The following presentation will give an update on Chile’s radiata pine resource base and industry, with the focus on the solidwood sector. In addition, an outlook on Chile’s timber supply and especially pruned log supply will be discussed, along with suggestions on the products and markets Chile is targeting with its clear pine resource.

**Plantation Base**

During the 12 years ending in 1990, the radiata pine plantation base in Chile expanded by an average of 60,000 hectares per year. Since 1990, this new planting rate has declined to an average of only 22,500 hectares per year. Note that these first two charts do not show “new planting” in Chile, but rather indicate the change in the total radiata plantation estate in the country. This figure can differ from the actual area of new plantations due to harvesting, fires, and adjustments to INFOR’s database on plantations from year to year.

The rate of new planting has declined markedly during the 1990s in part because the major Chilean corporations have expanded their plantation and industry development efforts to other countries, primarily Argentina but also Uruguay, Brazil, and Venezuela. Higher land costs in Chile have also had a negative impact on the expansion of plantations. Much of the new planting in Chile is being done by small landowners, and in fact the DL 701 planting subsidy has only applied to small landowners since 1996. Major landowners do continue to replant their lands after logging, and with some small net increase.

**Increasing Radiata Pine Harvest**

Chile’s radiata pine harvest has increased by 55-60% over the past decade. The total radiata harvest first exceeded 10 million m$^3$ in 1987 and surpassed 20 million m$^3$ in 2000. Data on the 2003 harvest will not be released for several months, but based on exports of solidwood products it is likely that the radiata harvest reached 23 million m$^3$, a new record, in 2003.

Radiata log consumption in 2002, the last year for which data are available, was primarily (60%) focused in the sawmills. Only 31% of the log consumption was directly for pulp, although of course most of the sawmill residuals are now recovered for pulp and to a lesser extent composite wood panels. An increasing volume of logs are used for plywood, and total wood panel production accounted for 6% of the radiata log harvest in 2002. Only 1% of Chile’s radiata harvest was exported as unprocessed logs. This chart says that pulp remains the driving factor in the Chilean industry, but in one sense this is incorrect--- it is probably more correct to say that the radiata pine plantations themselves are the driving factor in industry development. In Chile, it is definitely not a “market back” approach, rather industry development has followed resource availability.
Radiata log and lumber production and exports

Radiata log exports peaked at nearly 2.5 million m$^3$ back in 1988, and were just over 1.5 million m$^3$ in 1997. Since then log exports have plunged, and in particular sawlog exports have almost disappeared. Since 1997, radiata sawlog exports from Chile have decreased about 98%, and are unlikely ever to recover. Basically, Chile has conceded the log export market to New Zealand, as it has proven impossible for Chile to compete based on the freight advantage to the Asian log markets enjoyed by New Zealand.

During the 1980s, lumber production in Chile progressed only slowly, growing from just under 2.0 million m$^3$ in 1980 to 3.0 million m$^3$ in 1994. However, production has expanded rapidly since then, reaching nearly 5.0 million m$^3$ in 1999 and exceeding 6.0 million m$^3$ in 2002. In 2003, we do not yet have production data, but based on a 14% expansion in sawnwood exports, we project that total radiata sawnwood production must have been close to 7.0 million m$^3$ in 2003.

In general, Chile’s forest products industry is heavily dependent on the export market. However, in 2002 an estimated 43% of sawnwood production remained in the domestic market. In 2002, 36% of radiata sawnwood production was exported, and an additional 21% was reprocessed in the country for export as secondary products. The Chilean companies, and Arauco in particular, have actively sought to develop domestic markets and have worked with the rapidly developing home center industry to encourage domestic wood products consumption.

While New Zealand retains its title as “King of the Radiata Log Exporters”, Chile is the leading radiata pine sawnwood exporter. In 2003, Chile’s volume of softwood sawnwood exports exceeded New Zealand’s by approximately 80%. Between 1997 and 2003, Chile’s sawnwood exports nearly doubled, while those of New Zealand increased by about 50%.

Chile’s lumber industry has changed significantly over the past decade. Since 1990, most of the new sawnwood capacity has been developed by larger companies, in facilities with annual production exceeding 50,000 m$^3$. There has also been a corresponding increase in kiln-drying and in productivity (sawnwood output per employee). The new, larger production facilities now produce the major portion of Chile’s sawnwood, and Arauco is by far the dominant producer. Arauco is now building a large (400,000 m$^3$ annual capacity) sawmill at its Itata, Chile complex, which will give the company an annual production capacity of about 2.5 million m$^3$. CMPC is a distant second, at about 800,000 m$^3$ annual capacity, but this is still more than double the capacity of the third largest sawnwood producer, Terranova. CMPC is in the process of planning a new sawmill to replace the Mulchéni mill which burned down in early 2004. Note that this new mill will give them close to 1.0 million m$^3$ in total lumber capacity.

Chile: A Highly Concentrated Industry

Arauco is also the dominant exporter of wood products from Chile, with a total export value of US$415 million in 2003. Note that this excludes pulp and paper--- if we included all forest product exports, CMPC would be much closer to Arauco, but for wood products Arauco is unquestionably the dominant force in Chile.

By now you have gathered that the forest products industry in Chile is highly concentrated. Arauco and CMPC own about 60% of the forest plantations, and account for 100% of pulp production in the country. Masisa (now merged with Terranova) accounts for 92% of particleboard production in the country, and Arauco + Masisa produce all of the MDF in Chile.
Arauco produces 75% of the pine plywood in the country, and as we will discuss later, Arauco + CMPC account for most of the pruned log production in Chile.

**Pine Lumber and Value-added Exports**

The USA is the primary destination for Chile’s sawnwood exports (29% in 2003), although markets are relatively diverse. Mexico, following the signing of a Free Trade Agreement between that country and Chile, has rapidly become a major market for Chilean wood products, including 19% of softwood sawnwood exports in 2003. The Middle East/North Africa has long been an important market for rough, green sawnwood exports, and this market accounted for 18% of total Chilean exports in 2003, followed by Japan at 14%. Europe (5% of sawnwood exports) and China (3%) are relatively small markets for Chile.

In Q1 2004, the total value of Chile’s lumber exports was up 24.7% over Q1 2003, while the volume was up 12.5%. However, certain markets have seen a big jump in 2004. For example, the volume of exports to Spain (mostly clear pine) was 108% higher in Q1 2004 than in the previous year. Lumber exports to China were up nearly 140% (to more than 31,000 m$^3$) in Q1 2004, while exports to Korea were 128% higher than in 2003 (to 29,000 m$^3$ in Q1 2004).

In the USA, Chile is second to Brazil in terms of pine lumber imports, but is still ahead of New Zealand. US imports of coniferous sawnwood from Chile increased 4% in 2003, which meant a loss of market share to Brazil but slightly gaining ground versus New Zealand suppliers. Chilean exports of coniferous sawnwood to the US have traditionally been mostly surfaced lumber, but in 2003 this trend reversed and rough lumber exports were approximately equal to surfaced lumber exports for this market. Note that much of the rough lumber is Moulding & Btr, but also includes some fencing and other products.

For years, Chilean companies have tried to focus on exports of “value-added” products to the US, rather than logs or rough sawnwood. Chilean statistics tend to include “surfaced lumber” in value-added products, but in this chart we have shown that category separate to indicate the true value of secondary wood product exports. Exports of moulding have grown especially rapidly, more than tripling in value since 1997. Exports of MDF moulding have grown the fastest, but pine (both solid and finger-joint) moulding has also increased rapidly. This trend has continued in 2004, as the export value of Category 4409, which for Chile is mostly moulding, increased 12% in Q1 over the same period in 2003.

In contrast, exports of furniture from Chile have stagnated, due in part, of course, to intense competition from China and also from Brazil. Exports of furniture from Chile are only about US$50 million, less than 10% of that of Brazil. Chile is also facing intense competition from Brazil in the moulding business. Although the value of Chilean moulding exports has continued to increase, the volume of moulding exports to the US decreased in 2003, and Brazil has now caught up with Chile. The two countries are roughly even in the volume of coniferous moulding shipments to the US.

In total, Chile’s exports of secondary wood products (not including surfaced lumber) have approximately doubled in value since 1997, to nearly US$600 million. Moulding is by far the largest category, although exports of doors and windows have also been increasing rapidly. Despite the fact that exports of finished moulding have been growing quickly, from both Brazil and Chile, exports of blocks and blanks from Chile have continued to expand. The total volume of exports of blocks, finger-joint blanks, and cut-stock increased from about 150,000 m$^3$ in 2000 to 275,000 m$^3$ in 2003, an increase of more than 80%.
Chile’s exports of secondary wood products are much more heavily focused on the US market than are its exports of primary products such as sawnwood and wood-based panels. If one includes the Canadian market, more than 98% of Chile’s moulding exports go to North America, and most of its door and window exports as well. This is not expected to change significantly in the near future.

**Plywood – A New Use for Pruned Logs**

Plywood production in Chile had been characterized by small mills producing hardwood plywood, about 50-60,000 m³ per year, through 1997. Late in that year Arauco opened the first of its new, turn-key Raute plywood plants, and production of radiata pine plywood increased rapidly. Production exceeded 400,000 m³ in 2002, with exports of approximately 250,000 m³. While we do not yet have production data for 2003, exports last year jumped to just over 300,000 m³. The majority of this production is by Arauco, and is mostly A/C sanded panels (i.e., clear face). This has become a major use for pruned radiata pine logs in Chile. Exports continued to expand in 2004, as the total volume in Q1 increased nearly 12% over the same period in 2003.

Exports of plywood from Chile in 2003 were targeted largely at the US (43% of the volume) and Mexico (25%), but 20% of the volume also went to Europe and a smaller volume to Asia. I note that exports of plywood to the US jumped 47% in Q1 2004, over the same period in the previous year. Arauco is starting operations at a third plywood mill at Itata in 2004, and CMPC has also studied a plywood project. In contrast to Chile’s rapidly growing exports of plywood, New Zealand’s exports of plywood have actually declined over the last several years.

**Radiata Pine Harvest Forecast and Pruned Log Supply**

The radiata pine timber harvest is projected to expand in Chile, growing 40% from 20.4 million m³ in 2001 to 28.5 million m³ in 2010. The radiata sawlog harvest will grow slightly faster (up 42%) compared with the pulplog harvest (up 36%), over this time period. Note that this is substantially different from the 1999 forecast by INFOR, which indicates a relatively flat harvest level from 2003-2010. This is not my forecast, it was presented by Fernando Raga of CMPC at a conference last year.

The 1999 INFOR study listed the pruned plantations by age, indicating only a very small area of pruned plantations in the “normal” harvest age of 25-30 years. Six years later (that data was valid as of the end of 1998), the area of pruned plantations entering harvest age in Chile has increased sharply. Moreover, it is interesting to note that Chilean companies have maintained their commitment to pruning. The larger companies are still pruning 60-70% of their plantations, which means that nearly half of all plantations are pruned even if one assumed that small landowners were doing no pruning. Of course, many small landowners are pruning, and we estimate that the total area of pruned plantations in Chile must be around 55% or more of the total plantation area. This pruned area is highly concentrated, primarily in Region VIII, the south end of Region VII, and the north end of Region IX.

The 1999 INFOR forecast, the last major published timber supply forecast in Chile, indicated a surge in “available” pruned logs for harvest exceeding 3.0 million m³ in 2001-2003, declining to 2.5 million m³ through 2015. However, a recent survey of the larger companies in Chile gives a much different picture, indicating a doubling in pruned log production between the current level of about 1.6-1.7 million m³ to about 3.6-3.7 million m³ by 2012. Of this total, Arauco is likely to produce more than half (estimated here at about 54%), followed by CMPC with 27%. Note that
this market share estimate is based on a relatively pessimistic estimate of pruning by smaller companies and individual landowners. The true figure of pruning on these small ownerships is unknown, but if it proves to be larger than currently expected, then the market share for Arauco and CMPC should be correspondingly reduced.

What are the markets for clear pine in Chile? Moulding & Btr lumber to the US has been a primary product, and now clear boards and solid moulding are also growing. We estimate that the two major producers of solid moulding in Chile (Arauco and Promasa1) have been exporting a total of about 90 containers per month. The producers of clear pine boards, for the US homecenter market, have been exporting around 45 containers per month. We understand that the Chileans have been following on the New Zealand efforts in this market. In addition, as mentioned Arauco has developed a good market for radiata pine plywood with mostly clear faces. A good, but relatively small market for clear pine lumber has also developed in Spain and Italy, and the Chileans are hopeful of expanding exports of clear pine in the Asian markets, primarily China and Japan.

The feeling in Chile is that the supply of clear pine is growing quite rapidly, in fact more rapidly than the markets, and I believe they would welcome any suggestions from this conference on great new markets that they have not already considered. Given the concerns about market development, why are the Chilean companies still so keen on pruning?

One has to understand the full context of the Chilean pine industry. First of all, improvements at the nurseries have meant higher survival and lower initial planting densities. This has meant both lower planting costs and a general reduction in the need for thin to waste. Faster growth has meant shorter rotation ages than would otherwise be the case, to produce a tree of a given diameter size. In addition, the strong Chilean economy has meant relatively lower cost of capital for the major Chilean companies, helping to reduce the full cost of pruning. Recent pricing trends have strongly reinforced the idea in Chile that, because pruned logs are much higher priced than regular sawlogs, it must be a good business. In fact, some Chilean companies have argued that if the site quality on a given plantation is such that pruning is not justified, they are probably better off planting another species such as eucalyptus. Note that, in general, the bigger companies in Chile are pruning to 5.5 meters, and are aiming for a harvest age (for stands now being planted) or 24-26 years.

This continued commitment to pruning in Chile has now reached the point where it tends to become almost a self-reinforcing system. Having continued to prune the majority of sites, the industry is now facing a 25-year supply of pruned wood. This is a significant enough supply that it really demands investment in proper processing facilities to manufacture products efficiently from the expected pruned logs. Those investments have been and are being made, witness the new sawmills and plywood mills. Finally, having made the investment in processing facilities aimed at efficiently transforming pruned, larger diameter logs, the industry feels almost compelled to maintain their pruning regime, to guarantee a supply of the proper logs for the mills being installed! As stated before, it is our opinion that the forest in Chile is really the driver now in the development of the industry, and whether the market needs clear pine in the volumes to be produced is really almost a moot point. The wood is coming, like it or not, market-justified or not.

Finally, it is worth mentioning Chile’s experience with a “boycott” in late 2002 and 2003. The North American environmental group “Forest Ethics” initiated the campaign with large full-page

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1 Promasa is a subsidiary of the US firm Woodgrain Millwork.
ads in the New York Times. The claim was that development of pine plantations in Chile threatened the survival of the native forest, a claim that was wildly preposterous and certainly not supported by any facts. However, as I am sure you are aware, facts often have little to do with these campaigns, and eventually Home Depot negotiated a truce between the major Chilean companies and Forest Ethics. At the same time, the Chilean national certification standard CERTFORCHILE was completed and connected with the PEFC, giving it sufficient credibility. Now that all of the major companies in Chile have some type of credible certification, the industry believes that this issue is basically behind them, and in fact perhaps gives them some advantage over competitors not yet certified.

Summary

- Chile is a highly concentrated industry, with only a handful of companies accounting for the majority of wood products production and exports.

- Chile has a relatively small domestic market and is located far from any significant markets. Higher freight costs have had a severe impact in Chile as in most producing countries.

- The freight cost differential with New Zealand has left Chileans with little option but to focus on the export of more processed products to the highest extent possible.

- The supply of pruned logs and clear pine has been growing rapidly, and will approximately double over the next 8-10 years. Unfortunately, markets have probably not been expanding at the same rate, and there are some moderate concerns of over-supply in the future. However, please note that, even with the increased volumes forecast, the amount does not constitute an overwhelming “wall of wood.”

- Although most radiata logs are directed first to sawmills, several major pulp projects are being developed in 2004-2006. Almost all new investment in Chile has been generated by the major Chilean companies themselves.

- Despite the concerns over clear-pine markets, the industry has maintained its commitment to pruning, and has been developing the infrastructure to process higher volumes of pruned logs. With a 25-year supply of pruned logs in the pipeline, there is no doubt that the Chilean industry will continue to try to develop and expand markets for clear radiata pine.

End of Presentation