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Meeting China's Demands for Imported Wood and Wood Fibre

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Paper prepared for presentation at the "Forests, Wood And Livelihoods: Finding A Future For All" conference conducted by the Crawford Fund for International Agricultural Research, Parliament House, Canberra, Australia, 16 August 2005

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**SESSION: MEETING THE DEMAND FOR
FORESTS AND FOREST PRODUCTS TO 2020:
ISSUES FOR DEVELOPMENT AND AUSTRALIA**

**Meeting China's Demands for
Imported Wood and
Wood Fibre**

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China has developed a large, flourishing and rapidly modernising wood and wood fibre industry. China consumes an estimated 365 million m³ (roundwood equivalent) of wood and wood fibre annually and relies heavily upon imports. These imports increased nearly 10-fold between 1996 and 2004 to 106 million m³, making China the world's largest importer of forest and wood products.

As China enjoys substantial economic growth, buoyant housing construction and improving living standards, it is likely that imports will continue to expand. Wood and wood fibre imports for 2010 are estimated to be about 120 million m³. This growth offers opportunities and challenges for suppliers of raw materials and services.

The high demand for wood has resulted in unscrupulous suppliers trading logs from illegal sources, and this trade has become a small but contentious part of China's wood supply. The illegal logging

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which this trade fosters functions through a web of interrelated networks of corrupt local authorities, operators and loggers, banks willing to provide and launder money, shipping companies, customs agencies, manufacturers and an indiscriminating and greedy market. Illegal logging is condemned by the legitimate wood industry.

China has the world's largest plantation forestry estate totalling some 53 million ha and has an ambitious plantation program to establish 13 million ha of fast-growing high-yielding plantations by 2015. There are divergent opinions as to whether China will become self-sufficient in wood in the long term; the main body of independent opinion suggests that imports will remain a strong feature of the industry.

Experience gained through meeting China's wood demands offers the opportunity to be better prepared for the impacts that India will undoubtedly have on regional supplies of wood and wood fibre. India's GDP is growing strongly at 8.5% annually, and it is expected that her population will exceed that of China by 2030. It is inevitable that wood, paper and board consumption will increase from a very low base.

As forests and their products increasingly improve the livelihoods of millions of people in China and India, and provide benefits to their trading partners, the implications of this development extend to many parts of the world, including Australia.

Introduction

This paper aims to describe the current and projected demands for imported wood and wood fibre in China and to explore the current and future implications of this demand in other countries.

China's wood and wood fibre products sectors have changed and grown dramatically over recent

years. China consumes annually about 365 million m³ of wood (USDA Foreign Agricultural Service 2005) comprising 44% industrial roundwood, 23% agricultural logs (from farms), 28% fuelwood and about 3% natural losses (Brady 2004). Market liberalisation and encouragement of private investment have seen the emergence of a large, flourishing and increasingly modernised industry.

Limited domestic supply of wood coupled with strong domestic demand for wood products such as paper, construction materials, wood panels and furniture, and rewarding export opportunities, have resulted in a substantial increase in China's imports of forest products. These imports rose nearly 10-fold between 1996 and 2004 to 106 million m³, making China the world's largest importer of forest and wood products.

China's total value of trade in forest products reached US\$32 billion in 2004, an increase of 25% over 2003 (compare this with the total two-way, Australia/China value of trade of US\$21 billion). Of this, imports were US\$16.3 billion and exports US\$16 billion. The exports represented a year-on-year increase of 34%. For the first three months of 2005, trade in forest products continued to grow and Chinese authorities are confident that the 2005 trade figures will exceed those for 2004 (ITTO 2005). These changes mirror similar changes in the agricultural sector where substantial imports have helped fuel a dynamic export market⁹.

Consumption and national policy

Strong growth in housing construction and rapid expansion of the furniture industry have created a strong demand for forest products. As people become wealthier, they use more paper and board (Fig. 1) and this applies to China.

Although the trend breaks down as wealth increases and cultural preferences have greater influence, as a rule of thumb the maxim holds for countries with relatively low per capita GDP. There is a large gap between the wealth of rich and poor areas in China. The national GDP per capita in 2003 was about US\$1090. In 2002, the GDP per capita in Shanghai was about US\$5000 and in Beijing US\$3400, whereas in undeveloped areas

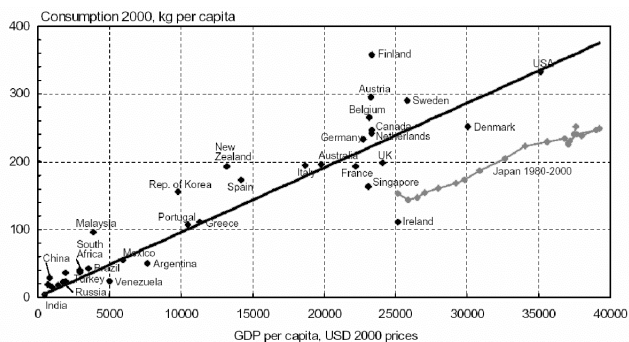


Figure 1. Paper and board consumption (kg per capita) and GDP per capita for selected countries (Source: Jaakko Poyry International)

of Gansu and Guangxi annual gross family income for rural households can be as low as US\$300. Consumption of paper, and board and wood panel products, varies greatly within China and is aligned with relative wealth.

The increased supply and use of wood fibre products is consistent with China's national policy to create an 'all-round, well-off society' (*Quan Mian Xiao Kang She Hui*). This policy pursues development that cares for the environment and reflects a commitment to promote equitable human development and recognises the urgent need to, *inter alia*, further advance science and education.

China's log imports

Official statistics for imports of all logs in 2004 were 28 million m³, of which 16 million m³ were softwood and 12 million m³ hardwood. Imports have increased dramatically since 1998 (Fig. 2).

Of the hardwood logs, 12.3 million m³ came from Russia, Europe and USA, and 3.8 million m³ from Malaysia, Papua New Guinea, Gabon and Myanmar. The softwood log exports from Russia to China were about 14 million m³ (Fig. 3). Several reports suggest that this is supplemented by up to 4 million m³ y⁻¹ of illegal logs.

Russia is clearly a major source for China's log imports. A constraint to expanding this large cross-border trade is the inadequacy of Russian infrastructure to move logs across the vastness of Siberia. Limited roads, limited railway capacity and congestion at border crossing points combine to constrain this trade.

⁹ In 2004, China's food imports grew to US\$55 billion and food exports to US\$113 billion

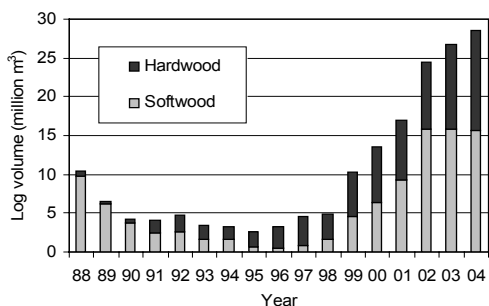


Figure 2. China's log imports (Source: R.E. Taylor and Associates, from China Customs Statistics, USDA FAS; '04 estimated)

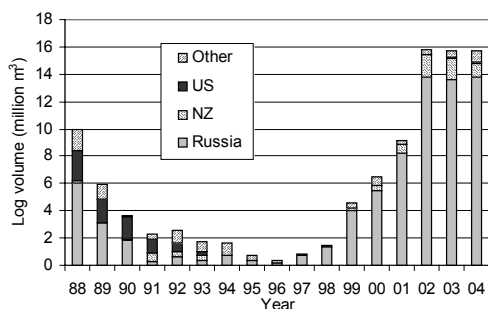


Figure 3. China's softwood log imports (Source: R.E. Taylor and Associates; from China Customs Statistics, USDA FAS; '04 estimated)

The Russian authorities are also encouraging greater log processing in Siberia, and this is an area of Chinese investment.

China's trade in logs is being greatly affected by shipping costs. The types of ships used in the international log trade are mainly the Handy and Handymax classes (~ 25 000 and 40 000 t capacity). The daily hire rate for these ships has increased dramatically (by 338% and 538% respectively) since 2003 (Flynn 2005) and this has had an inevitable impact upon the landed price of logs. Shipping costs are influenced by oil prices which have risen from US\$40 to US\$57 per barrel in the past 12 months.

China's sawn timber imports

China's total imports of sawn timber have increased from about 800 000 m³ in 1996 to 7.6 million m³ in 2004 (Wood Markets Monthly 2005a,b), 5.5 million m³ of which is hardwood and 2.1 million m³ softwood (Fig. 4). The main hardwood sawn timber suppliers are Indonesia, Malaysia, the US, Thailand, Myanmar and Russia, and the main

softwood suppliers are Russia, New Zealand and Canada. Most of the imports are used as raw material for manufacturing components for finished or semi-finished products.

China's imports of sawn lumber are expected to continue rising over the next five years at an annual rate of 10–20% (Wood Markets Monthly 2005b). Construction of venues for the 2008 Olympic Games in Beijing is expected to raise demand for sawn timber imports substantially.

China's wood chip imports

For the first time, China is expected to become a net importer of wood chips in 2005. From an high of 1.6 million bone-dry metric tonnes (BDMT) of hardwood chip exports in 1995, China expects to substantially reduce exports and imports are predicted to reach 1.6 million BDMT in 2007 (Flynn 2005) (Fig. 5).

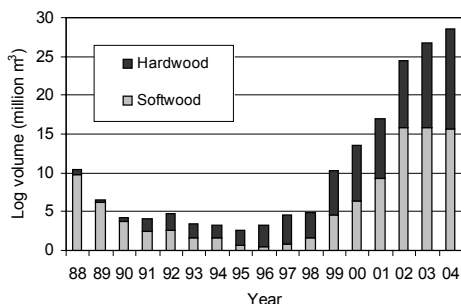


Figure 4. China's lumber imports (Source: R.E. Taylor and Associates; from China Customs Statistics, USDA FAS; '04 estimated)

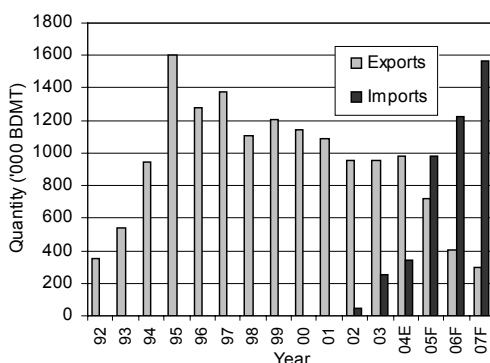


Figure 5. China's hardwood chip trade 1992–2007 (E= estimated; F= forecast) (Source: Bob Flynn, Wood Resources International)

China's need to import pulp is based upon the substantial increased demand from newly-installed pulp mills. The domestic resource of wood chips from fast-growing commercial plantations is not yet fully mature and these plantations are troubled by low yields and several limiting social factors.

China's housing market

The Chinese demand for housing is growing rapidly; about 10 million new homes are built each year — five times the number of housing starts in USA in 2004 (Wood Markets Monthly 2005a,b).

Under the National Housing Reform Program, China plans to construct 5 billion m² of new housing and renovate 2 billion m² of housing by the end of 2005, with the goal of doubling the average living space per unit of housing by 2010. The housing industry consumes an estimated 0.025–0.045 m³ of wood per square metre of floor area in urban areas, and 0.04–0.06 m³ m⁻² in rural areas. Interior design adds an estimated 0.025 m³ m⁻² to total wood use in housing (Zhu *et al.* 2004). In the first six months of 2004, sales of marketable housing units on the Chinese mainland were about 110 million m², requiring an estimated 6.6 million m³ of finished wood. This housing growth is expected to continue and will need wood for construction, flooring and furniture.

Recognising the opportunity in China's housing sector and the need to address cultural preferences, the Canadian Federal Government and the British Columbia Provincial Government and industries have established 'The Dream Home China Project' in Shanghai. The project aims to shift consumer demand towards wood-frame homes by promoting North American style housing and design (http://www.dreamhomechina.com/the_story.asp). In Shanghai, about 14 million m² of new housing are needed annually to keep up with population growth. Shanghai is a logical entry point for developing a North American style (wood-frame) housing market because of this high demand, combined with available land for development, a large number of international companies setting up Chinese operations, and a higher-than-average family income.

Wood-based panels

Rapid expansion of Chinese manufacturing capacity in fibreboard, plywood and particleboard to

service the needs of the flooring, furniture and other wood products industries has led to major changes in worldwide markets for panel products.

Fibreboard. China contributes about one-third of a current global capacity of 44 million m³ y⁻¹ of medium-density fibreboard (MDF). It has become the world's largest producer of MDF; production capacity has grown from 650 000 m³ in 1995 to >16.5 million m³ in 2004. The raw materials for MDF are mostly grown domestically (eucalypts, pines and many other species) and the manufacturing capacity uses modern technologies. The impregnated-paper laminated flooring industry is expanding rapidly and is based upon MDF and HDF (high-density fibreboard).

Plywood. China's plywood manufacturing capacity increased four-fold from 500 000 m³ in 1991 to 21 million m³ in 2004, enabling it to become an exporter of plywood. In 2003, China became the largest plywood-producing country in the world (Sun *et al.* 2005). However, production is now falling, reportedly through difficulty in obtaining suitable resources.

This is a sector which is heavily dependant upon high-quality imported logs to produce high-value surface veneers to cover low-cost Chinese core veneers. Demand is serviced by large imports of softwoods from Russia, New Zealand and Australia and of hardwoods from Indonesia, Malaysia and central Africa. Production of high-quality engineered veneer products such as container floors relies on imported logs, including regrowth eucalypt logs from Australia.

Particleboard. Although particleboard has not enjoyed the same growth as other panel products, it has doubled from <2 million m³ in 1993 to >6.4 million m³ in 2004.

Secondary processed wood products (SPWP)

Low labour and other manufacturing costs have made China a low-cost producer of secondary processed wood products (SPWP) such as furniture. Rapid growth in exports is continuing, and in 2002–2003 China's exports increased by 24% to almost US\$7.5 billion, overtaking Italy as the largest global exporter of SPWP (ITTO 2005). This rapid expansion was due largely to exports of wooden furniture to USA and Japan, leading to anti-dumping tariffs being imposed on some prod-

ucts in the US market. These exports are expected to continue expanding as more companies from the USA, Taiwan and other Asian countries establish SPWP joint ventures in southern China because of the low costs.

Furniture production. China's total exports of furniture (all categories — plastic, steel, mattresses, etc.) are expected to reach US\$14 billion in 2005. Total furniture exports were US\$10.3 billion in 2004 — representing year-on-year growth of 39% (Xinhui News Agency 2005). Wooden furniture continued to be China's largest wood product export segment and was worth US\$4.7 billion in 2004, a year-on-year increase of 37%. Domestic sales for 2004 were US\$33 billion — an increase of 34% over 2003.

The impact of the Chinese furniture industry is demonstrated through Ikea's move of its Asian procurement centre from Singapore to China. Furniture factories in North America have closed and been relocated to China. The success of the wood furniture sector and the threat of US anti-dumping tariffs have fostered Chinese investment in Vietnam, where a significant export furniture industry now requires log and lumber imports worth US\$700 million annually to support its expected export of wooden furniture worth US\$1.5 billion in 2005.

China's wood flooring industry

China's expanding housing and commercial retail sectors have fostered a strong and expanding wood flooring industry which currently has an annual production of 200 million m². Total wood flooring sales for 2004 were about US\$4 billion and the sector is growing at 20–30% annually.

Solid wood flooring. This comprises about 30% (70 million m²) of the flooring production, 90% of which uses imported timbers. This sector is at the high-value end of the market and has a high level of exports. The factories for these sectors are generally smaller, with more than 4000 enterprises engaged in the industry.

Solid wood composite flooring. This is a multi-layered composite of solid wood. Production totalled 22 million m² for 2004. The surface layers for these flooring systems are mostly high-value imported hardwoods and the substrates lower-value woods.

Impregnated-paper laminated flooring. Production totals 120 million m² and is based upon MDF and HDF. These flooring systems have become very popular because of competitive prices, high durability and ease of installation. Starting from a zero base in the mid-1990s, manufacturing is now undertaken by around 500 large-scale enterprises using domestically-sourced wood fibre and imported surface materials (Global Wood 2004).

Pulp and paper

China has some longstanding intellectual property in the paper sector — most papermakers recognise that Tsai Lun invented paper in China in 105AD. China is now the world's second-largest producer of paper and paperboard, and significantly is also the world's second-largest producer and consumer of tissue paper. In 2003 production of tissue paper was nearly 3.3 million t, second only to the USA (about 6.4 million t).

China's total demand for fibre (non-wood pulp, recovered paper and wood-based pulp) for all grades of paper rose from 12.8 million t in 1990 to 40 million t in 2003. It is forecast this will reach 65 million t in 2010 (He and Barr 2004).

Whilst net imports of paper products were 5 million t in 2003, it is estimated that these will rise to only 6 million t in 2010 because of substantial newly-installed paper-making capacity. However, pulp imports are expected to continue to rise with net imports of paper-grade wood pulps of 5.7 million t in 2003 expanding to 8.2 million t in 2010.

Recovered paper provides about 50% of the total pulp consumption in China. Imports of recovered paper were estimated to be 12 million t in 2004 (accounting for >50% of the world exports, Fig. 6) and these will grow 16.8 million t in 2010 (Jaako Poyry 2005). Recovered wood fibre has a critical role in the packaging industry that underpins China's manufactured exports, almost all of which are packed in cartons. The manufacture and supply of these cartons is a significant industry which relies heavily upon imports of recycled pulps. China is the world's largest importer of recovered pulps (Jaako Poyry 2005). The willingness of the Chinese market to pay competitive prices for several grades of recycled paper has left some industries in Europe and North America short of raw material.

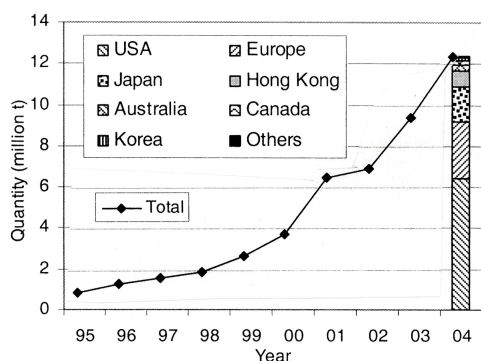


Figure 6. China's imports of recovered paper (Source: Jaakko Poyry International)

Illegal wood supplies

Three main concerns have been expressed regarding the negative impact of China's escalating demand for imported wood and wood fibre, i.e. demand is:

- driving illegal logging in wood producer countries
- contributing to forest degradation and a loss of natural forest cover in Southeast Asia and other parts of the world
- threatening the livelihoods of forest-dependent people who lose access to forests being harvested or cleared, or who are displaced from lands being converted to pulpwood plantations (He and Barr 2004).

Illegal logging, and associated international trade in illegally-logged timber, is a major problem for many timber-producing countries in the developing world. It causes environmental damage, costs governments billions of dollars in lost revenue, promotes corruption, undermines the rule of law and good governance and funds armed conflict. It also retards sustainable development in some of the poorest countries of the world. Consumer countries contribute to these problems by importing the resulting timber and wood products. Comprehensive information on illegal logging can be found on the Royal Institute for International Affairs' web-site (<http://www.illegal-logging.info>).

Illegal logging is a complex business requiring considerable social, financial and operational skills and coordination from the main players. It is not a recent phenomenon, having been a practice for a great many years in all wood-producing countries.

It was a problem and a challenge long before China's recent growth in wood needs. It functions through a web of interrelated networks of corrupt local authorities, powerless (or complicit) forest owners, operators and loggers, banks willing to provide and launder money, shipping companies, customs agencies, manufacturers, and an indiscriminating and greedy market. To assign direct blame for illegal logging to any single link in the chain is clearly flawed, but illegal logging begins and ends with ignorance, i.e. ignorance of the legal ownership rights of forest owners and ignorance of responsibilities, ignorance and indifference of the consuming markets. As an example, recent headlines in the US could be repeated in many western countries and Japan: '*Hardwood flooring linked to illegal timber smuggling ring, says group. Investigators expose U.S. link to billion dollar wood smuggling ring*'.

The need for international cooperation to control the illegal trade in logs is demonstrated by discrepancies in customs documentation. In 2002, the volume of logs China declared as timber imports from Malaysia was double what Malaysia declared as exports to China. Some of the difference may be attributed to exports from Malaysia's 'free ports', at least one of which has been shown to re-export timber sourced from illegal logging operations in Indonesia (WWF 2004). Similarly, China's declared sawnwood imports from Indonesia were five times what Indonesia declared as exports to China. In 2002, such volumes of illegal logs from Malaysia and Indonesia to China would have been worth more than US\$850 million in shipping and wood sales alone.

Illegal logging is condemned in the legitimate wood industry. A recent comprehensive report commissioned by the American Forest and Paper Association *Illegal Logging and Global Wood Markets: The Competitive Impacts on the US Wood Products Industry* concluded that goods valued at US\$23 billion are produced globally each year from illegally harvested timber. This figure indicates the large negative impact illegal logging has on legitimate business.

China does not support illegal logging and treats it as a serious issue. This is clearly demonstrated by Chinese statements at the recent FAO Conference on Forestry. In 1998, China enforced its own ban on logging in native forests as part of its Natural Forests Protection Program. In December 2002, the Government of China and the Government of

Indonesia entered into a MOU designed to control illegal logging.

Russia and China held their first negotiations on forest management cooperation when a delegation from the Chinese State Forestry Administration visited Moscow over 15–19 August 2005. The talks focussed on the development of a joint program, including the creation of a database of Chinese enterprises that buy timber from Russia, and of Russian logging companies. The database will allow tracking timber supplies and help in control of illegal trade.

Where will China's wood come from?

The 6th National Forest Resource Inventory (1999–2003), released by China's State Forest Administration (SFA) in January 2005, concluded that China's forest cover has increased to 175 million ha or 18% of the country's total land area. The plantation area of 53 million ha is reputed to be the largest in any country. With an average annual increment of 178 million m³ from China's commercial forests, the SFA has expressed confidence that domestic timber production from existing reserves of commercial forests, including fast-growing high-yielding forests, can meet demand (USDA FAS 2005 GAIN Report). Many expert observers, however, do not expect this to be the case: e.g. Brady (2004). The most likely trend for China's imports of forest products is upwards (Fig. 7).

Zhu *et al.* (2004), in the report for WWF, examined a number of earlier studies and, complementing these with their own data, predicted that China will need to import 125 million m³ round-wood equivalent (RWE) of wood to meet commercial needs (excluding firewood) in 2010 (Table 1).

China's domestic log costs are high by international standards. Average delivered log costs (for sawnwood) are significantly higher than those of other log suppliers (Fig. 8).

Brady (2004) concurred with the conclusions of Taylor's study and considered that high forestry taxes and inefficient domestic transportation networks contributed to the high costs.

Table 1. Estimates of China's commercial wood market in 2010 (Source: Zhu *et al.* 2004)

Study	China's domestic industrial wood supply (million m ³ , RWE)	Import volume needed to match demand (million m ³ , RWE)
Zhu <i>et al.</i> (2004)	114	125
Shi <i>et al.</i> (1999)	180	64 (21 in tropical timber)
Wood Resources International (Hagler <i>et al.</i> 2001)	113 (83 ex-short-rotation plantations)	119

RWE = Round-wood equivalent

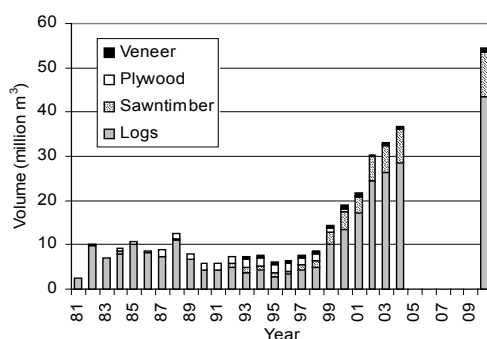


Figure 7. China's forest product imports (Source: R.E. Taylor and Associates: China Customs Statistics/Wood Markets)

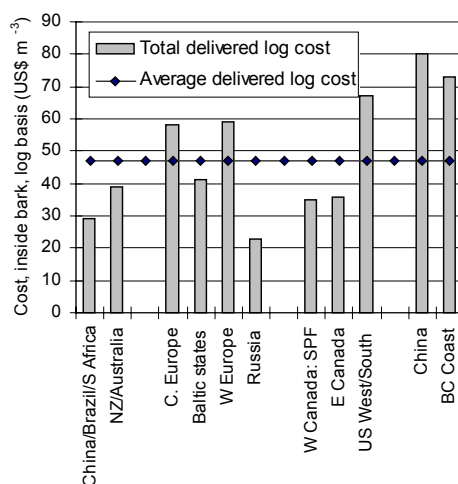


Figure 8. Global delivered wood costs 2002 (Source: R.E. Taylor and Associates)

In addition, Brady observed that there were a number of other challenges to meeting China's domestic wood fibre demands. These included:

- land availability and tenure security. Securing adequate land for plantations to support large-scale mills remains a prime challenge for pulp mill operators, as does effectively competing with other profitable land uses.
- attracting required investment from foreign banks and companies. Ability to fund investment requirements domestically is doubtful.
- continuing restrictions on investment and ownership.

How big is big?

The magnitude and diversity of China's wood and wood fibre imports are impressive and demonstrate a rate of growth which reflects the dynamism of the sector. China's wood industries are large and stand tall in the international community. However, how large is the sector compared to those in North America and Europe?

Figures derived from FAO reports and market research by R.E. Taylor and Associates indicate that, in 2003, the USA consumed about 27 million m³ of sawn hardwood and China 10 million m³. For conifer sawnwood in the same period, the USA consumed about 100 million m³ and China 9 million m³ (Fig. 9).

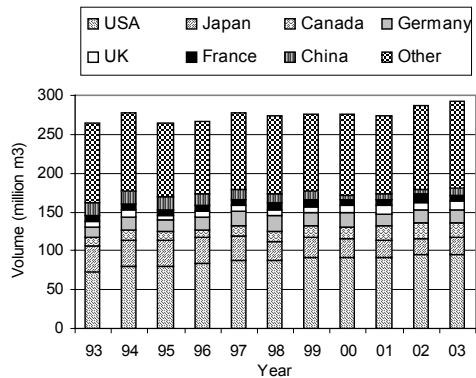


Figure 9. Global consumption of coniferous sawnwood (Source: R.E. Taylor and Associates)

For paper and paperboard, North America's 2003 aggregate consumption was estimated at 105 million t, Western Europe's at 86 million t and China's at 45 million t. Clearly, while China is a large, expanding and significant market, the world's largest wood users are the wealthy societies of North America and Western Europe (Fig. 10).

What next?

China's wood and wood fibre industries are now dependent upon imports. This situation is similar to that of other industries that have benefited from China's cheap and efficient manufacturing capacity, and it offers opportunities and challenges for suppliers of raw materials.

Reliance on high volumes of imports presents challenges for the Chinese industries. Can supplies of significant quantities of raw materials be guaranteed? What happens if shipping prices continue to rise and the price of imported raw materials rise and make secondary manufacturing uncompetitive? These are serious long-term questions and it is highly likely that the Chinese industry will want to align itself with certifiable, sustainable supplies of wood.

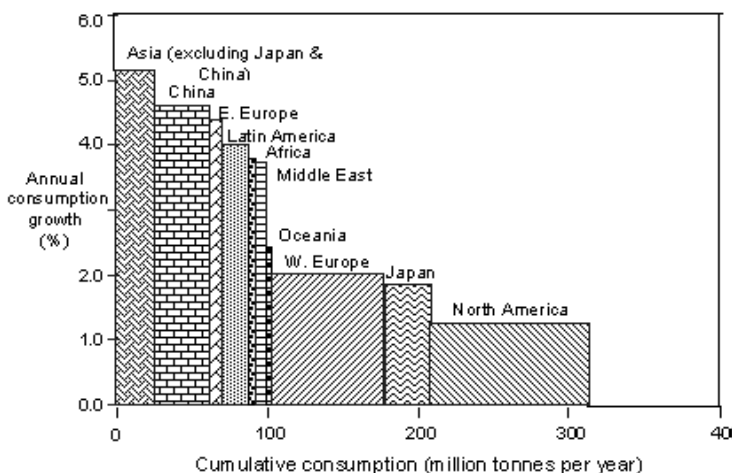


Figure 10. Paper consumption and demand growth (Source: Jaakko Poyry International)

The harvests from Australian forests will increase from the current 25 million m³ to 35 million m³ in 2010. It is unlikely that Australia will possess the domestic capacity to profitably process this additional 10 million m³. It appears likely that unprocessed or semi-processed wood exports will become a more substantial part of our national forestry business and the substantial markets of Asia are an obvious target.

China's demand for wood and wood fibre has had (and will continue to have) a significant impact on the Asia-Pacific regional forestry sector. The challenges generated by this demand are partly due to a lack of preparedness and consideration of the impact that an increasingly wealthy and productive society can have on wood supplies. Can we learn from the responses that have been made to meet China's wood needs?

Can we be better prepared for the impact that India will undoubtedly have on regional wood and wood fibre supplies? With a population of over 1 billion (expected to exceed that of China by 2030), a strong manufacturing capacity and a GDP growing strongly at 8.5%, it is inevitable that Indian consumption of paper and board and wood products will increase. Culturally, there is an inclination towards wood furnishings and flooring. I have no doubt that India's wood demands will increase greatly and exceed its domestic capacity to supply. Imports will become a greater part of the Indian wood balance, but information on these imports is limited.

It seems likely that oil prices and shipping costs will remain high and that in terms of long-term wood supply, 'geography will win' (Malcolm McComb, Pentarch Forest Products, *pers. comm.*) — those countries and suppliers which can economise on shipping costs will enjoy an advantage. Australia has both proximity and a plantation-grown resource that could conceivably be partially directed towards this expanding market.

A recurring theme in studies assessing China's wood use patterns is the problem of obtaining reliable data. Unrecorded harvests and production, unrecorded imports, corporate secrecy and the magnitude and diversity of China's forestry and forest products sector make such assessments challenging.

There is, however, little doubt that the pattern of wood use for 20% of humanity that China represents is changing and growing rapidly as the

country enjoys substantial economic growth and improvement of living standards.

As forests and their products increasingly improve the livelihoods of millions of people in China, the implications of this development extend to many parts of the world, including Australia. This growth provides opportunities and challenges for suppliers of raw materials and services, and considerable attraction for global consumers of high-quality wood products.

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A special thanks to my many Chinese friends and colleagues who have patiently offered me insights to one of the world's most fascinating wood industries for almost 25 years.

A special acknowledgement to an old friend and mentor, John Turnbull, for once again reviewing a paper.

I have undoubtedly made mistakes in interpreting the contents of a number of excellent recent reports on the China wood market, and for this I apologise.

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