EUCALYPTUS CLEARWOOD FROM PLANTATIONS IN THE SOUTHERN CONE --
Brazil, Uruguay and Argentina

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Introduction
It is generally understood that well tended radiata pine trees are a good investment option. Trees that are properly managed and pruned reportedly are providing a reasonable rate of return today in the domestic market. At the same time, the radiata estate is very large and still growing. Although New Zealand is a small player in global markets, it is a large participant in certain markets like Korea, Japan, and increasingly China. Today, radiata export log markets for commodity grades are turbulent due a variety of factors, including market limitations, shipping, currency and “growing pains” in Chinese economic development.

Seemingly, under current conditions, it is important to consider alternatives. One of these alternatives could involve intensively managed hardwoods, and in this regard eucalyptus is a prime candidate. Other countries are investing in intensive management for eucalyptus wood products. In 2004, it is an emerging market development. Eucalyptus might be viewed as a threat to certain radiata clearwood markets but it also can be an opportunity for diversification and value adding. Hardwood wood product demand is increasing in international markets while supplies of quality products are decreasing, in particular for tropical hardwoods. There are developing markets for plantation-based hardwood products. Various eucalyptus species can be grown in New Zealand.

History of eucalyptus clearwood development in Brazil
From our perspective, the eucalyptus clearwood story started in Brazil. In 1998 the Klabin Group, the largest integrated pulp & paper producer in South America, received Forest Stewardship Council (FSC) certification for its forests in Southern Brazil, in Parana State. The Klabin regional management, with 115,000 ha of pine and eucalyptus plantations in Parana, had been promoting eucalyptus wood products manufacturing for several years. It had been managing 33% of its 35,000 hectares of its eucalyptus for sawlogs / veneer (largely E. grandis from a NSW seed source). Upon receiving FSC chain-of-custody certification, the small-scale sawmill and furniture industry located nearby found markets in the EU for certified clearwood products. This provided the major market entry point, and during the interim these companies, plus other new entrants, have expanded and refined their manufacturing capabilities opening up new markets.

Data-base reference for presentation
Since 1998, there have been many new developments as the industry grew with larger scale eucalyptus operations and diversified products, including veneer & plywood. Manufacturing know-how and technology has advanced. Other countries entered the clearwood sector in the mid-1990’s, including Fletcher Challenge operations at Tapebicua, in northern Argentina. More intensively managed forests were implemented, in Uruguay and at Aracruz in northern Brazil. For the author and his two associates, Bob Flynn (US) and Evan Shield (Australia), monitoring these global eucalyptus solid wood activities became a past time and a business. The presentation...
today is based upon a global survey our team published in 2003. We continue to monitor the new developments and progress as a plantation-based lesser-known hardwood species achieves market acceptance. (Robert Donnelly, Robert Flynn and Evan Shield. 2003. *The Global Eucalyptus Wood Products Industry*, DANA Publishing, 300 pp)

**Brazil is a natural solid wood candidate**

In looking at the international market potential, there are both supply and demand factors to consider, as well as plantation developments. Brazil is what might be called a natural candidate. As New Zealand, it has a well-developed forest plantation-base, around 5 million hectares with both pine (36 %) and eucalyptus (64 %). Pine growth rates for southern pine rival New Zealand. And eucalyptus growth rates in areas devoted to wood products range between 40 – 50 m3/ha/yr (over bark). The eucalyptus plantations are the largest in the world devoted to industrial applications, compared to other countries. However, only 3 – 4 % supply is utilized for lumber as the bulk of the annual harvest is for pulp (49 %) or charcoal (44 %). The principal species are *E. grandis, E. urophylla, E. saligna* and hybrids, principally *E.urograndis*. Along with its neighbouring countries, Uruguay and Argentina, the South American Southern Cone has the bulk of the eucalyptus plantation areas with wood products potential.

**Market drivers for additional hardwood wood products**

The drivers for increased plantation hardwood product demand, include international trends to increasing hardwood lumber and plywood trade. Hardwood sawnwood trade (upper grades) has increased by 3.8 % per year over the past decade. This is created in part by diminishing supply availability of tropical hardwoods, for both lumber and plywood. Hardwood plywood exports from Southeast Asia declined 25 % in the past 5-6 years. Concurrently, Europe, North America and China have been increasing their volumes of imported hardwood products. The European sawn timber market, the largest regional market, increased imports by 25 % since 1995, climbing to 8 million m3. North America imports were up 70 % to 2 million m3. China, in particular, is growing very rapidly and imports twice as much hardwood sawn timber as North America.

Despite these market changes, the supply of eucalyptus sawn timber is less than 2 % of the global hardwood supply (around 2 million m3) and plantation eucalyptus is approximately 50 % or 1 million m3 per year. Brazil is the leading supply source of plantation-based product accounting for 60 % of the total. It is projected that the international growth in eucalyptus lumber will come solely from plantations.

**Product-market development and support from multi-nationals**

The value-added eucalyptus applications (clearwood) include sawn timber and plywood. The sawn timber exports are:

- laminated window frames for northern EU markets,
- garden furniture for northern EU markets and the US,
- dowelling for the EU and US,
- cut-stock for Asia largely in re-export products,
- flooring for the US and EU,
- interior furniture substitution for mahogany in Brazil.

The *E. grandis* plywood / veneer applications are:

- LVL veneer for the US and high-grade clear for EU / US
The developing eucalyptus solid/clearwood industry benefited through the support of various large international corporations. This has included:

- Aracruz/Weyerhaeuser (Brazilian lumber & flooring exports),
- Boise (Brazilian LVL veneer facility and exports),
- Fletcher Challenge (pioneering Argentina lumber & plywood operations),
- Mondi (South African lumber operations),
- SCANCOM (exports Brazilian lumber to Vietnam furniture factories)
- Weyerhaeuser (initiating plantations in Uruguay),
- ENCE (lumber operations in Uruguay)
- major international home improvement chains committing to sustainability in their hardwood product procurement.

Certification opened up market niches
In particular, FSC certification opened up markets in the EU – window frames and garden furniture to replace meranti and other tropical hardwoods. That market introduction was followed by American imports of FSC plywood, garden furniture and flooring. The Southeast Asian countries and China purchased lumber and cut-stock to manufacture products for re-export. Moreover, alternative certification systems have followed FSC and are becoming established. It is noteworthy to observe that the new Brazilian certification system is working with the pan-European system (PEFC) to establish mutual recognition. The market-entry key for plantation-based products in most export markets is sustainability.

Market positioning for plantation-based eucalyptus products
The increased demand has been driven by specific growth applications, as flooring and furniture. The underlying value proposition is that the wood is attractive for appearance applications, sustainable, and properly manufactured can produce quality products. Typically, the plantation eucalyptus products are substitutes for certain tropical species and applications as indicated in the presentation.

One of the negatives has been the name “eucalyptus”. People call it “pizza wood” or suggest “smoking eucalyptus to stop smoking”. It is generic name and universal but does not portray or enhance the product image. In contrast, the Australians have been very clever in describing their principal species with new names, which are more appropriate and market oriented. These are brand names that are familiar in New Zealand and in reality are various species of eucalyptus. So far plantation eucalyptus is struggling to make a new identity with “rose gum” the leading contender. Lyptus is company specific. Some more work is required in this area of market-oriented brand identity.

Based upon wood properties, plantation eucalyptus compares favorably to other hardwoods. In one example, Aracruz has provided prospective customers with wood property comparisons. Their medium-density Lyptus product (*E.grandis* and *E. Urograndis*) compares favourably to red oak for flooring – it has greater density and in hardness tests is equal or harder. The Lyptus
international sales agent, Weyerhaeuser, has positioned the clear lumber grades in the U.S. under prevailing market conditions – reportedly 30 % less than cherry, 10 % less than mahogany and above alder. This places the product as a high-grade clear substitute based upon its potential end-use. In flooring applications, high-quality clear “rose gum” (E. grandis) has been positioned in the U.S. above red oak, at around the same level as high-quality jatoba (a popular Brazilian native hardwood) but less than jarrah (the Australian eucalyptus and industry standard with supply restrictions). Again, the positioning is based upon performance properties for equivalent quality and the pleasing appearance of the rose-coloured product. Veneer and plywood products tend to follow equivalent hardwood pricing and plywood is competitive with certified SE Asian products. Note that these are emerging market trends.

Supply trends
Regarding the supply of plantation eucalyptus, there are few countries with established solid wood plantations as most of the eucalyptus is managed on short-rotations for fuelwood or energy. In 2002, major countries with solid wood potential included the Southern Cone of South America, South Africa and Australia. The Brazilian industrial plantations of 3 million hectares were significantly larger by a factor of 6. (China, also, has large areas of plantation eucalyptus but primarily for non-industrial use and the industrial management is less well defined).

Brazil has been the dominant supplier of eucalyptus sawlogs in recent years, just over 1.2 million m3 per year. South Africa and Argentina have been producing around 400,000. m3 per year with Australia and Uruguay around 150,000 m3.

The projected production of pruned eucalyptus sawlogs in 2015, around 1.5 million m3, will be principally South America, with a developing supply projected for Australia. South Africa, too, is continuing to prune. The overall sawlog supply availability is forecast to increase to a level of 10 million m3 by 2015, or 3 times the supply in 2001.

Intensive and aggressive forest management
Concurrently, there have been new forest management regimes developing to produce larger diameter trees, which contain less defect (a smaller defect core). One of the most aggressive single-product regimes that evolved from the early 1990’s was pioneered by the Otegui family in northern Uruguay on their 25,000. hectares of eucalyptus (80%) and pine (20%) plantations. The regime starts with wide spacing, 900 trees per hectare, and heavy pre-commercial thinning at 18 months with the remaining stems reduced to 400. Pruning is initiated at the same time and continues in 4 – 5 lifts, up to 10.5 metres. At age 9, a commercial thinning is done and the final crop trees are reduced to 200. The final clear cut will take place at age 16. The objective is to produce 45 cm trees and around 500 m3 / hectare in the final cut.

Other industry leaders have adopted accelerated, intensive management but typically multi-product regimes with commercial thinnings at 4–6 years to produce energy / pulpwood. For these multi-product regimes, the final harvest is generally 20 years. With hybrids, the rotation age, in one case, is anticipated to be 15 years. Interestingly, the Uruguayan aggressive forestry shows a better internal rate of return (IRR) using prevailing market costs and prices. The Uruguay case has a pre-tax IRR of 21 – 23 % compared to multi-product regimes with 16 – 19 % IRR.
Concluding Commentary for Opportunities, and in Summary
The opportunities for eucalyptus in solid wood are largely in clearwood and involve several factors as indicated:

- substitution as certified products,
- high-value applications where global hardwood supplies are limited,
- limited over supply in the next 10 – 15 as restricted sawlog supply,
- veneer /plywood options developing (good for 2nd logs),
- preference for medium density eucalyptus, as indicated in Brazil.

In summary, Brazil is the leader in plantation-based lumber, flooring, veneer and furniture. But by 2008 – 2010, Uruguay will be the leader in pruned eucalyptus wood supply. Other countries have pruned log supplies but the focus is for pulp (Chile) or has drifted to other products (South Africa). Some countries as Australia and Argentina will catch up but have been delayed in the process. New Zealand, also, has eucalyptus solid wood potential and some 50,000 hectares. Earlier farm forestry and FRI cooperative research indicated similar growth potential in agro-forestry trials.