification is to enhance market entry into European and North American markets, therefore the main reasons for certification are the requirement of foreign buyers and an active marketing strategy to develop competitiveness in these markets. Whether the decision to get certified is a passive or active strategy, most of the companies in our sample perceive that certification could be a good strategy to enter a specific market.

There are ten major types of certified wood products comprising the certified wood products mix. Within these products, some common characteristics are shared, such as simple material usage, small size, and final products, which can be explained by the difficulty in material segregation and production control under Chain-of-Custody requirements.

As we stated before, Europe and North America are the dominant markets for certified wood products exported from China, with. 83.5% of the respondents exporting to these markets which corresponded to 92.8% of their certified wood products sales. Europe, as the most environmentally friendly market, accounts for more than a half of all certified wood products sales exported from China, followed by the United States with 29.8%, and Canada with 8.4%.

The United States supplies nearly one-fourth of the certified wood to Chinese wood products manufacturers, making it the most important source of certified wood raw materials. Compared to the end markets, the sources of certified wood are more varied. In addition to the United States, New Zealand, Brazil, Europe and China also provide more than 10% of the certified wood supply in China. From the certified hardwood exporters' perspective in United States, China was listed as one of the most important markets for certified hardwood exports from the US, mostly for certified hardwood raw materials used for manufacturing and re-exporting (Hrabovsky & Armstrong 2005). The most frequently used certified wood species are temperate hardwood species, accounting for nearly 40% of total usage. More than half of the companies reported facing a supply shortage of certified wood. The problem of the certified wood supply shortage was considered to be a substantial obstacle to chain-of-custody certification in China. The instability in the supply and price of certified wood causes many difficulties in the production management and cost control processes.

Certified wood products manufactured in China are exported to foreign markets mainly through distributors and wholesalers. In addition, retailers and import-export companies are also commonly used as distributional channels for certified wood products.

Cost and benefit issues were emphasized in the survey in order to better understand the factors influencing certification and its impact on the international trade of Chinese forest products. Although some business data is considered highly confidential, we still succeeded in collecting enough data to develop a general picture about the costs and benefits resulting from certification, and some statistical inferences were made with regards to the profitability of selling certified wood products.

The average sale of certified wood products by respondent companies in 2006 was $3,484,595 with a sum of $125,445,420 for all of the sampled companies. If we generalize the mean sales to the entire population (200 certified companies), the total sales of certified wood products in 2006 was approximately $697 million. This is only a small segment of the entire wood products market compared to the more than $20 billion worth of sales of wood products exported from China in 2006. For all the sampled companies, the average proportion of sales of certified wood products was less than one-fifth of their total wood products sales in 2006. Optimistically, nearly 40% of the companies reported an increase of sales of certified wood products between 2005 and 2006 with an average increase of 22.7%. Only one company reported a decrease in sales between 2005 and 2006.

Increased cost is a critical problem for the certified wood products companies in China. With the increased cost of certified raw materials, the cost of certification itself and the cost incurred from other aspects of the process, the costs of certified wood products are substantially higher than for non-certified wood products. For most of the manufacturers surveyed, the increased cost for raw material was the most significant component of the cost increase, with an average increase of 22.3% above non-certified wood cost. The cost for the evaluation and audit fee of certification differs greatly from forest farms with wood mills (FM/CoC) to manufacturers and traders (CoC), averaging $9,037 per year across all companies, or $5,912 per year for just manufacturers and traders. Because of the difficulty in obtaining data on the indirect costs of certification, it is impossible to calculate the overall cost increase for certified wood products compared to non-certified wood products.

Price premiums for certified wood products were neither stable nor substantial for most of the surveyed companies. European countries support a relatively higher price premium (6.3%) than the other end markets, and the United States has a slightly lower price premium (5.1%).

Compared to non-certified wood products, one fourth of the companies reported obtaining a higher profit margin with an average increase of 6.7%, while 39% of the companies reported a lower profit margin of 5.6%. The profit margin is determined by the price and cost of certified wood products, wherein higher prices will increase the profit margin. A simple linear regression model between profit margin (dependent variable) and average price premium (independent variable) was developed to assess the relationship between these two factors. The regression model shows that certified wood products will be more profitable than non-certified wood products for a price premium of 11% or more.

For the eight attitudinal statements evaluated by the respondent companies, the results were mostly positive except for the statement that certification will help them increase their market share in the domestic market. This indicates that certified wood products companies are generally optimistic about certification, and that certification is perceived as a strategy to help them improve their competitiveness in the future.

FSC is one of several influential forest certification programs in the world and the primary certification program used in China. As of November 1st, 2006, there were 200 FSC certified companies, and just 4

PEFC certified companies. However many companies have complained about the lack of effort in publicizing the FSC program to a broader group of people including government, business, academia and the public. Currently there is no FSC accredited certification body in China, which contributes to the high cost of certification.

To date, China has not developed an independent forest certification program having specific criteria and principles for its domestic forest resources[11]. Considering the fact that certified wood products are now mainly targeted to foreign markets, some tradeoff between a domestic certification program and international market recognition must be made to ensure the international acceptance of certified wood products exports. Therefore suggestions about developing a domestic forest certification program under the FSC or PEFC framework with mutual recognition from FSC or PEFC have been voiced. However no concrete action has been taken on this issue yet.

Another problem many companies are facing with certification is the restricted supply of certified wood raw materials. With only four domestic forest farms having been certified, most wood products manufacturers are highly dependent on imported certified wood. The short supply of certified wood is considered a big drawback to certification in China. To solve this problem, many of the certified companies are expecting more domestic forest farms will be certified in the future. However, except for some large state-owned or private forest farms, the large number of family or individually managed small forest lands have more difficulty in becoming certified because of the high cost and other problems. Although FSC does have a group certification program for small and dispersed forest farms, the procedures to obtain a group certification will be very complex. To a large extent, this is because the co-operative associations of small family-owned forests are still at the initial development stage and then only in a limited area of China (Lü, Shi & Zhang 2005). To resolve the shortage of certified wood in the short-term, companies will need to extend their channels for imported certified wood and enhance their communications with importers.

In summary, this study on forest certification and its influence on the international trade of forest products industry in China provided the following five observations:

1. Forest certification is a new trend for wood products manufacturers in China, especially for export-oriented manufacturers. Wood products manufacturers who are targeting the European or North American markets will have to consider their reactions to the upcoming trend of green markets, and try to find appropriate strategies to adopt forest certification in their marketing plans.

2. For certified wood products companies, forest certification provides a strong tool to enter new markets, maintain their current markets, improve the competitiveness of their products or build up a positive public image, but does not promise a profitable return. Therefore cost control of certified wood products will be a critical issue for certified companies in China.

3. Certified wood products companies show positive attitudes on the overall influence of forest certification, and are optimistic on the prospects of certified wood products with a bigger market share and higher profitability in the future.

4. Except for a few state-owned forest farms, domestic forest farms still have substantial obstacles to overcome in obtaining forest certification. Therefore, manufacturers have to deal more efficiently with log importers for stable and sufficient sources to solve the problem of supply shortages for certified wood raw materials.

[11] The State Forestry Administration started to set up "Criteria and Principles of Forest Certification for China" from 2002, while no official version of the C & Is have been approved yet.

5. China's State Forestry Administration is setting up its own national forest certification scheme and cooperating with the FSC in order to improve the process of certification for its own domestic forest resources and industry. In addition, it is working on the feasibility of mutual recognition with FSC or PEFC certification programs.

Literature Cited

Anderson, R. C., Laband, D.N., Hansen, E.N., Knowles, C.D. (2005). Price premiums in the mist. *Forest Products Journal*. **55**. 19 – 22.

Armstrong. S. J., Overton. T. S. (1977). Estimating non-response bias in mail surveys. *Journal of Marketing Research.* **14**. 396-402.

Cao, X. Z., Hansen, E. N., Xu, M. Q., Xu, B. M. (2004). China's furniture industry today. *Forest Product Journal*. **54**. 14 – 23.

Food and Agriculture Organization (FAO). (2005). *Forest Products Year Book 2003*. United Nations.

Godfrey, M. (2005). Growing on trees. *Eurobiz*. http://www.sinomedia.net/eurobiz/v200510/box0510.html

Hrabovsky and Armstrong. (2005). Global demand for certificated hardwood products as determined from a survey of hardwood exporters. *Forest Product Journal*. **55**. 28-35.

IKEA. (2007). The staircase model for solid wood, veneer, plywood and layer glued wood. IKEA internal database.

IKEA. (2007).

http://www.ikea.com/ms/zh_CN/about_ikea/social_environmental/resources.html

Ke, S., Wen, Y. Process, drive and interest analysis on institutional transition of China's forestry property rights. *Green China*. **2005 (20)**. 29 – 32.

Lu, W., Zhao, J., Lin, Y. (2003). The current condition and its prospects of forest certification. *World Wide Fund for Nature (WWF) Forest Certification Newsletter*. **5**. 1 – 4.

Lü, Y., Shi, J., Zhang, Z. (2005). The practice and reflection on the institutional reform of forest property rights in Fujian collective forest farms. *Journal of Nanjing Forestry University.* **5**. 78 – 82.

Magnus Löfmark. (2000). History of IKEA.

http://www.forest-trends.org/documents/meetings/shanghai_2001/ch_3_Lofmark_Sh.ppt

Nussbaum, R., Simula, M. (2005). *The Forest Certification Handbook*. London: Earthscan.

Ozanne, L. K., Vlosky, R. P. (1997). Willingness to pay for environmental certified wood products: a consumer perspective. *Forest Products Journal*. **47**. 39 – 48.

Ozanne, L. K., Vlosky, R. P. (2003). Certification from the U.S. consumer perspective: a comparison from 1995 and 2000. *Forest Products Journal*. **53**. 13 – 21.

SGS. (2005). Forest management certification report of Youhao Forest Bureau. http://www.forestry.cn.sgs.com/zh/forest_management_reports_cn

State Forestry Administration. (2006). http://www.forestry.gov.cn/subpage/content.asp?lm_Tname=lykj&lmdm=5300&f_lmname=林业科技&id=42

State Environmental Protection Administration of China. (2006). http://www.sepa.gov.cn/hjyw/200610/t20061027_95150.htm

Stevens, J., Ahmad, M., Ruddell, S. (1998). Forest products certification: a survey of manufacturers. *Forest Products Journal*. **48**. 43 – 48.

United Nations Economic Commissions for Europe (UNECE) / Food and Agriculture Organization of United Nations (FAO). (2005). *Forest Products Annual Market Review, 2004-2005*. United Nations.

United Nations Economic Commissions for Europe (UNECE) / Food and Agriculture Organization of

United Nations (FAO). (2006). Market Effects of Public Procurement Policies for Wood and Paper Products in the UNECE Region: A study by the Team of Specialists on Forest Products Markets and Marketing for the UNECE and FAO Policy Forum. *Public procurement policies for wood and paper products and their impacts on sustainable forest management and timber markets*. United Nations.

Vlosky, R. P., Ozanne, L. K. (1998). Environmental certification of wood products: The U.S. manufacturers' perspective. *Forest Product Journal*. **48**. 21-26.

Wang, X., Ma, A. (2005). Cost-benefit analysis of forest certification. *Forest Engineering*. **21**. 64 – 66.

Wang, Y., Zhang, L., Sun, Y., Yu, Z., Lei, F. (2005). Analysis on the impacts of forest certification in Changhua Forest Farm. *Journal of Beijing Forestry University*. **4**. 57 – 60.

World Wide Fund (WWF). (2002). *WWF Forest Certification Newsletter*. **1**.

World Wide Fund (WWF). (2007). WWF and IKEA cooperation on forest projects – China project. http://www.wwfchina.org/english/sub_loca.php?loca=22&sub=92

Xu, B., Zhao, J. (2002).An investigation into the current situations of FSC Chain-of-Custody certification in China. *WWF Forest Certification Newsletter*. **2**. 7 – 10.

Zhao, J. (2003). The feasibility report on forest certification: a case study of Youhao Forest Bureau. *WWF Forest Certification Newsletter*. **4**. 6 – 10.

Appendix

Survey Questionnaire on Certified Forest Products Companies in China

1 April, 2007

Dear Company Manager:

The Chinese forest products manufacturing sector is very important to US forest products exporters and importers. For wood raw material exporters in US, China is becoming one of the major markets for certified wood. And for wood products importers in US, certified wood products made in China still have their advantage in price and quality as non-certified wood products. Currently, there is an increased interest in the specification and use of certified wood and chain of custody programs that allow companies to track the movement of certified wood materials and products. This is particularly true in China and US forest products exporters and importers are extremely interested in how this trend might affect the specification and use of wood products in China. This interest is natural given the importance of China to US forest products exporters and importers. In addition, this information could be of great importance to Chinese managers as they look to increase their use of certified wood products in the future.

Your participation in this project is very important. Part of the research specifically focuses on the Top Chinese companies who have adopted or are considering adopting certified wood products and or a chain of custody program within their company. Your company is one of a select group of companies that are being asked to give their opinions regarding certified wood and chain of custody programs and the factors that these have on influencing the international trade trend. Therefore, the information that your company provides will be of significant importance to the success and accuracy of this research.

I hope that you will take about 15 minutes of your valuable time to help with this project by completing the enclosed survey. I ask that the survey be completed by the person in your firm in charge of forest certification issue.

***You can be assured of complete confidentiality*.** All information that you provide will be held in the strictest confidence and will only be reported in combination with the information provided by other respondents. Your participation is very important to the success and reliability of this project. If you have any questions or comments regarding this survey, please feel free to contact me. Thank you again for your assistance.

Please attach the completed survey with email and send to: **FSCcertification@gmail.com**

I am appreciated for your opinions and time. Our center would like to send you a small gift (IKEA vacuum flask worth of USD $4) under your acceptance. If you are willing to receive it, please leave your detailed address below:

We will send out the gift within one month after we receive your completed survey.

The DEADLINE to send back this survey is March 30, 2007.

Sincerely,

Ivan L. Eastin

Director and Professor, CINTRAFOR
College of Forest Resources
University of Washington
Telephone: (206) 543-1918
Email: eastin@u.washington.edu

Part I

We'd like to ask some questions basically related to the motivations and cost-benefit of FSC certified wood products, please give your answers following the instructions.

1. What are the major reasons for your company to get FSC (COC) certification? *(Choose all answers that comply)*

☐ The requirement from the parent company
☐ The requirement from the foreign buyers of wood products
☐ The requirement from the domestic buyers of wood products
☐ The marketing strategy our company actively made to keep up with the new market trend
☐ Other, please specify_____

2. What are the major types of FSC certified wood products of your company? *(Choose all answers that comply)*

☐ Indoor furniture & Accessories (indoor furniture, furniture parts, bathroom, kitchenware, mirror, blinds, fans, lights, etc.)
☐ Craft products, Stationeries & Toys (craftwork, photo frames, pencil, wooden easel, wooden toys, etc.)
☐ Outdoor furniture & Accessories (outdoor furniture, umbrella, gazebo, tent, hammock, birdhouse, wood flowerpot, etc.)
☐ Wood materials (lumber, plywood, particle board, block board, finger-joint board, MDF, engineering wood, veneer, etc.)
☐ Garden tools & BBQ tools (hammers, axes, scissors, chisels, BBQ trolley, BBQ tools, etc.)
☐ Flooring ☐ Doors & Windows ☐ Logs ☐ Pulp & Paper
☐ Other, please specify_____

3. Who are the major purchasers of your certified wood products? *(Choose all answers that comply)*

☐ Retailers
☐ Distributors/Wholesalers
☐ Importing & Exporting companies
☐ Wood products manufacturers
☐ Other, please specify_____

4. Where are the end markets for your certified wood products? And what is percentage of sales for each of the end markets?*(Choose all answers that comply and estimate the PERCENTAGE)*

☐ Europe	**%**
☐ United States	**%**
☐ Canada	**%**
☐ Australia	**%**
☐ Japan	**%**
☐ China	**%**
☐ Other, please specify_____	**%**
	100%

5. Where are the certified wood originated from? What is the percentage for each of the original producing area? *(Choose all answers that comply and estimate the PERCENTAGE)*

☐ United States	**%**
☐ Canada	**%**
☐ Europe	**%**
☐ New Zealand	**%**
☐ Indonesia	**%**
☐ South Africa	**%**
☐ China	**%**
☐ Other, please specify_____	**%**
	100%

6. **Which types of species does certified wood belong to? What is the percentage for each of the species?** *(Choose all answers that comply and estimate the PERCENTAGE)*

☐ Conifer	**%**
☐ Non-conifer (tropical)	**%**
☐ Non-conifer (other)	**%**
	100%

7. **Is your company now facing a shortage of certified wood?**
☐ Yes ☐ No

8. **What was the annual sale of certified wood products of your company in 2006? ¥** _____yuan

9. **What percentage of total wood products annual sales was certified in 2006?** *(Please estimate the PERCENTAGE)* _____**%**

10. **What percentage of total export wood products sales was certified in 2006?** *(Please estimate the PERCENTAGE)* _____**%**

11. **What percentage of total domestic wood products sales was certified in 2006?** *(Please estimate the PERCENTAGE)* _____**%**

12. **Below are three reasons for cost increase of certified wood products. Please RANK the following choices from 1 to 3 where "1 = most significant factor", "3 = least significant factor".**
(_____) Increasing prices of wood raw materials
(_____) Cost of evaluation and semiannual audit fee of certification
(_____) Cost from management adjustment and factory improvement, e.g., file tracing system setting up, equipment upgrading, training fee etc

13. **The prices of certified wood raw materials are approximately_____% higher than non-certified wood raw materials.**

14. **How much did your company pay for evaluation fee of the latest certification? ¥** _____ yuan
How much did you company pay for semiannual audit fee per year? ¥ _____ yuan

15. **What is the percentage of price premium for certified wood products compared to non-certified wood products (per m^3/ton) for the markets listed below?** *(Please estimate the PERCENTAGE. If there is no price premium, then put the number "0". If your company does not sale products to the markets, then leave it blank.)*

Europe	United States	Canada	China
_____%	_____%	_____%	_____%

16. **Is the profit margin of certified wood products higher or lower, compared to non-certified wood products?** *(Choose one answer and estimate the percentage)*
☐ Higher, please estimate the percentage _____%
☐ Lower, please estimate the percentage _____%
☐ Neither higher nor lower

17. **Has the annual sales of certified wood products increased or decreased from 2005 to 2006?** *(Choose one answer and estimate the PERCENTAGE)*
☐ Increase, please estimate the percentage _____%
☐ Decrease, please estimate the percentage _____%
☐ Neither increase nor decrease ☐ Do not know or not available

18. **Has the annual income of certified wood products increased or decreased from 2005 to 2006?** *(Choose one answer and estimate the PERCENTAGE)*
☐ Increase, please estimate the percentage _____%
☐ Decrease, please estimate the percentage _____%
☐ Neither increase nor decrease ☐ Do not know or not available

Part II

*We would like to ask you to evaluate some judgments based on a seven-point scale, please rate each judgment with the scale of "**7 = Strongly Agree**", "**6 = Agree**", "**5 = Somewhat Agree**", "**4 = Neutral**", "**3 = Somewhat Disagree**", "**2 = Disagree**" and "**1 = Strongly Disagree**".*

Judgments	***1 Strongly Disagree***	***2 Disagree***	***3 Somewhat Disagree***	***4 Neutral***	***5 Somewhat Agree***	***6 Agree***	***7 Strongly Agree***
Certification helps our company to ***enter*** target markets.	☐	☐	☐	☐	☐	☐	☐
Certification helps our company to ***maintain*** target markets.	☐	☐	☐	☐	☐	☐	☐
Certification helps our company to be more competitive in target markets.	☐	☐	☐	☐	☐	☐	☐
Certification helps our company to increase the market share of our products in ***foreign*** markets.	☐	☐	☐	☐	☐	☐	☐
Certification helps our company to increase the market share of our products in ***domestic*** markets.	☐	☐	☐	☐	☐	☐	☐
Certification helps our company to enhance its public image.	☐	☐	☐	☐	☐	☐	☐
I believe the annual **sales** of certified wood products will increase in the next 2 years.	☐	☐	☐	☐	☐	☐	☐
I believe the annual **income** of certified wood products will increase in the next 2 years.	☐	☐	☐	☐	☐	☐	☐

Part III

We would like to ask for your opinions on some issues relevant with forest products certification and its impact on the international trade of forest products industry, please write down your own opinions on the open space.

1. **What are the most urgent problems do you think for forest products certification in China currently? What are the events you are most concerned about forest products certification in China in the next 2 years?**

2. **Why have you chosen FSC certification over other certification programs?**

3. **What do you think of the overall impact of forest certification on international trade of forest products industry in China, positive or negative? Please also briefly state your reasons.**

Part IV

Finally, we would like to ask some basic information about your company for statistical purpose. ***All survey information will be kept strictly confidential.***

1. **Where is your company (specifically branches or manufacturing basis relevant with certification) located?** *(Please indicate the province, city or county)*

_____

2. **Which of the following business type does your company belong to?** *(Choose one answer)*

☐ Domestic private company
☐ State-owned enterprise
☐ Joint venture company
☐ Wholly foreign-owned enterprise

3. **What is the major business of your company?** *(Choose one answer)*

☐ Forest farms/manufacturing
☐ Manufacturing
☐ Trading
☐ Manufacturing/Trading
☐ Other, please specify_____

4. **How many employees are working in the company?** *(Choose one answer)*

☐ Less than 100
☐ 100 – 499
☐ 500 – 1000
☐ More than 1000

5. **What was total annual sale of your company last year in 2006?** *(Choose one answer)*

☐ Less than ¥10,000,000
☐ ¥10,000,000 – ¥40,000,000
☐ ¥40,000,001 – ¥70,000,000
☐ ¥70,000,001 – ¥100,000,000
☐ More than ¥100,000,000

6. **What was the percentage of exporting sale out of total annual sale in 2006?**

(Please estimate the PERCENTAGE) _____**%**

Thank you for your precious opinions and time!