

MARKETS FOR FOREST PRODUCTS

Report from P F Olsen and Company Ltd, Rotorua

Investment in a forestry plantation is a long term commitment and thus carries a number of risks. By applying good forest management and carrying insurance cover against crop losses from fire and wind, the investor can be confident of the physical outcomes from the investment. Future increases in world population and increasing individual wealth, coupled with a decline in the wood available from natural sources, indicate a good future for plantation grown wood.

The principal risk for the investor is therefore whether the future product price will generate the required rate of return or better. The rate of return calculations used in this project are based on the assumption that the future prices obtained will be similar to recent average prices.

There is also a risk of picking the wrong species or product to grow. In New Zealand one major company has backed the option of growing Radiata pine on a very short rotation with no tending. Others favour growing Radiata on a longer rotation combined with pruning to maximise production of clearwood. The principal alternative species for New Zealand wood growers is Douglas Fir, which attracts higher prices than Radiata pine logs of similar quality, but requires a longer rotation.

How certain are we of future trends? What are the upside and downside risks? Understanding the underlying factors will provide confidence in the predictions. As with most financial forecasts there is a wealth of opinions. Not all can be correct and each year adds new information. We have tried to present a balanced picture from the data that is currently available.

This report looks at the factors expected to impact on the longer term wood market. Specifically examined are:

- *predicted demand for wood products,*
- *current sources and predicted levels of supply,*
- *international competition, and*
- *the effects of these inputs on New Zealand wood prices.*

Like most forecasts the demand figures are based on extrapolations of historical trends. The future supply estimates should be based on real measured quantities, since most trees to be felled over the next 20 years, other than short rotation pulpwood crops, must be already growing. However our experience is that some countries are not sifting out failed areas from their planting statistics and their estimates of future wood availability are likely to be optimistic.

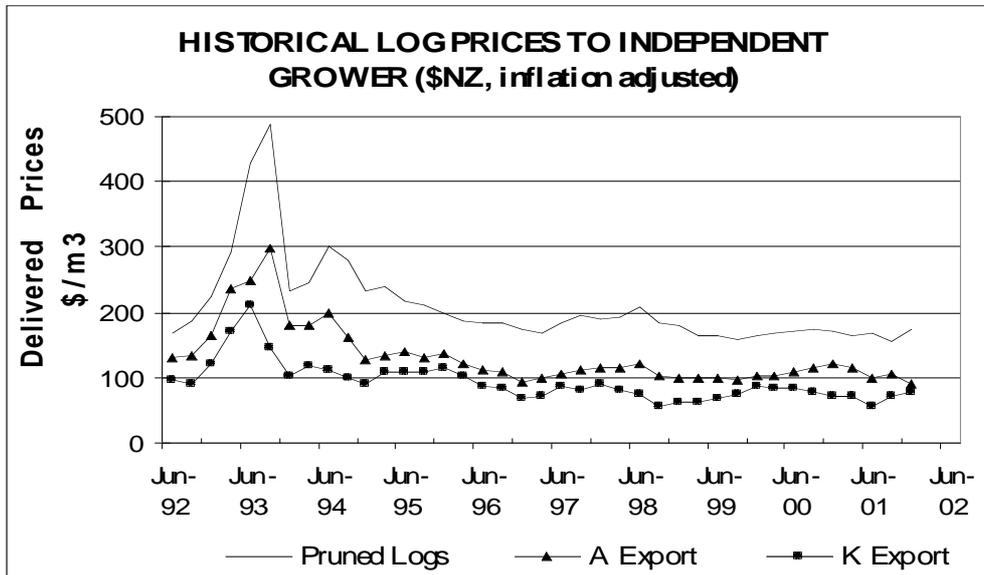
Wood is a global commodity

Wood is a globally traded commodity. In recent years trade has widened outside some traditional market patterns, sometimes aided by subsidies. Europe now supplies large volumes of sawnwood to Japan. Logs from wind damaged trees in Europe are being exported to China. New Zealand sells wood to the USA and Chile to Western Europe.

As for all commodity trading we can expect price fluctuations in each product category.

The chart below shows recent median price movements for New Zealand export logs for a generic range of log grades.

Chart 1: Real New Zealand Export Log Price Movements



Data sourced from New Zealand Ministry of Agriculture and Forestry December 2001

Over the next five years at least, expect wood prices in New Zealand to be volatile, governed by the rates of economic growth in Asia and the level of increased supply placed in the market by New Zealand and other Radiata pine wood exporters. The economic growth of wood using countries in Asia has slowed from the highs of the early nineties, and will probably remain low for the medium term as local economies go through a period of consolidation.

Increasing globalisation of industry makes wood production, import, export and consumption statistics a confusing source of information on future export opportunities for New Zealand. Japanese companies with high domestic costs have moved some manufacturing offshore. Examples are sawmilling in China and plywood manufacture in the Philippines. These countries import wood, process it and then export it to Japan or elsewhere providing a confusing demand picture.

Future Demand for Wood Products

Past industrial wood usage trends have closely tracked increases in population growth and per capita wealth. The World’s population is expected to be 7 billion by 2010 and 8.2 billion by 2020, up from 6 billion at present. 59% of this population is located in the Asia Pacific region. Increased wood usage per capita in the past has followed expanding per capita gross national product. Once a country’s GNP per capita level reaches that of the developed countries, growth in per capita wood consumption flattens off, or decreases due to improved efficiency in wood use.

FAO’s 2001 forecast of global industrial roundwood usage shows annual industrial wood use of 1.68 billion m3 in 2000 rising to 2.61 billion m3 in 2030. This increase of 930 million cubic metres in annual usage is large in proportion to New Zealand’s total annual output of roundwood. New Zealand’s year 2000 harvest was 18 million cubic metres and is forecast to increase to 25 million cubic metres within the next few years and an eventual 30-36 million cubic metres by 2020.

Table 1: Predicted Usage of Total Industrial Roundwood

Year	Billion m3
1994	1.57
2000	1.68
2010	1.88
2020	2.19
2030	2.61

Source FAO 2001

FAO's predictions above shows an expected annual compound growth in consumption of 1.4%. This level of increase is less than in previous predictions. The 2001 predictions are modelled on reduced growth of gross domestic product and incorporate the impact of expected rises in price, which reduces demand.

Much of the world growth in wood usage is expected to be in the western half of the Pacific Rim. Does this mean increased demand for New Zealand wood products and if so, what products?

Simple matching of expected total wood supply and demand is too simplistic. A shortage of supply in one product or species cannot always be met by substitution by another. Processors converting from tropical hardwoods to plantation grown softwoods have to alter their processes and their machinery specifications to handle the new species. They may also prefer to exit the business or switch to non-wood substitutes.

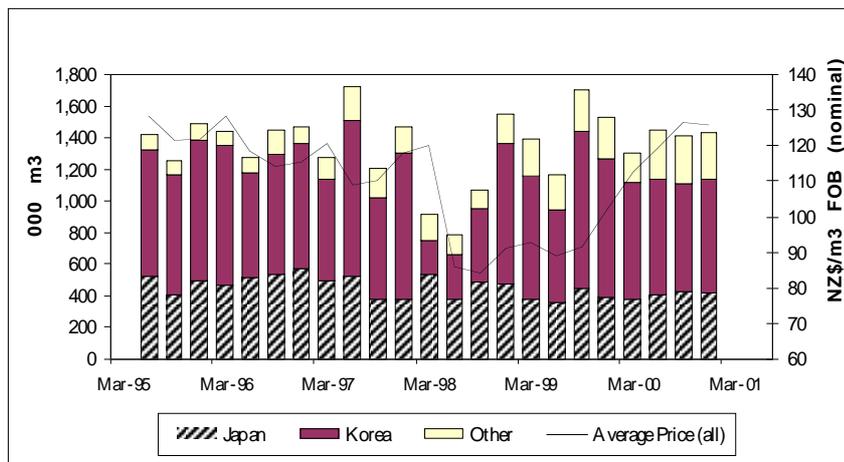
The wood products that are presently becoming scarce in Asia are large logs from natural forests, particularly hardwoods from tropical rainforests. New Zealand plantation wood is generally less strong, less dense, less durable, softer and lighter in colour and if unpruned, are full of large branch knots. Radiata pine is also wetter than many alternative species, so costs more to dry. So can it substitute for rainforest woods? The answer is that for many uses it can, by introducing suitable processing such as densifying, preserving, dyeing, engineering design, drying or whatever is required. Since this processing comes at a cost the answer is that for some markets Radiata will trade at a discount to tropical hardwoods or to harder, denser and more durable old growth softwoods.

FAO presents a wealth of statistics on both supply and demand and wood usage. This data is supplied by members of the United Nations. In general, international protocol prevents those data known, or suspected, to be unrealistic from being specifically identified and amended. This means both the supply and demand forecasts may be inaccurate in detail.

In some countries substantial volumes of wood are harvested illegally, so wood usage is under reported. Plantation area data is also often drawn from the reported production of seedlings (as in New Zealand, for each immediate past year. The New Zealand figures are verified later). In many cases the area of productive plantation successfully established is far less than seedling production figures suggest. Plantation establishment area and productivity are often over reported.

To study how international wood demand impacts on New Zealand it is easier to focus on New Zealand statistics, which are both precise and can be verified. Chart 2 shows recent log export statistics. Export statistics in this chart and those following are all based on NZ Ministry of Agriculture and Forestry Statistical Releases.

Chart 2: Quarterly Log Exports and Average Prices

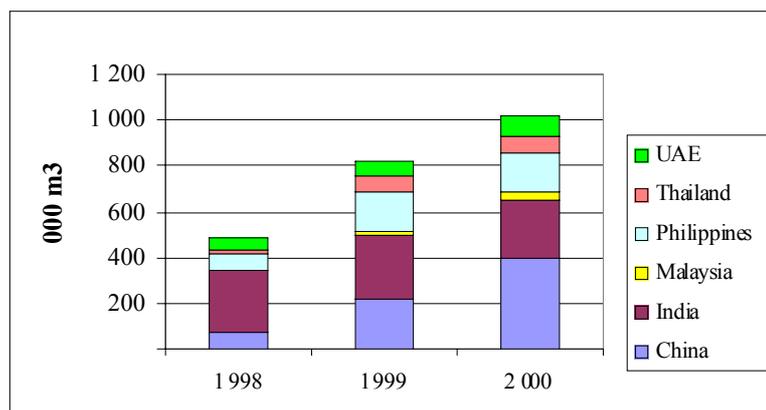


Sourced from NZMAF Statistical Releases

New Zealand’s largest trading partners in log products are Japan and Korea. Japan is unlikely to provide an expanding market for New Zealand logs. Korea is another large buyer that has potential to expand its future uplift volumes, but as Chart 2 shows with the 1997/98 dip in price and volume, its wood usage is tied closely to its general economic vigour.

Chart 3 looks at log exports to countries in the ‘others’ category in Chart 2. The general trend for these smaller importers has been an increase in imports of New Zealand wood. All these countries other than the United Arab Emirates have large or very large populations.

Chart 3. New Zealand Log Exports to Smaller Markets



New Zealand’s opportunity to find large new markets for our expanding wood supply lies with populous countries with rising wealth. So far China shows the most promise. Charts 4 and 5 show sawnwood exports follow similar patterns to logs.

Chart 4: Sawnwood Exports to Major Markets

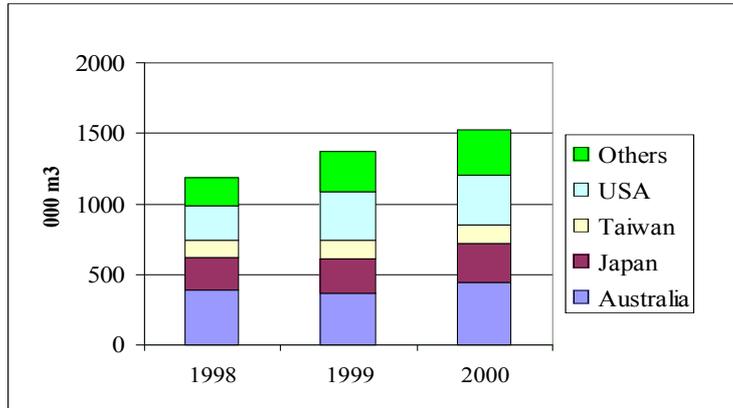
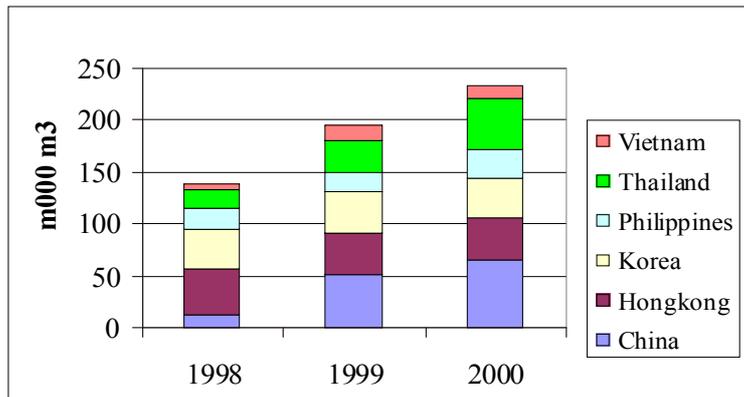
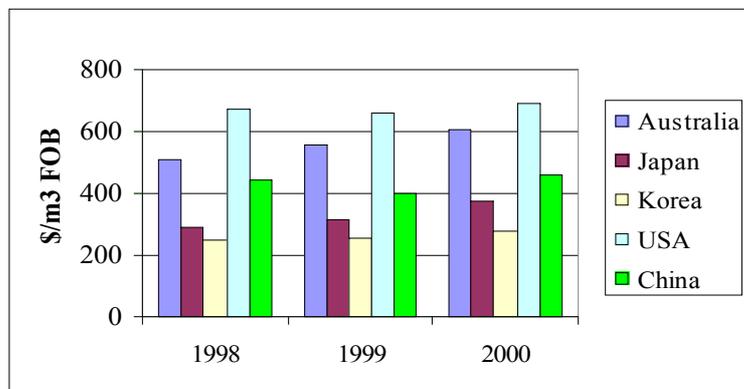


Chart 5: Sawnwood Exports to Other Countries



Products exported vary in quality and value. Chart 6 shows that sawnwood exports to Australia and the USA have far higher average unit value than those to other markets.

Chart 6: Unit Prices for Export Sawnwood



Demand for New Zealand sawn wood products in Asia is largely for use in packaging and concrete form-work. Use of Radiata pine timber in construction is limited in Asia, though use of products such as laminated veneer lumber, laminated beams and edge glued panels are making an impact.

The USA is driving the present buoyant market demand for knot free Radiata products. New Zealand can expect stronger competition from Chile in these markets, since Chile has substantial tariff and freight advantages.

Chile's product is not made from pruned wood. Knots are cut from knotty boards and long lengths are reconstituted by finger jointing. This process has:

- the higher cost of processing the final product, and;
- collateral losses from waste (the lengths containing knots) in the process.

Using pruned wood saves energy, capital and labour costs required to convert unpruned wood to a similar product.

Japanese plywood manufacturers regard Radiata pine as too soft for face veneer. Currently Japan prefers Russian Larch to Radiata as a hardwood substitute for core veneers, because it is easier to dry and is harder, but the rising cost of Larch is forcing them to use Radiata pine. The Philippines import both pruned and unpruned logs for plywood manufacture. As tropical hardwood supply becomes increasingly constrained by supply and/or price, more Asian plywood manufacturers may change over to Radiata.

Table 2 quantifies the relationship between wood use and current imports of logs and sawnwood from all sources within those countries in Asia which are substantial wood users.

Country	Population millions	GDP per Capita (\$US 1995)	Industrial Roundwood				Sawnwood		
			Consumption (m3)		Imports (mill./m3)	Exports (mill./m3)	Consum. (mill./m3)	Imports (mill./m3)	Exports (mill./m3)
			(millions)	per capita					
Japan	126	39,640	82.30	0.66	57.19	0.02	37.29	8.34	0.07
China	1,244	620	107.83	0.09	5.30	2.20	28.37	2.81	0.57
Hongkong	6	22,900	1.15	0.19	0.66		0.91	0.42	0.00
R.Korea	46	9,700	17.66	0.39	15.65		4.71	1.09	0.04
India	960	340	43.50	0.05	0.45		20.41	0.02	
Indonesia	204	980	46.75	0.23	0.11	0.76	7.82		0.66
Philippines	71	1,050	4.79	0.07	0.28	0.04	0.73	0.70	0.07
Malaysia	21	3,890	26.73	1.27	0.16	11.34	4.58	0.13	2.68
Thailand	59	2,740	8.18	0.14	1.04	0.28	3.14	2.40	0.08
Vietnam	77	240	2.20	0.03	0.00	0.21	0.76	0.01	0.01
Total	2,812		341.1	0.12	80.8	14.8	108.7	15.9	4.2

Table 2: Economic and Wood Use Statistics East and SE Asia (Year 2000 provisional figures)

Source FAO 2001 and 1999 (GDP)

The list above excludes other populous Asian countries such as Pakistan, Bangladesh and Iran who import very little wood at present. Taiwan data is excluded because it is not a member of the United Nations. The use and import figures for China are almost certainly an under estimate with year 2000 industrial log usage figures reported at 140 million m3 and imports at 13.6 million m3 (Japan Lumber Journal March 2001)

While there are variations in different analysts' projections of wood demand, there is general agreement that the strongest drivers are population and GDP growth. There is consensus that both will increase in this region, causing a significant rise in demand for wood. Such a rise in demand may result in better conversion rates, new products which economise on roundwood inputs and substitution with other materials. These developments are likely to dampen, but are unlikely to prevent the rise in demand.

World Forest Supplies and New Zealand in Perspective

The World's forests are estimated to cover some 3,869 million hectares in 2000 (FAO 2001). The forested area has been decreasing yearly. The current loss rate has slowed from previous decades, but is still some 9 million ha/year (FAO). Indonesia, Malaysia, Burma and Thailand have been losing 1.2%-1.4% annually.

In Asia the overall rate of area loss is balanced by creation of new plantations, mostly in China. The productivity of many of these plantations in low rainfall or low temperature areas is low and the actual growing stock will have decreased.

Only about half the natural forests are suitable for production. The remainder is restricted for various reasons such as National Parks, Reserves and various economic reasons such as lack of infrastructure, remoteness and terrain.

Natural forests still dominate world wood supply. The three largest producers the USA, Canada and Russia have 83% of the standing volume and supply about 77% of the current demand. In much of Europe outside of the UK the line between natural forests and plantations is very blurred because plantations are stocked with native species and natural forests are intensively managed for sustained yield.

The three major suppliers will continue to dominate the world market for wood for some time to come. For these three major suppliers average yields per hectare have been diminishing and forests cut now are generally more remote and therefore more costly to exploit.

Environmental legislation, particularly in North America, is expected to increase costs and limit supplies. North American annual roundwood exports to Asia have declined from 29 million m³ in 1990 to 20.9 million m³ by 1996. They are forecast to decline to 4.2 million by 2030 (FAO).

Demand in the USA for New Zealand wood has been increasing. New Zealand Radiata pine exports to the USA increased by 48% over the last three years to reach 353,000 m³ in the year to December 2000 (MAF). The USA is now New Zealand's second largest sawn timber export destination after Australia.

Lack of infrastructure is a major impediment for Russia to increase wood supplies into Asia. Once the world's largest timber producer, its national output has fallen since the end of the USSR. Russia has the resource to increase supplies significantly, perhaps by as much as 60 million m³ (Alternative Futures for Global Fibre Supply FAO 1996) in increased output from its far eastern forests. Output from the Russian Far East has increased recently helped in part by China supplying resources to harvest logs for export to China. See Table 3.

Table 3: Exports of Logs from Russian Far East (million m³)

Destination Country	1998	1999	2000
China	0.0	4.3	5.6
Japan	4.3	5.7	5.2
Total	4.3	10.0	10.8

Source: Japan Lumber Journal March 9 2001

Increasing production costs are likely to keep the possible expansion of production in Russia in line with increasing world market prices, but this may be balanced by the falling Rouble combined with Russia's ability to internally source most costs of machinery, material, fuel and labour. Exports into Korea from Russia in 1998 were reported to be at less than cost price.

In South-East Asia, as in most tropical regions, forest area is diminishing due to harvesting and/or conversion of forest to agriculture or degradation to scrub. Supplies of logs for timber and wood based panels from South-East Asia are expected to drop by 50% over the next 25 years (source: FAO, FLC

Reed). This reduction of some 46 million cubic metres is more than two times New Zealand's current harvest. The Asian region combines an increase in projected demand with diminishing supplies and is a natural market for New Zealand supplies, because of proximity and growing trade links in other industries. The significant projected decline in North American roundwood exports to Asia as discussed above will provide increasing opportunities for expansion of New Zealand exports to Asia.

FAO estimate Global forest plantation resources at 124 million hectares or 3.2% of the total forests. New Zealand's current 1.8 million hectares constitutes only 1.4% of the plantation area compared to Asia (40% of the area) former USSR (22% of the area) and North America about 20% of the area). New Zealand forests are more significant in terms of output because of their high productivity, but compared to world wood supplies New Zealand is a very small supplier.

Only Chile, New Zealand, Australia and South Africa have predictable increased supplies of large dimension logs in the Pacific Rim region. Together they are expected to increase annual production by 30 million cubic metres of coniferous roundwood between 1998 and 2010. The Nordic countries also have surplus capacity in softwoods that can be diverted to the Pacific rim, if prices are adequate.

Indonesia, Malaysia, China, India, Canada and the USA are expected to reduce or limit supply over the next decade. The changes in the USA and Canada will be dependent on Government action. How much additional resource will they lock up, if any? Only slow growth in production is expected for North America over the next ten years to 2010 (FAO 1999). For Malaysia and Indonesia the reduction in volumes of high quality hardwood from the natural tropical forest is inevitable, since it is not being replaced by similar plantation product. Plantations in these countries are mostly producing short rotation pulp grade logs. FAO predicts a reduction in output of some 40 million m³ of tropical hardwood logs from these countries between 1996 and 2010.

In 1998 both India and China have introduced or announced sharp reductions in domestic harvesting to conserve forests resources. China has announced a 37% reduction in its immediate annual cut for 10 years. This equates to a reduction of around 24 million m³ per annum. China has a low per capita wood usage of 0.1m³/year. This is half the World average consumption. In comparison New Zealand uses 2.1m³/year per capita.

Matching of Supply and Demand

Supply and demand will always match, while prices will vary depending on the changes that will take place. In the short term higher prices increase supply, as was demonstrated following the timber and pulp price rises in 1993 and 1995 respectively. Substitution for dimension lumber by reconstituted or engineered wood products, steel, aluminium, cement and plastic is taking place and likely to continue when prices for solid wood increase relative to these materials. This process however can be reversed if the costs of producing these substitutes increase. Substitutes to solid wood in particular require non-renewable energy and raw material resources. Increases in the costs of energy may result from an increase in energy demand and a possible introduction of carbon taxes. This in turn would increase the demand for and price of solid wood.

On the other hand advances in process technology and higher prices will provide the impetus to further improve conversion rates, reduce waste and make recycling more attractive.

Higher prices will also encourage more people to grow wood, as has already happened in New Zealand. It should be noted that the area of plantation that would need to be established now to replace diminishing natural forest supplies would be large. There are significant constraints limiting expansion of plantations in many countries i.e. capital, management expertise and access to suitably fertile land.

In the medium and long term diminishing supplies from natural forests and an increase in demand for products now made from wood is very likely to result in higher prices. This situation provides excellent

long term prospects for plantation grown timber. Table 4 shows the predicted net value of exports less predicted imports over time. Negative numbers equate to a deficit in trade and positive numbers a surplus.

Table 4: Predicted World Trade in Roundwood and Sawlogs by Regions

Roundwood	2000	2010	2020	2030
Africa	9,332	17,667	36,002	77,391
Europe	-22,219	-34,145	-75,841	-139,081
Asia	-65,397	-91,538	-120,580	-164,914
North/Central America	4,892	-2,025	-19,507	-30,940
Former USSR	29,258	41,048	51,323	73,634
South America	11,356	17,616	44,553	102,250
Oceania	23,887	42,486	75,159	72,769
Sawnwood				
Africa	-1,561	-1,714	1,615	12,050
Europe	-12,429	-19,798	-23,178	-26,237
Asia	-13,397	-18,359	-32,334	-52,356
North/Central America	23,309	40,299	58,062	75,481
Former USSR	4,827	1,516	35	1,743
South America	1,681	28	-2,836	-9,996
Oceania	508	967	1,576	2,253

Source FAO 2001

The Asia region has the fastest growing deficit in both roundwood and softwood.

Prospects for New Zealand Radiata Pine

New Zealand is well placed to supply an expected wood deficit in Asia. The main competition will be from Russia and South America. North American sawnwood will compete against structural timber products.

Long term threats to markets for New Zealand wood would be very large investments in plantation forests elsewhere. A comparison between New Zealand and other producers however shows that only few other places in the world can match the growth rates achieved in New Zealand, and produce relatively large logs in a very short time of only 25 to 30 years. The trees our competitors will be selling have already been planted and there are not too many of those as discussed above. Interest in plantations has increased in tropical areas recently. Most Asian and South American tropical plantation projects are growing short rotation crops for pulp and paper production. The competitive strength of the New Zealand forest growing industry is production of large logs to substitute for logs from natural virgin forests in North America and Asia.

Expanding plantations in South Brazil, Uruguay and NE Argentina include both hardwoods and softwoods. They are rapidly expanding their resource at present and have large areas of good quality land available for plantations. They have advantages of superior growth rates and lower production costs than New Zealand coupled with good quality management. Their disadvantages compared to New Zealand are distance from Asian markets and political structures that add a lot of cost to overheads. If establishment programmes are maintained at a high level they will have an impact on New Zealand markets, particularly in the USA. For the next 15 to 20 years, such competition is unlikely to have a significant impact on markets for large dimension sawlogs.

Over the next decade, wood product prices are not expected to rise significantly. Many regions have ample production capacity. The current world economic slowdown will further mitigate price rises.

Large dimension sawlogs, particularly the higher grades, may be the exception. Though any price rises will be restrained by the availability of substitutes.

In the longer term however, the fundamentals of supply and demand described previously indicate deficits and likely price appreciation. Confidence in the outlook for log prices to be obtained from new planting or stands to be harvested in the long term should remain positive.

New Zealand has gained considerable experience in growing plantation forests. The research and development that has taken place during the last 70 years has provided us with the knowledge to manage forests well, produce outstanding growth and make considerable improvements in the quality of the logs produced. There are still opportunities to further improve our skills in growing radiata pine, but the knowledge, skills and technology available gives New Zealand forest growers a considerable competitive advantage for some time to come.

New Zealand plantation grown wood is a renewable resource grown for export and domestic consumption, which allows us to manage most of our remaining natural forests for other purposes. The Resource Management Act provides a framework for the protection of water and soil values and an assurance that the commercial, environmental and socio-economic interests are suitably balanced. This in turn provides an excellent basis for eco-labelling and environmental management certification, which are likely to be required by some of our future customers.

Despite the recent weak market conditions the medium and long term outlook appears to be sound. Such outlook is based on an analysis of the fundamental factors which will shape future markets. These are:

- projected supply,
- projected demand, and
- changes in technology and production costs.

These long term fundamentals remain unchanged by the Asian crisis. Indeed, the economic restructuring currently underway in Asia will be of future benefit by ensuring economic growth. This economic growth will ensure that Asian wood markets will be more stable and sustainable.

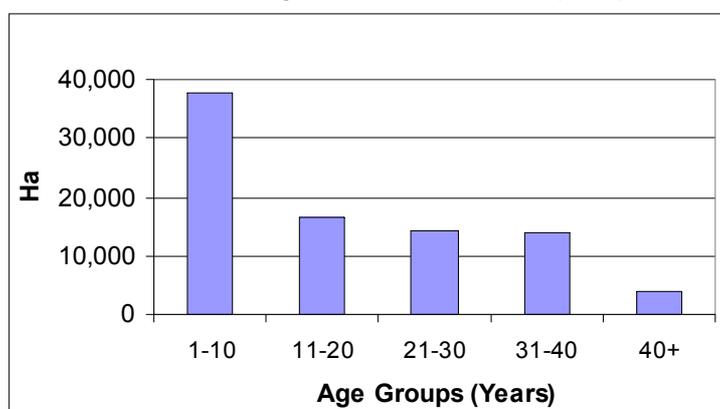
Douglas Fir in New Zealand

New Zealand's 86,000 ha Douglas fir resource is 5% of the total New Zealand plantation area (MAF 1999), making it the second most popular species after Radiata pine. Two thirds of the area planted between 1994 and 1999 is sited in the Otago/Southland region, planted mainly by two overseas-owned companies: Blakely Pacific and Wenita.

In the south of the South Island Douglas fir as a plantation species compares favorably with Radiata pine in terms of volume output, form, and tolerance to high altitude, exposure and to snow. It is also free of infection by *Dothistroma pini* rust.

The Douglas fir age class distribution was formerly mostly crops over 60 years old. Most of these older stands were harvested in the past 10 years while export Douglas fir log prices were high. Chart 10 shows the 1999 age class distribution.

Chart 7: Douglas Fir Planted Area (1999)



Sourced from MAF

Volumes of N. American Douglas fir imported into Japan are greater than any other species, forming 23% of log imports and 14% of lumber imports in 2000 (Japan Lumber Journal 2001). Table 5 shows quantities imported.

Table 5: Douglas Fir Exports to Japan from North America (000m3)

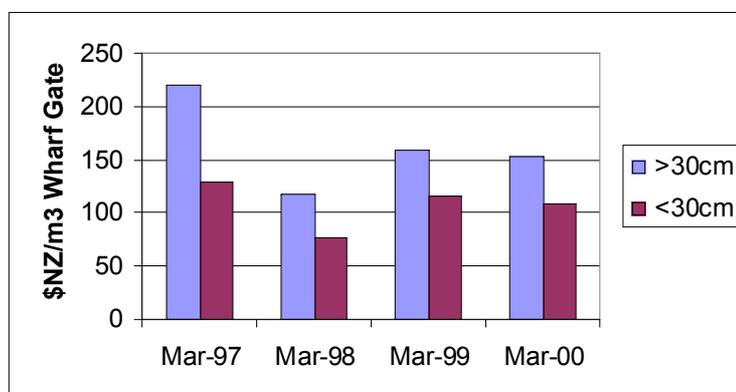
Year	Logs	Lumber
1997	3,466	1,454
1998	3,369	1,123
1999	3,388	1,308
2000	3,430	1,273

Douglas fir pricing perspective

In Japan Douglas fir is generally used in construction, while Radiata pine timber is used for making crates and boxes, concrete form-work and core veneer for plywood. Market prices for the logs of North American Douglas fir and Radiata pine logs do not always move up and down in tandem as a result of the different markets. This differentiation of end uses between the species provides a New Zealand forest owner growing both species some hedge against price falls in one of the market sectors. Generally there is a reported \$200/m3 margin in the CIF Japan price between J grade logs (20-30 cm small end diameter) of the North American Douglas fir and New Zealand Radiata pine.

Douglas fir logs exported from New Zealand attract prices some \$NZ100 - \$NZ150/m3 lower in Japan than North American Douglas fir. The main reason is that the North American logs have very small or no knots which New Zealand logs cannot achieve under plantation conditions. A range of export prices over the past four years are shown in Chart 8.

Chart 8: Price Movement Trends of 2 Grades of Export NZ Douglas Fir logs over time.



New Zealand domestic log prices for Douglas fir exceed those of unpruned Radiata pine of similar quality grade. Most Douglas fir is sawn into framing lumber. The price margin between unpruned logs of the two species roughly equates to the cost of drying and preserving sawn Radiata, which are not required for Douglas fir. This cost equates to a delivered price premium for Douglas fir logs of around 20% - 25% over a similar grade of Radiata log, and 7% - 10% for short logs (3.7m – 4.3m). The better Douglas fir logs sell at equivalent prices to pruned Radiata pine.

Douglas fir is exported to Japan and China in a variety of grades whose names and descriptions vary with the exporter. New Zealand is not able to produce the highest grade export logs, which derived from natural stands in North America and are both slow grown and have very small or no branches. Table 6 indicates a product mix achieved from Douglas fir on an average South Island site. The indicative prices are those currently applying. Far higher prices for Douglas fir logs have been achieved in the past few years.

Table 6: Typical Out-turns from tended Douglas fir Stands Aged 40 – 45

Grade	Branch Class	Sweep Class	Minimum SED	Lengths & % mix (m)	Grade recovery %	Price at mill or wharf (\$NZ)
Large Export	0-6cm	<D/4	32 cm	12.1 (70%) 8.1 (30%)	10	150
Small Export	0-6cm	<D/4	22 cm	12.1 (70%) 8.1 (30%)	28	110
Large Domestic	0-6cm	<D/4	25 cm	3.7 - 6.1	40	80
Small Domestic	0-6cm	<D/4	15 cm	3.7 - 6.1		
Pulp		< D/2	10 cm	3.2 - 11.1	22	35

Sawnwood imports into Japan of smaller dimensions Douglas fir are in competition with imports of laminated veneer lumber. Large dimension Douglas fir beams 250mm or wider and 3 to 6m long hold a large premium over smaller sizes.

The case for growing Douglas fir rather than Radiata pine is similar to the case for pruning Radiata pine. With pine the margin for pruned logs is mostly defined by the cost of producing competing finger-jointed clearwood boards from unpruned sawnwood. The smaller dimension Douglas fir in Japan competes with laminated veneer lumber made from other species. As with finger jointed pine the cost of processing laminated veneer lumber sets a minimum margin between Douglas fir log sale prices and that of other species such as unpruned Radiata pine. This provides Douglas fir with an in built premium in comparison to species such as Radiata pine.

Large dimension Douglas fir attracts a large price premium from those house owners who want solid fir beams and who are prepared to pay extra for them. Generally these larger sawn products logs will only be obtained on trees grown on rotations longer than 50 years.

This report is taken from the Prospectus for the Mt Whitnow Forest Partnership registered on the 28th of January 2002 and together with the Investment Statement, available from Warren Forestry Ltd free of charge.

PF Olsen and Company Ltd have given, and have not withdrawn before delivery of a copy of the Prospectus for registration, its written consent to the distribution of the Prospectus with its report included in the form and context in which it is included here.

PF Olsen and Company Ltd has not advised on the preparation of this Prospectus and does not hereby make any presentation concerning any of the content of the Prospectus, other than its report included here.

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