Wood Supply and Demand Issues in The Pacific Rim – Background Situation

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In association with Jaakko Pöyry Consulting

Abstract

The paper contains an update on the wood supply and demand outlook situation for New Zealand. There have been a number of modelling attempts in recent years to look at both supply and demand situation for wood. The outcome of these modelling attempts has been inconclusive. The paper attempts to separate market certainties from uncertainties. It also highlights the increasingly important role of plantations in the world industrial wood supply, and the decreasing supply of larger diameter logs. The paper concludes that there are significant market risks in plantation forestry as a result of the long lead times and changes in the world economy. New Zealand appears to be reasonably positioned because of our early investment in larger diameter logs and our presence in the Asia-Pacific market region; however, there is no room for complacency.

Introduction

Plantation forests are playing an increasingly important role in meeting the world's growing requirements for wood and non-wood forest products. Whilst plantations represent less than 3 per cent of the world's forest resources they are estimated to supply 35 per cent of the world's demand for industrial roundwood and 10 per cent of fuelwood. Their supply capability is increasing and this raises ongoing concerns regarding the market outlook. There have been a number of modelling attempts in recent years to look at both the supply and demand situation for wood. The outcome of these modelling attempts has been inconclusive.

This paper does not attempt to provide another in-depth econometric model. Instead it takes a practical and common sense approach to link the key findings of previous studies to our combined experience in the region, and separates certainties from conjecture. We have started off with a summary of the major factual issues that are shaping supply and demand. The forestry sector worldwide is however facing an unprecedented and an accelerating rate of change. Change inevitably produces uncertainties. We have provided a listing of the future dynamic issues/risks affecting the demand for New Zealand's plantation forest products, that we believe need to be monitored and where practicable, managed.

Although the main emphasis of the paper is directed toward the supply and demand situation facing New Zealand’s larger diameter Radiata pine logs, to provide perspective, a limited amount of detail has been included on both the global industrial wood products situation and the regional supply and demand of pulpwod/small diameter logs.

The Certainties Of Wood Supply

Future increases in global wood supply will largely come from plantations. The annual global industrial wood supply from plantations is predicted to increase from 624 million cubic metres in 2000 to 1043 million cubic metres in 2040 – an increase of 67 per cent. Their predicted contribution to regional and the global wood supply is shown below:

### Predicted Contribution of Plantation Wood to Regional and World Industrial Wood Supply

<table>
<thead>
<tr>
<th></th>
<th>2000</th>
<th>2020</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Oceania</td>
<td>32</td>
<td>46</td>
<td>48</td>
</tr>
<tr>
<td>World</td>
<td>35</td>
<td>44</td>
<td>46</td>
</tr>
</tbody>
</table>

ABARE/Jaakko Pöyry 1999, Global Outlook for Plantations, Canberra

Industrial plantations have increased rapidly over the past 20 years – the areas of plantations by region in the mid 1990s are below. These areas exclude rubber wood plantation areas.

<table>
<thead>
<tr>
<th>Industrial Plantation Forest Area, by Region</th>
<th>Total Area mid-1990s</th>
<th>Effective Area mid-1990s</th>
<th>% of World Effective Plantation Forest Area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>million ha</td>
<td>million ha</td>
<td>%</td>
</tr>
<tr>
<td>Asia</td>
<td>32</td>
<td>46</td>
<td>48</td>
</tr>
<tr>
<td>Oceania</td>
<td>55</td>
<td>66</td>
<td>67</td>
</tr>
<tr>
<td>World</td>
<td>35</td>
<td>44</td>
<td>46</td>
</tr>
</tbody>
</table>

Source: ABARE/ Jaakko Pöyry (ii)

Within the Asia Pacific area, the major increases in large diameter log supply will be from the plantation forests of New Zealand, Australia and Chile. For the purposes of this paper we would define large logs as those with an average diameter of greater than 30 cms.

<table>
<thead>
<tr>
<th>Predicted Production of Plantation Forest Large Diameter Logs From Main Exporting Asia-Pacific Countries (millions m3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
</tr>
<tr>
<td>-------</td>
</tr>
<tr>
<td>Australia</td>
</tr>
<tr>
<td>Chile</td>
</tr>
<tr>
<td>New Zealand</td>
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<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Jaakko Pöyry & Ogle/Miller estimates
Commercial logging of natural and semi-natural forests is becoming an increasing emotive environmental issue worldwide. Over the 15 years to 1997 there was a loss of 200 million hectares of natural forests in developing countries and the loss is still thought to be continuing at around 12 million hectares per year. Although commercial logging can only be directly related to about one quarter of this forest clearance it does indirectly provide access for follow up agricultural encroachment and markets for informal sector logging. Wood certification linked to “green consumerism” is a direct product of the concern in developed countries to try and slow the level of unsustainable logging. The increasing impact of green consumerism is a certainty. In the long run it will both reduce the availability of natural forest logs (particularly of larger diameter logs) in the Asia Pacific region and should increase the demand for plantation grown logs. In the short term however log production, particularly from the natural forests of Indonesia will be influenced more by a combination of economic pressure, lack of control over illegal logging and weak concession management.

Major supply problems of larger diameter logs are looming in Asia through the continuing over-logging and clearing of forests in Malaysia, Indonesia, and Cambodia. Reliable statistics do not exist in Indonesia and Cambodia because of illegal logging, and the figures estimated below are believed to be conservative. Also as volumes decline, the average diameter, mix of species and log quality will decline whilst cost of production will increase making the remaining volume less competitive in regional markets.

<table>
<thead>
<tr>
<th>Predicted Production of Natural Forest Large Diameter Logs From Main Exporting Asia-Pacific Countries (millions m³)</th>
<th>1998</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malaysia</td>
<td>22</td>
<td>12</td>
</tr>
<tr>
<td>Indonesia</td>
<td>40</td>
<td>15</td>
</tr>
<tr>
<td>Cambodia</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>68</td>
<td>31</td>
</tr>
</tbody>
</table>

Jaakko Pöyry & Ogle/Miller estimates

The impact of this declining supply of larger natural forest hardwood logs is most obvious on the regional plywood industry. The Asian plywood industry is changing fast. The main changes are: a) an increasing supply of smaller logs of lower quality, b) the ongoing shift to softwood logs (particularly as core veneer), c) the increased competition from non-softwood wood panel substitutes (particle-board and MDF) which can be produced from small diameter logs and wood/agricultural residues.

The large diameter log production from the Pacific North West forests of Canada and the United States is not expected to increase in supply. At the best these forests are likely to continue at its present level of supply to the Pacific rim countries of around 24 million cubic metres (in roundwood equivalents). Other commentators expect a slow decline in terms of its export supply and competitiveness within the region.

By the year 2010 China's domestic supply of large diameter logs is expected to be almost exhausted. Currently China's forests produce about 50 million cubic metres per year of sawlogs and peelers logs. Another 10 million cubic metres per year are imported of which 50 per cent is currently sourced from Russia. A number of estimates have been made of the future imports following the 1998 harvesting bans. The most important certainty is that all predictions agree that large diameter log imports will increase. The question of by how much and from where is much less certain and is discussed below.

The Russian Far East forests are still holding enormous supplies (perhaps 20 billion cubic metres) with an annual allowable cut of 100 million cubic metres per year. The current cut is around 20 million cubic metres per year. The certainties are (a) that Russia's Far East production is slowly increasing and, (b) that its problems of the high cost of production, inadequate infrastructure and the high risk investment climate are not likely to change quickly, and will continue to restrict rapid increases in supply.

Trees grown outside forests (mainly small farm woodlots, agricultural trees (eg. rubberwood) and home garden trees) are becoming an increasingly important source of larger diameter industrial logs. This is already evident in China, Malaysia, Thailand, India and Vietnam. Estimates of this source of wood are unreliable, but based on limited surveys we have seen in India and Vietnam it is estimated to already be as high as 20 million cubic metres per year for the five countries and increasing rapidly.

Fast growing, short rotation hardwood plantations will increasingly replace natural forests as sources of wood fibre for pulp and paper in Asia. In Indonesia, which has seen the biggest growth in paper and paperboard production capacity over the past 10 year, (from 1.0 million tonnes in 1990 to 6.0 million tonnes in 2000) there has been a corresponding increase in short rotation plantation establishment (20,000 hectares per year in 1990 to 150,000 hectares per year in 2000). Whilst planting figures are often over stated and growth rates lower than projected, many of the larger plantation companies are well managed and have invested heavily into R&D to boost plantation performance and yields. Results have been impressive. By 2010 Jaakko Pöyry estimate that 95 per cent of Indonesia's fibre supply will come from domestic plantations. A short fall in domestic fibre supply is still inevitable because natural forest sources are dwindling and re-planting rates have been unable to keep pace with industry capacity increases. Some Indonesian mills are already importing wood chips and logs from Malaysia and further opportunities exist for the export of softwood logs and chips from New Zealand.

and Australia.

Similarly the Japanese pulp and paper industry has through favourable price signals encouraged the establishment of fibre plantations in Pacific Rim countries such as Chile, Australia, South Africa, NZ, China and Thailand for chip export to Japan. The expansion in fibre production from these sources will ensure that the Japanese chip trade remains competitive with high risks for producers who are not low cost.

The Certainties of Wood Demand

Industrial wood demand correlates most closely with population increases and secondly with economic growth rates. Consumption of industrial wood products in 1996 in the world was an average of 0.26 cubic metres per person; which means a current industrial wood demand of around 500 million cubic metres per year in the Asia Pacific region (or 900 million cubic metres per year if we include South Asia). The general agreement from most of the demand models, is that the average world industrial annual round wood demand will increase by around 1.5 per cent to 2.0 per cent per annum over the next decade. Also as income per capita increases people with more money spend less on fuel wood but more on industrial wood products.

The Asia Pacific region is likely to continue to be the fastest growing region in the world in terms of consumption of all wood products for the foreseeable future. It will therefore increase its share of global consumption of industrial round wood relative to other regions from an estimated 21.6 per cent in 1994 to 24.8 per cent in the year 2010.2

Japan, as the region's largest importer of forest products by far, is expected to maintain its dominant consumption and importing position in most wood product markets for the next 10 years. Although growth in demand in the Japanese market has slowed in recent years it will remain an important market for added value products.

Thailand, Philippines, India and Viet Nam have all, over the last 5 years, moved to become net importers of industrial wood products, and in particular those derived from larger diameter logs. Exports from New Zealand to these countries should show modest annual increases. Pine logs and sawn timber have however a generally low image in all of these countries. Improvements in marketing and quality assurance will be needed if the opportunities for New Zealand exporters are to be fully realized.

The above four countries plus China have all instigated measures to reduce wood imports through promoting substitute materials (mainly concrete, steel, and plastics). Our observations in these countries are that wood substitutes are a larger threat to New Zealand's market penetration into markets than competition from alternative suppliers of wood products.

Similarly "green consumerism" is growing in the more affluent middle class segments of most Asian countries, and is regarding wood per se as unsustainable and encouraging substitutes. A strong case can be made for the need for a much higher level of generic market promotion by plantation forest producers to educate Asian consumers that trees are not an "endangered species".

Plywood and sawn timber demand is expected to face the lowest growth rates of all wood products in the Asia Pacific region over the next 10 years. Jaakko Pöyry predictions are that plywood demand whilst recovering from the downturn following the Asian crisis will still not achieve pre crisis levels. Asia-Pacific demand is expected to grow by about 1.5 per cent per year (from 18-21 million cubic metres per year) from 2000-2010, and that sawn timber demand will be around 2 per cent per year. This is a result of three forces. Firstly the relative overall declining availability of larger diameter logs suitable for sawing, and the secondly improved technologies for manufacturing engineered wood and panel products that will shift demand away from plywood and sawn timber, and thirdly the ongoing switch to wood substitutes.

Wood panel product demand (with the exception of plywood) is expected to continue to grow strongly (average growth around 5 per cent per year over the next 10 years). Recent Jaakko Pöyry estimates project MDF to grow at rate of 11 per cent per year, particle board at 7.5 per cent, and OSB at 26 per cent (albeit starting from a small base). This is a factor of three forces working together. Firstly the supply of small diameter logs or wood residues is expected to remain strong in most producing countries to provide sufficient input at competitive prices, secondly technological developments will continue to find efficient ways at utilising more small diameter logs to produce cost effective substitutes to products that previously required large diameter logs, (MDF, OSB, LVL etc) and thirdly the good physical properties of these products will assist in their maintaining competitiveness against wood substitutes. This also means that there will inevitably be a shift in the market from high quality high cost logs to lower quality and lower cost logs as processing technologies improve. This shift should work to New Zealand's favour.

In pure volume terms the largest growth in demand will be in pulp and paper products. The annual average growth rate for these products is expected to be 4 per cent to 5 per cent range in the Asia Pacific region for the next 10 years. However the forestry impact of this growth in consumption will not be so dramatic, as there is scope for further large increases in recycling in the newly industrialised countries in the region. In addition we are likely to see the increased use of non-wood fibres to augment fibre supply.

Uncertainties

World economic growth rates and the growth rates of countries in the Asia Pacific region cannot be predicted with certainty. The 1997/98 Asia economic crisis was
not widely predicted by economists. It has had a major unanticipated impact on wood demand in our region. Other unanticipated influences include the recent storms in Europe that will see large volumes of wood enter the European market with ripple effects into "our" markets. (Recent discussions with a European forester suggested that 300 million cubic metres of wind throw logs resulted from the January 2000 storms in France alone).

Wood demand is very sensitive to the pricing of wood substitutes. During the 1993/94 price spike, solid wood products lost market share to steel and plastics. Pricing of energy and other commodities will have an important influence on wood demand and pricing.

Although there appears to be general agreement on wood demand growth, there appears to be much less agreement on where the future wood supply will come from to equal the demand, and the level of price adjustment required to make global demand equal supply. We know that future supply is likely to be influenced by the current state of forest resources, the cost of resource access, management practices and Government policies. This however does not help us answer questions like whether China will largely draw its future supply from Russia rather than New Zealand.

The influence of green consumerism upon plantation forestry is still a major uncertainty. Society's perception of forests is rapidly changing and there appears to be no general consensus yet on the sustainability issues surrounding plantation forests. This goes wider than just the environmental impacts - it requires convincing the society on economic, production, aesthetic and social issues as well. Plantation forestry has still got a long way to go to improve its standards, information base and image.

A new but still uncertain influence on future wood supplies in the region is the growing interest in "carbon forests". These are plantations established to offset the impacts of global warming from industrial greenhouse gases. Carbon emission trading could result in major distortions to the forest industry. If accepted we could see major investments in tree crops. They will be established at lowest overall aggregate cost including land, planting, and maintenance. Their location may have little relevance to the geography of industrial processing options or markets. There will be a tendency to plant for high volume growth of fibre with lesser emphasis on quality for end use or silvicultural manipulation. Ultimately this could lead to a global oversupply of low quality fibre with consequent price and hence market implications.

Unreliable supply data will continue to create uncertainties. For example a number of Asia's smaller fast growing plantation forests, that were intended to be harvested before age ten for pulpwood, are unlikely to find an economic pulpwood market. Many plantation forests over the past 10 years have been planted in wrong places (usually too far from reliable pulpwood markets), and for the wrong reasons (eg. regreening and creation of employment). The consequences is that many such forests are growing into larger diameter logs that will eventually find their way into the sawlog and veneer log markets. Thailand, Malaysia, Indonesia, Vietnam, Laos and the Philippines all have a large number of examples of such plantation forests. The area of these "sawlog plantations by default" is currently estimated at 500,000 hectares in these six countries and we are beginning to see a major saw milling industry being developed upon small hardwood plantation logs.

Increased globalisation through improved transport systems, lowered tariffs and "branding" in marketing are important but uncertain influences. With the reduction of larger diameter logs within the Asia-Pacific region, the region is increasingly sourcing logs and sawn timber products from non-traditional sources. For example Scandinavian and Southern United States sawmillers have significantly increased their market shares for sawn timber products in Japan and other Asian markets over the past five years.

Conclusions and Implications for New Zealand

There is a need for "judgmental extrapolation" when trying to understand and interpret the various supply and demand modelling attempts in recent years. Alf Leslie's recent paper"* puts it more bluntly when he states "The whole procedure of forecasting the future wood supply-demand balance is so full of conjecture, contradictions, pre-conceptions, guesses and wishful thinking on both sides that almost anybody's guess goes."

The Asia Pacific region will continue to remain the largest wood deficit region in the world. Unfortunately little of the wood supply and demand modelling in our region provides adequate separation of large diameter logs from smaller diameter logs. We can however be relatively certain, that the deficit of larger diameter logs, where New Zealand has its largest investment and market exposure, is expected to increase.

Plantation forests will rapidly increase over the next decade as a source of industrial wood. However their true importance and potential is uncertain because of problems of definition, data collection, data analysis, variable outputs and public perceptions regarding sustainability.

There are undoubtedly significant market risks in plantation forestry as a result of the long lead times and the increasing rate of change in the world economy. We can however be confident that in probability terms "we have backed some winners" through our:

* Early involvement in plantations. Planted forests

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* ITTO 2000, Tropical Forestry Update: A J Leslie, For Whom the Bell Tolls
are now recognised worldwide as the major force driving wood supply. New Zealand has had early exposure to the growing, processing and marketing plantation grown wood products;

- Geographical presence in the wood deficit Asia-Pacific market;
- Large investment in larger diameter logs with relatively low production costs.

We cannot however afford to be complacent as there are challenges still to be faced. The most important of these are:

- Increased global competition in the Asia-Pacific region;
- Green consumerism and the uncertain image of plantation grown wood;
- Our over dependence upon, and our poor marketing practices associated with export log sales; and,
- Our generally limited experience to research, understand and produce for targeted market needs for added value wood products in the region.

Members invited to consider awards and scholarships

Awards and Scholarships

Members are invited to consider making nominations and/or applications for the following awards and scholarships.

Awards

Please forward these to the national Secretariat by the closing date of Monday 19th March, 2001.

Chavasse (travel)

Availability - Honorary, Fellow or Full members interested in travelling overseas (or bringing overseas speakers to NZ)

Procedure - Determined by NZIF panel. Written applications detailing country, timing, interests, itinerary and budget. Up to $3,500. Travel to take place prior to 31 March of the following year.

Balneaves (travel)

Availability - Open to anyone in forestry sector who is of good integrity, active in plantation research, with 10 years of professional activity ahead of them, in possession of good communication skills and with an interest and ability in establishing relationships.

Procedure - Determined by NZIF, NZFOA and Forest Research on application. Minimum $5,000 for travel in year of being awarded.

Forester of the Year (excellence)

Availability - Open to anyone in forestry sector with 10 years professional experience, integrity, communications skills and enthusiasm.

Procedure - Awarded on the basis of material delivered on any topic within the broad field of forestry using tangible communication techniques. Entries judged on ability to communicate the subject. Name engraved on (ex-forest service) carving and certificate.

Scholarships

As well as the above awards, there are three scholarships available as follows:

NZIF

Availability - Any NZ University

Procedure - under graduate application for $1000

NZIF Frank Hutchinson

Availability - Any NZ University

Procedure - post graduate application for $1000

NZIF Mary Sutherland

Availability - NZ Polytechnic

Procedure - forest student application for $1000

NZQA Levels 7 and 8 equate with advanced qualifications of graduate and postgraduate standard respectively. Applications close 31 March. There are no formal application forms. Selection is based on a 3 page submission by each candidate. Criteria for selection are aptitude, personality, community service, financial need, and relevance of the course to the profession of forestry.

The awards referees committee will make their selection in time for the recipients to be announced at AGM/Conference in April but the recipients will...