

# Global and Regional Supply Change Implications and Projections

For Mid-1990's New Zealand Forestry Investors

For Arbor Management Limited

By

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## Introduction

In the 1980s and 1990s a number of respected observers in New Zealand and overseas were predicting a very bright future for wood demand internationally, but with predicted reduced supplies of wood available for natural forests as they were cut out, or locked up for conservation reasons.

This in turn encouraged many New Zealand large and smaller investors to invest in new forest plantation projects and schemes in New Zealand. Observers and investors alike were particularly heartened by a “spike” in log prices internationally around 1993; when several observers predicted that this was a result of the start of a global wood supply deficit, and more price increases might be expected in future.

Many of the trees planted in these years are now ready, or will soon be ready, for harvesting. It is apparent, however, that the promised real log price increases widely predicted and expected, have not materialised. Indeed real prices for all log grades have reduced in real terms.

This report summarises the major reasons for this not occurring; both internationally and in New Zealand, the implications for returns expected for planting Radiata pine in New Zealand over the last several years; and possible future trends.

## The 1993 Price Spike

In 1993, log prices internationally spiked upwards. Probably the major driver for this was the sudden loss of huge areas of United States Federal lands available to harvest in the Pacific North West due to a “Spotted Owl” ruling, which severely restricted the ability to harvest lands which contained, or might contain, an endangered bird called the Spotted Owl. At the time, the United States Pacific North West was one of the three largest global wood baskets; and so any large, sudden reduction log supply would have been expected to tighten supplies and increase prices.

Unfortunately, this spike proved to be short lived as the world wood supply and demand balance, and (important for New Zealand) North Asian markets soon re-adjusted.

## Reasons for a Real Price Decline in New Zealand Log Prices: 1994 to 2014

There are several reasons why the “promised” real price increases widely predicted and expected in the 1980s and 1990s have not materialised.

DANA can place these reasons into two categories; generic and specific.

### Generic:

- Even the best predictors (if there are ever such people?) can only make predictions based on knowledge available to them at the time they make their predictions.
  - The very best may know about most (but never all) of the parameters which will affect behaviour in the future, but even good predictors are often not in command of several factors important to future outcomes.
  - This is especially true for anything to do with trees; as in the 1980s and 1990s (and even in 2014); much of the world tree resources are not well measured, are very isolated and hard to visit, and are described by statistics which vary from poor to abysmal.
  - A surprising example of this problem of measurement was revealed in November 2014, when respected and professional company Rayonier, conceded that its estimate of its United States Pacific Northwest inventory of available commercial forest had been seriously overstated for years; and it immediately had to reduce its annual harvest by 27%. This occurred in a first world country, with assets managed by a first world company which is continually and closely monitored by several agencies, banks, analysts and markets; including the New York Stock Exchange regulators.
  - In contrast most of the world’s forests remain unmeasured and are in regions with dubious or outright corrupt governance.
- An instant after even a good predictor makes his/her predictions, new and unknown events can commence to occur. These may occur days/months/years after a prediction is made, but any one of which may severely compromise a previous prediction.
- Just two examples of how easy it is to completely mess up predictions include:
  - The Bank of New Zealand (BNZ) predicted the NZD/USD exchange rate monthly, for eight years (96 data points). For this period, it got even the direction of the change wrong 54% of the time. The BNZ conceded that even a blindfolded monkey throwing a dart at a dartboard would eventually get the direction right 50% of the time.
  - In DANA’s opinion, close to 100% of “bona fide” predictors of future oil prices failed to predict a huge fall in prices in 2014. In aggregate, these analysts would have been paid 100s of millions of dollars to make predictions, all of which have been abysmally wrong.

- Very long term data series of commodity pricing, such as the Economist Commodity Price Index which has been published for 160 years, indicate that real prices of commodities have fallen over long periods.
- Predictors of any commodity prices are captive to their own experience and biases. This is true for those that predict tree/log prices.
- Many log price predictors have been/are academics, with very solid educational credentials, but have never been in the bear pit of actual commodity trading, so have not witnessed the often irrational behaviour of commodity traders; and how politics interferes with commodity trading and pricing.
- The markets adapt. If a commodity price increases too much, or over a long period, markets adapt by substitution or changes to demand behaviour.

### **Specific:**

The fall in real log prices over the past 20 years include, but may not be limited to:

1. While the Federal harvest in the United States Pacific North West plummeted, over time large private forest holdings increased their harvest levels, which are now higher than the harvest lost from Government lands.

Other globally huge wood baskets have increased harvest levels substantially and have the capacity to increase production substantially in the future. These include:

- a. The United States South, which in annual production terms is now the world's largest wood basket. It contains 19.5 million hectares of Southern Yellow Pine plantations, compared with less than two million hectares of plantations in New Zealand. It has the capacity to substantially increase production (by many times the total New Zealand annual harvest), especially after several years of declining production following the peak in United States housing starts in 2005; and which still remain at 50% of their long term average. Real prices for sawlogs in that region have halved since 2005.
  - b. Europe, forest inventories in many wood rich countries in Europe continue to grow as growth rates out strip harvest levels.
  - c. Russia, where harvest levels remain at only a small percentage of what they were in Soviet Union days. Harvesting may be restricted by costs; but even a decline in production and sales of logs and lumber to China in recent years was reversed in 2014, as higher prices attracted more volume.
2. While increased pressure on the harvest of (mostly tropical) native forest sawlogs will eventually lead to major reductions; the industry: Both legal and illegal – has been remarkably resilient in circumventing restrictions on harvest levels. One example is for Myanmar Teak: 70% of the global trade originates from Myanmar logs. Some sources

estimated that at least 50% or more is illegally harvested and is dispatched to China via one province, which has been effectively in control of Chinese and Myanmar warlords.

One recent report claims that 70% of native forest harvesting from native forests in Papua New Guinea is now illegal – but with nothing much being done about it. The EU, United States and Australia have recently introduced legislation which penalises importers of illegally harvested wood. This may impact supply over time, but in the meantime, enough regions/countries do not require sustainable harvest standards.

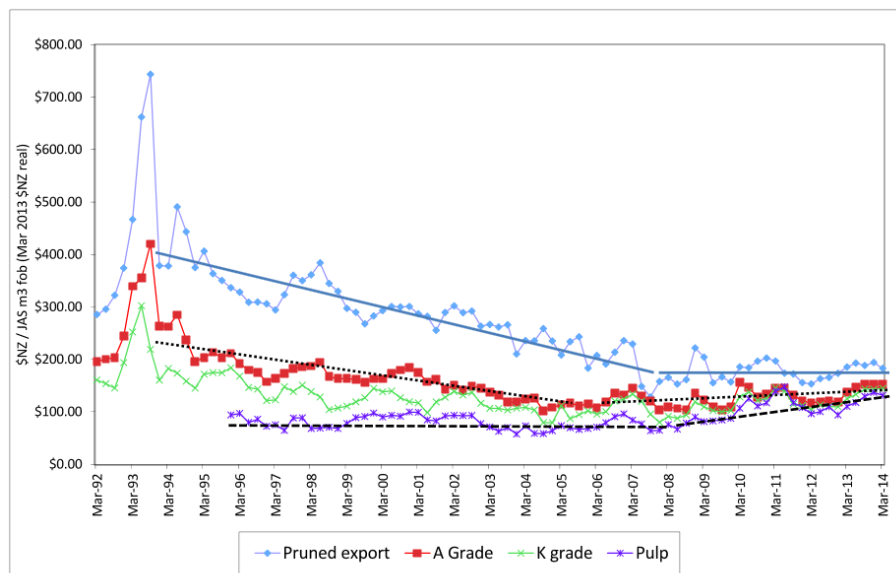
3. Global demand for the “high value” log mix: sawlogs and plywood logs have actually declined in recent years. The FAO reports that global softwood sawlogs/veneer log production increased from 1994 to 2003, but has since declined from 652 million cubic metres to 626 million cubic metres in 2012. Everson (2014) reports that the growth in the top 10 markets for New Zealand sawn timber (8 of which are in Asia) has been flat for the last 10, and the last 20 years. It has grown by 4% in the last 5 years, but only because of a massive 45% growth into China, which will unlikely be sustainable (sawnwood shipments to China in the period January to May 2014 are down 20% over 2013). The aggregate growth in plywood markets has been flat over a 20 year, a 10 year and a 5 year period.
4. Significant demand for these products is now being met, especially in Asia, from fast grown eucalyptus and acacia plantations: often with rotation ages of 3 to 7 years.
5. Demand for some wood products, especially pulp have increased: for instance chemical wood pulp from 116 million tonnes in 1994 to 123 million tonnes in 2003 and to 131 million tonnes in 2012; but these products use low value wood only.
6. Major growth in building materials demand has occurred in countries in Asia and Latin America, where wood is not a preferred building product.
7. Non wood products continue to be preferred products in many countries. UNEP reports that global cement production has increased from 1.4 billion tonnes in 1994 to 3.7 million tonnes in 2012. Worldsteel.org reports that global steel production has increased from 753 million tonnes in 1995 to 1.6 billion tonnes in 2013. While wood enthusiasts continue (quite properly) to advertise the benefits of wood; promoters of non-wood products have not been standing still. For instance worldsteel.org claims that energy production to make a tonne of steel has reduced by 50% in the last 30 years.
8. Other New Zealand- specific factors which have impacted on domestic log prices have included:
  - a. A strengthening exchange rate against the USD and the AUD. These currency movements have severely disadvantaged NZD prices for logs over the last decade: For effectively both export and domestic logs.

- b. An increase in harvest from only 16 million cubic metres in 1994 to almost 30 million cubic metres in 2013; and a transformation in the ownership and log marketing structure of the New Zealand industry which has probably weakened the discipline of many log sellers; relative to the position 20 to 25 years ago. At that time, for instance, log export marketing was in the hands of (mostly) just three organisations (which worked very closely together overseas).

## Impact on log prices

As a result of the factors above (and no doubt others), real prices for all log grades have reduced substantially from the early 1990's; and indeed from much earlier last century. The following three charts, provided by David Evison of Canterbury University Forestry School, in July 2014, illustrate these trends.

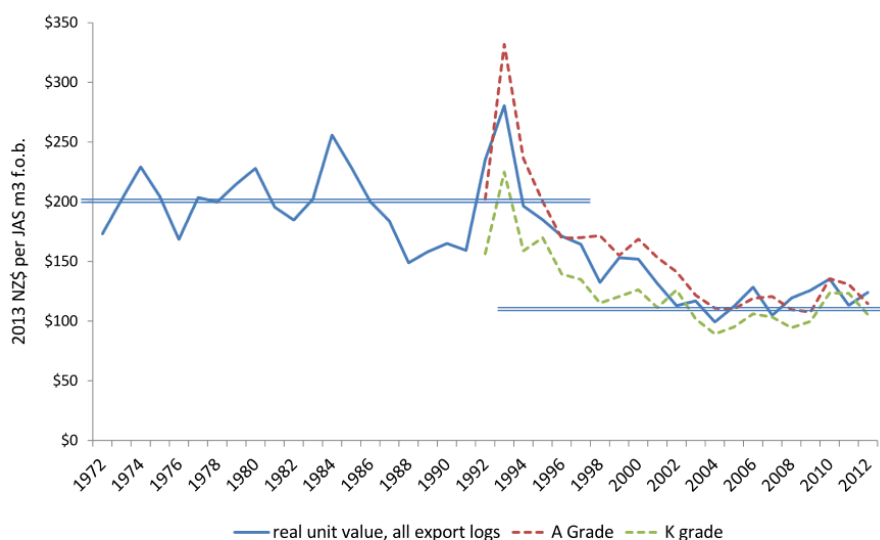
**Figure 1: Real FOB log prices for selected log grades, 1992 to 2014**



Sources: <http://www.mpi.govt.nz/news-resources/statistics-forecasting/forestry/indicative-new-zealand-radiata-pine-log-prices.aspx>; [www.stats.govt.nz](http://www.stats.govt.nz)

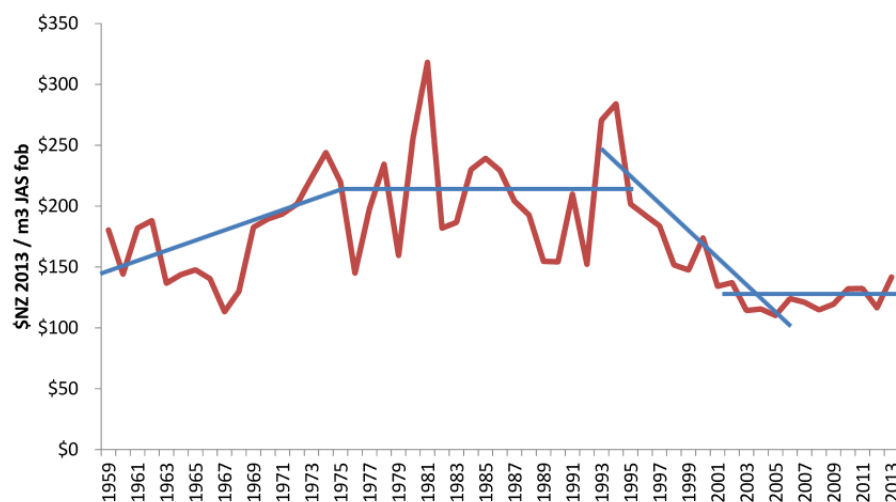
In the following chart, Everson illustrates the “step” change down in real log export prices from 1993/94 to 2004, after which they have somewhat stabilised.

**Figure 2: Real FOB log prices for selected New Zealand log grades, 1972 to 2012**



In an analysis not often undertaken, Evison has produced some interesting evidence about real export log prices from 1972 to 2012/13. After (on average) increasing from 1959 to 1975, they bounced around but were on aggregate flat from 1975 to 1993/94, when they fell substantially until 2003, when they fell off.

**Figure 3: Real FOB log prices for selected New Zealand log grades, 1959 to 2013**



In 2014, DANA analysed real FOB price trends (in 2013 NZ\$) for a number of log grades. A summary of its findings is provided below.

**Table 1: FOB log price trends for selected log grades and average annual growth rates (AAGR)**

Log Grade	Period	AAGR
Export K	1991 - 2013	-0.50%
Export KI	2002 - 2013	-0.40%
Export C A	2012 - 2013	0.50%
Domestic P1	1991 - 2013	-0.90%

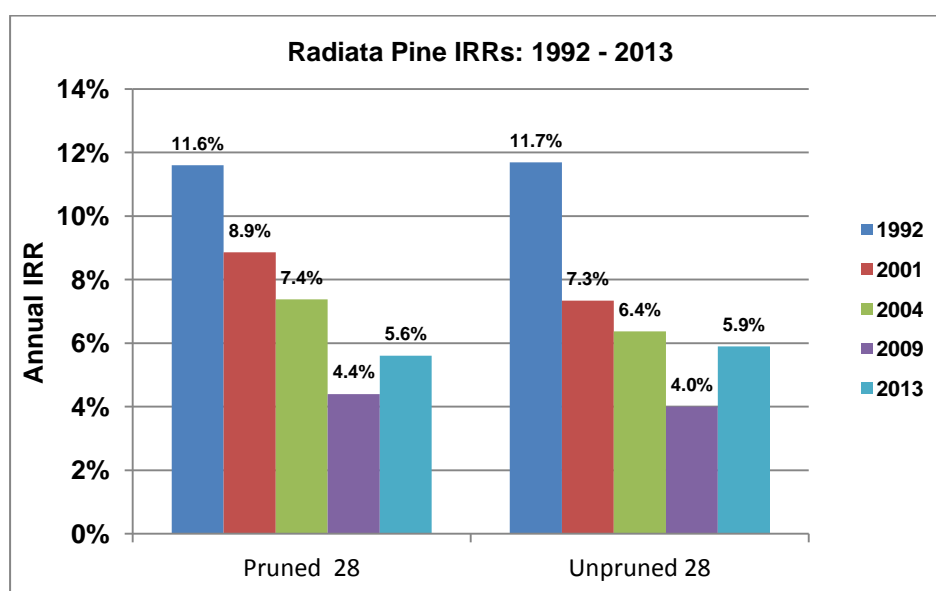
Source: DANA

## Impact of New Zealand Plantation Forest returns

The reduction of real log prices, together with relentless increases in costs (particularly of land), have resulted in much reduced investment return expectation of New Zealand Radiata pine forest owners. Two examples follow:

- In 1992, DANA Director Dennis Neilson invested in a leased land, new planting project in Western Bay of Plenty. At the time the expected IRR return from this project was 10%. DANA regularly updates the data in this (internal) model; and the expected IRR return equivalent is now only around 5%.
- Separately, DANA has reviewed the economics of growing forests in the Central North Island intermittently, from 1992 to 2013. The implied IRR returns for two Central North Island regimes (Site Index 30) are illustrated in the following chart.

**Figure 4: Central North Island radiata pine return on investment expectations, 1992 to 2013**



Source: DANA



## 2014

The “only significant story” in the New Zealand industry over the last 3 to 4 years has been the China demand story. New Zealand Radiata pine log export volume to China exploded from only one million cubic metres in 2005, to 11 million cubic metres in 2013; and was running at a 12 million cubic metre annualised rate in January to May 2014 (which was still at an annualised rate of 12 million cubic metres by August 2014) -- but was reducing in the latter part of 2014, as for various reasons\*, this trend (in either volume or price) could not last. Already, by late March 2014, prices of all grade except pruned have substantially reduced. By July 2014, the benchmark “China A 3.8 metre” log grade price had fallen from around US\$ 163 per JAS cubic metre CFR (landed China port) in March 2014, to around \$ 120 in early July (although there were various unverified reports of even lower prices). This was a reduction of US\$ 43 per cubic metre or (around NZ\$ 49); or 26%. This flows directly through to stumpage. DANA has calculated that with the above price reduction, the China A stumpage for an “average” New Zealand forest may have reduced from ~ NZ\$ 79 per JAS cubic metre to only around \$ 19.

\* Some reasons include:

- The market price of all logs into China in 2013 to 2014 had attracted supplies from several new sources; including European countries and the United States South
- China was coming to the end of a NZ\$ 800 billion stimulus package allocated mostly to building and infrastructure (a large user of Radiata pine wood) following the 2008 global financial crisis. It was only natural that demand would eventually reduce.
- An over reliance of the Government, major banks and business since 2008 on the informal “shadow banking” system had got out of hand, and had to be reigned back in.
- A very serious desire to reign in corrupt practices in many areas of Government and business is having at least a short term negative impact on demand, and the availability of credit in China.

**Post Script:** 2014 has turned out to be an eventful for the New Zealand to China log trade; and indeed for the overall Chinese economy. Numerous reports and articles about the Chinese economy are continually published by newspapers and online websites. For instance, there appears to be one such article per day published in the Wall Street Journal.

By November 2014 the benchmark A grade log price had recovered a little to around US\$ 133 per JAS cubic metre CIF China although log stocks in China remained very high and demand had reduced. As is always the case, short-term future projections by those directly in, and indirectly observing, the Chinese economy generally and the log export trade specifically range from pessimistic to optimistic.

DANA’s short-term view is that prices and demand will remain subdued through the Chinese New Year in early 2015 and if they do not pick up immediately afterwards could remain subdued for an extended period, but are unlikely to seriously reduce from their current price levels.

Some factors have since mid-year acted in favour in NZ\$ based at wharf gate and stumpage prices.

The most significant one is the recent weakening of the NZ\$ against the US\$ and shipping price reductions. The NZ\$/US\$ has weakened from a 2014 high of 0.88 in mid-July to 0.77 in early November.

Other issues, some unexpected, are being reported. Probably the most notable of this is the very recent revelation that a major forest owner in the United States Pacific North West (Rayonier – which also has forest assets in New Zealand) has been seriously overcutting its forests in that region for a decade, and that it will immediately reduce its harvest levels by 40% for a period of 5-10 years.

This revelation by the Chief Executive of Rayonier in early November has stunned the forestry and financial industry in the United States as Rayonier is a *“Timberlands Real Estate Investment Trust”* (T-REIT), and as such is listed on the New York stock exchange. An unanswered question is, *“Is Rayonier the only forest owner in the region that has been over-harvesting its forest assets over the last decade, or is this symptomatic of a much wider situation?”* If so, then prospects for a major reduction in harvest from the region which supplies large volumes of log exports to North Asia could be on the cards which will be very positive for New Zealand.

Since mid-year, DANA has become aware of at least two major sawmill developments in China and its Director Dennis Neilson has visited one of these in October. Machinery for this new Greenfield sawmill, north of Shanghai, is being installed, with an expected commissioning in Q1 2015. The mill owner has stated to DANA that it will utilise 500,000 cubic metres per year of radiata pine including as much pruned log volume as it can secure. There are reports of another sawmill in North China undergoing a major (or possibly huge?) expansion with some unconfirmed reports it could be using an additional 1.0 million cubic metres of logs with the installation of a twin line German manufactured sawmill and a large number of German dry kilns. This mill complex has previously used quite large volumes of New Zealand radiata pine sawn timber so the owners will be familiar with the properties of radiata pine wood and may choose to start importing radiata pine logs in 2015. DANA has not verified these reports and has not yet visited this mill site.

Separately, international concern continues as to the robustness of the Chinese economy and therefore the short-term future at least of the construction industry which uses most of the sawn timber cut from New Zealand logs exported to China. Pessimists believe that the GDP in China is only in fact 1-2%, rather than the 7-7.5% officially reported. If this turns out to be the case then we may see subdued demand into 2015 and beyond.

And, finally, a major devaluation in the Russian rouble in the last 3-6 months has again, suddenly, made exporting wood from Russia to Asian markets much more competitive, and we may see an increase in supplies from Russia in 2015.

## The Future

A prediction of future log price trends is not within the DANA brief, but we make some general comments below.

Many of the “macro” global factors which observers relied upon 20 years ago when predicting log price trends are still in existence. The global population is increasing; the average per capita GDP of developing countries and average incomes are increasing. The major native forest wood baskets in the Amazon, Asia and Africa are being either depleted, or being locked up. Log export restrictions are being imposed; e.g. by Myanmar from April 1, 2014. The “sustainability” story of wood holds today; probably even more so, with global warming issues affecting emission restrictions to produce, and the costs of producing steel and concrete (and perhaps plastics); although the shale oil revolution in the United States and perhaps elsewhere has actually brought the cost of production of oil down there.

China and India are huge wood deficit countries: For instance CIBC estimate the roundwood equivalent deficit in China to have grown from 80 million cubic metres in 2008, to 150 million cubic metres in 2013 and it predicts this will increase to 200 million in 2015. (DANA believes that CIBC may downward revise these earlier 2014 estimates if the China economy continues to be soft.)

Future demand for plantation radiata pine from New Zealand should be sound into the medium to long term; but we can expect continued volatility and continued competition from several sources of logs and sawn timber.

Many observers are taking a more cautious approach to predicting any future price predictions, although DANA expects China log prices to rebound significantly over the next 1 to 2 years. However, one of the world’s most respected analysts in Pacific Rim markets, Russell Taylor from Vancouver, has recently been espousing a Pacific Rim log and lumber demand and price “super cycle” from around 2015 to 2020.

Mr Taylor’s reasons include:

- A growing wood deficit in China
- The difficulty and increasing cost of accessing softwood, wood suppliers in the Russian Far East and Siberia
- Reducing harvest volumes from Western Canada due to massive losses of pine forests killed by a pine beetle
- Increasing housing starts and therefore sawn timber demand in the United States
- A small volume only of additional supply available from New Zealand, Australia and Latin American countries
- The high cost of European stumpages, and therefore high costs of both export logs and sawn timber products.

However, more recently, Mr Taylor has been a little more subdued about his enthusiasm surrounding a “super cycle” as Chinese wood demand has come off a peak earlier in 2014. Notwithstanding this, he still believes by 2017-18 there is likely to be an overall very tight wood supply available from wood exporting countries to North Asia and particularly to China.