



Adviser Edge
Investment Research

Australian Paulownia Industry

February 2006



Industry overview

This report has been prepared for financial advisers only

Australian Paulownia industry overview

As global demand for wood products strengthens (from high global economic growth), and supply of wood from natural resources declines, there is an increasing dependence on plantation forestry to supply the shortfall. Australia's diverse climate, vast tracts of land and well-developed infrastructure is considered to be ideal for the development of high value timber plantations.

There has been a slowdown in the worldwide trade of hardwoods, particularly from tropical regions. The main reason is due to a clampdown on unsustainable management of forestry resources by various countries. Timbers such as gaboon, meranti and ramin are becoming depleted, with further restrictions in the international marketplace resulting in stricter logging policies.

Resource overview

Paulownia (*Paulownia fortunei*) is a deciduous hardwood species, indigenous to parts of China. It is known worldwide for its vigorous growth and desirable working and aesthetic characteristics. As such, it is possible to grow Paulownia on very short rotations, compared to those of other hardwoods. This makes it ideal for a plantation hardwood species.

Paulownia stands take typically between 12 and 18 year to harvest age, with a partial harvest thin at age six. At age 18, around 420 m³/ha of saleable logs can be expected. Paulownia thrives in warm summer climates (29°C), enjoying moderate rainfall (or irrigation). Soil drainage is vital, as non-aerated soils may lead to reduced growth.

Fast grown Paulownia is found to have differing characteristics, including lower density when compared to the slow grown Paulownia produced in parts of Asia such as China, Taiwan, Cambodia, Laos and Vietnam. Preliminary trials have shown fast grown Australian Paulownia is susceptible to denting and has an inferior ability to retain fasteners, which may be constraints to its potential use across a range of applications.

Product analysis

Paulownia has a range of end uses, attributable to its durability, workability and a very high strength-to-weight ratio. In fact, the strength-to-weight ratio is reputed to be the highest in the world. Paulownia is non-absorbing, has superior insulating qualities and an ignition point of 400°C. Combined with the aesthetically pleasing blonde-coloured wood with a straight

grain, it is ideal for products such as furniture, jointed board, veneer, blind slats, doors, fibreglass core and mouldings. Other applications include use in building for insulation and decoration, casket making, and in aviation, automotive and boat building where its lightweight attributes put it at a competitive advantage.

Australian production

More than 80% of Paulownia being grown in Australia is less than six years old. As a developing industry, most of the commercial and private stands are located throughout the nation. Australian grown Paulownia is primarily produced in Victoria, New South Wales, Queensland and Western Australia. Queensland Paulownia Forests Limited (QPFL) is one of the largest managers of Paulownia, with plantations located in southeastern Queensland and central New South Wales. Environmental Forest Farms (EFF) is also a large manager of Paulownia, having several plantations to the north of Perth.

Australia's entire production of Paulownia in 2005 is expected to be quite low, with around 1,000m³ to 2,000m³ being harvested. Over the next 10 years domestic production is expected to rapidly increase, reaching between 130,000m³ and 145,000m³ by 2015. It is anticipated that the domestic market will consume the majority of domestic production, with an attempt to substitute imported supplies of internationally grown hardwoods.

A significant amount of money has been invested by QPFL to fund research into the use of microwave technology to improve the hardness of Paulownia. QPFL is currently developing a quality assurance program to evaluate log quality and control product compliance. QPFL has also recently purchased an operational sawmill at Kogan, four hours west of Brisbane, to which they will be seeking to add a specialised Paulownia processing plant.

Pricing analysis

Prices achieved for plantation grown Paulownia will depend on the market acceptance of fast grown timber and the price and supply of competing tropical hardwoods. Recent research has shown that price may prove to be a major constraint to the competitiveness of rough sawn Paulownia, as timber prices are expected to reach over \$1,500 per m³ (BIS Shrapnel, 2005).

One of the largest potential markets for Paulownia exists in the replacement of Western Red Cedar imports. In excess of 98% of Western Red Cedar is imported from Canada and is traded in US dollars (US\$). Due to the US\$ denomination, the price of



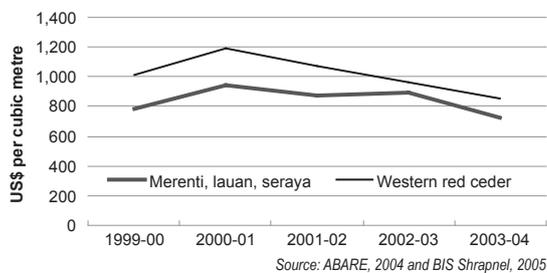
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Western Red Cedar is exposed to exchange rate fluctuations of the USD against the A\$.

The price of Western Red Cedar peaked at almost \$1,190 per m³ in 2000/2001 and subsequently fallen to a low of \$856.61 per m³ in 2004, rising slightly to \$877.08 per m³ in May 2005 (BIS Shrapnel, 2005). Much of this variation is attributable to exchange rate movements. Merenti, another potential substitute for Paulownia, has averaged a price of \$845 per m³ over the past five years.

Figure 1: Price Variation of Paulownia Substitutes

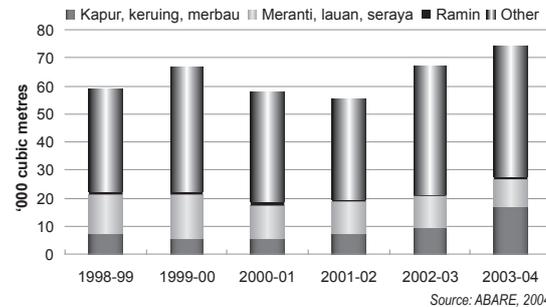


Australian consumption

Australian hardwood sawnwood consumption has averaged over 1 million m³ annually over the past decade, with a large proportion now used in applications such as joinery, panelling and furniture. Imported species such as Meranti, Douglas Fir and Western Red Cedar currently meet a significant percentage of this demand. As a viable substitute, Paulownia is well placed to compete in the specialised markets. Of these timbers, Western Red Cedar commands the most significant market share with imports averaging 59,000m³ annually over the past five years (BIS Shrapnel, 2005).

The current market for Paulownia in Australia is relatively small and is serviced mainly by Chinese imports. In 2004, Australia imported around 322m³ of sawn timber, a number that is predicted to fall in 2005. However, the strong import demand for other substitute species indicates that a potential market for domestically grown Paulownia does exist. Given a rapid increase in domestic Paulownia supply over the next ten years, there is a requirement to develop domestic markets through the replacement of the substitute species.

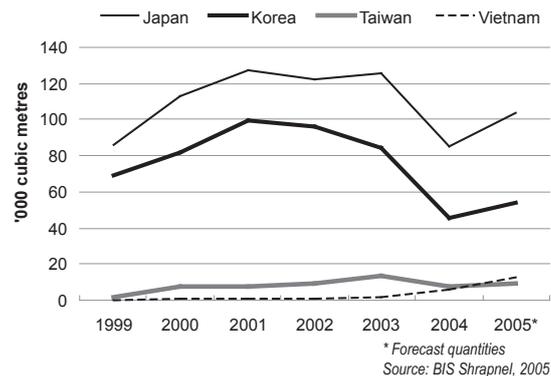
Figure 2: Imports of Rough Sawn Broadleaved Hardwood



International consumption

Paulownia consumption in Japan and Korea has accounted for an annual average of 54% and 37% of Chinese Paulownia exports over the past six years. These markets demand premium quality slow grown timber that is in excess of 30 years of age. Other significant emerging markets include Vietnam, Taiwan, Malaysia, the US and Italy. All of these countries have recorded significant growth in Paulownia imports over the past five years, with Chinese exports to Vietnam increasing 96% per annum over the past seven years (BIS Shrapnel, 2005).

Figure 3: Paulownia Exports from China by Destination



Competition

The Paulownia industry is a small part of the global hardwood industry, with only 1.6 to 2 million ha of native and plantation Paulownia grown globally. The majority of native stands are found in the Asia Pacific region, with smaller plantations existing in North and South America.

China is currently the dominant supplier of Paulownia, exporting an average of 210,000m³ per annum, with their total export market increasing by an average of 6% per annum



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over this period. In recent years, the Paulownia trade has shifted towards plantation sourced timber, with the US, Brazil, Paraguay and Taiwan becoming major market players

Very small volumes of slow grown Paulownia are presently imported to Australia from China. Australian producers of Paulownia are seeking to compete with Chinese imports in the established domestic markets of jointed board for casket manufacture and timber for boat building. However, this will depend on the market perception of Australian grown Paulownia.

Other considerations

Certification of Paulownia stands could be a major component in raising returns and opening up markets, as high profile illegal logging practices of hardwoods are brought to a halt. International watchdogs are at the forefront of cracking down on illegal log trade, focusing on both the producers and consumers (through awareness campaigns). As yet, there is little evidence to suggest a significant price premium is offered on certified products, though in the face of changing environmental attitudes, this will most surely develop in the future. As such, suppliers of wood products into Europe and North America, where there is an increasing awareness for ethical and environmental concerns, may benefit from certification. Some of the most well known certification standards for environmental matters are the internationally recognised FSC (Forest Stewardship Council) and ISO 14001 (International Standards Organization). The Australian Forestry Standard (AFS), drafted to meet the needs of Australian growers, is also fast gaining international acceptance as a quality standard for sustainable, environmental and ethical forestry operations.

Summary

In having extremely fast growth rates, Paulownia has the potential to return high value products in a short period of time. At present there is very little harvesting of domestically grown Paulownia in Australia, with 80% of the resource under the age of six (as at 2005). Small volumes imported from China indicate a demand for Paulownia products, but it is anticipated the true value lies in the ability for Paulownia to compete against substitute species.

The price received for Paulownia will depend on the market acceptance of fast grown alternatives to imported products such as Western Red Cedar. Judging by the price of the Paulownia substitutes, it is expected that Paulownia has the potential to command a respectable return. In developing a

competitive advantage over substitute species, Paulownia has excellent potential in the Australian marketplace for developing into a well-known and well-received timber species.



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- (b) the agribusiness sector of the project in this report,

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