

Pruned wood supply from the Central North Island and disrupter influences on wood processing

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Abstract

This study examines the influences on pruned wood flow in the Central North Island (CNI) where most of the mills are focused on processing pruned logs. Understanding these influences is strategically important for the 12 pruned log mills that are mostly purpose-designed and market-focused on processing higher-value pruned versus lower-value knotty grade logs. These CNI-based mills collectively process over 1.2 million m³ of pruned logs annually, being most of the pruned logs produced. Changing forest management practices by the two-large scale CNI corporate forest growers away from pruning along with abrupt changes in age class structure results in a bleak outlook for the pruned log mills.

Over the following 12 years to 2030 annual pruned log production reduces by 375,000 m³, representing a reduction of 30%. Furthermore, in 2037 pruned log supply from Kaingaroa Timberlands will cease resulting in a loss of more than 450,000 m³ annually, representing a total reduction of 70% relative to the current CNI domestic consumption. These reductions of pruned log supply will commercially compromise most, if not all, of the CNI pruned log mills. Future processing of a much-reduced volume of pruned logs will most likely be carried out by the few sawmills processing structural logs, and pruned logs will also continue to be exported.

Introduction

Since the early 1900s when the first forests were planted in the CNI management practices have undergone continued evolution. Such recent changes have been influenced by the sale of state forest assets purchased largely by Timber Investment Management Organisations, a log price spike that instigated a spike of new land planting, and ongoing changes of forest ownership and loss of vertical integration. Today's decision-making is aided by a wealth of data and tools for evaluation. The only certainty is that in the ongoing quest to extract further value, forest management will continue to evolve.

The forest area planted in radiata pine within the CNI region is around 550,000 ha, with a current merchantable annual harvest of over 12 million m³. Much of this

harvest is based on a direct sawlog regime that yields pruned logs. For over 25 years, the production of pruned logs has resulted in the development of export markets for clearwood and considerable investment in domestic wood processing, whereby most of the 16 CNI processing plants are solely focused on utilising pruned logs.

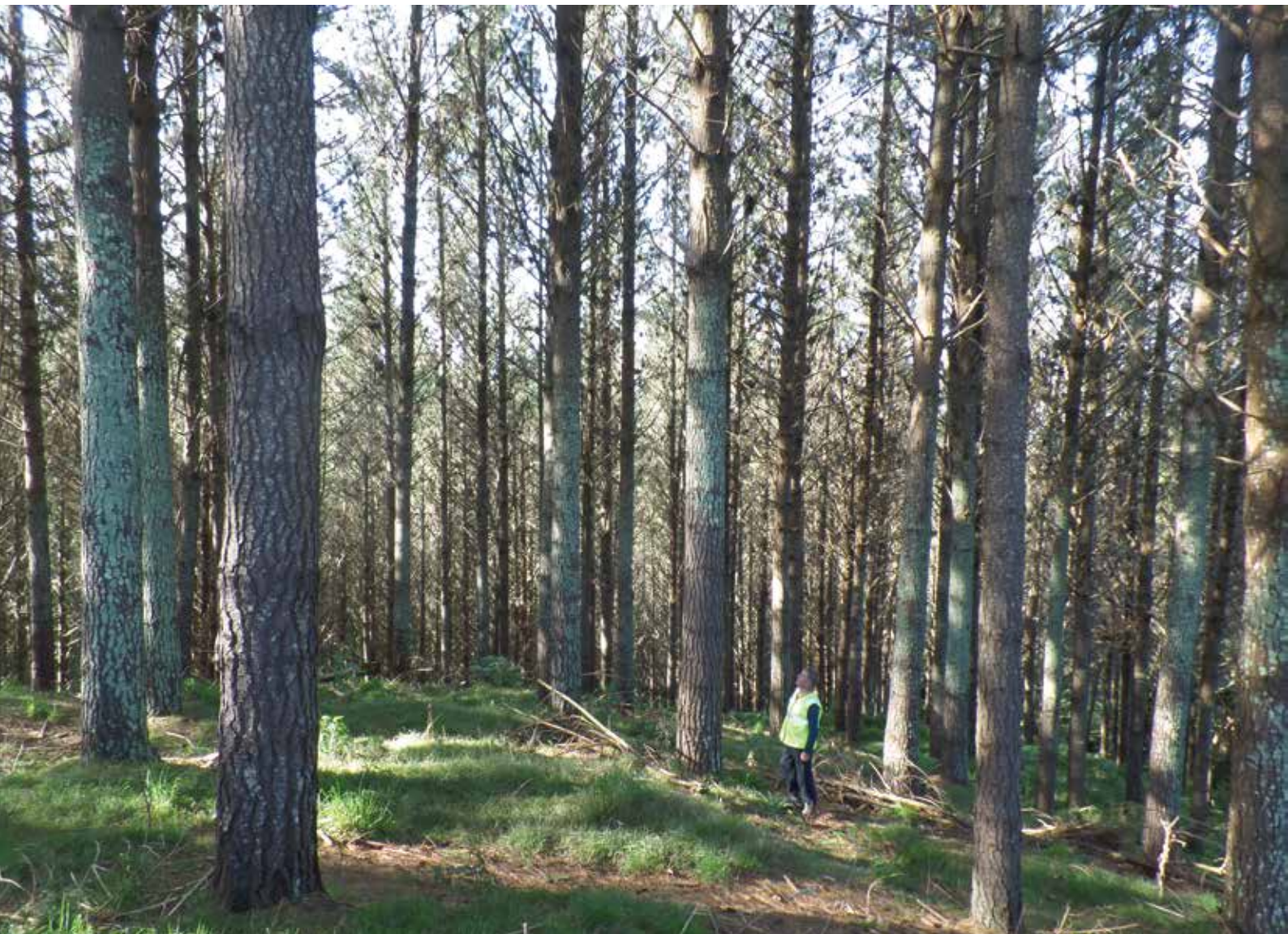
However, in 1996 one of the two largest CNI corporate growers, Carter Holt Harvey Forests Ltd, universally changed their forest management practices to a regime that did not incorporate pruning. Kaingaroa Timberlands also implemented a similar regime that has more recently been extended across the whole estate. Further influences on the pruned log wood flow in the CNI region relates first to the considerable reduction of new land planting in the late 1980s by the corporate forest growers, due in part to cessation of converting indigenous forest land to radiata pine plantations, and the subsequent influence of the abrupt age class structure and reduction of wood flows. Similarly, the new land planting boom that spiked at 100,000 ha annually was implemented primarily by small-scale growers in the 1990s and early 2000s. Furthermore, since the 1990s new land planting boom to the present day very low levels of new land planting have occurred, which has also been compounded by considerable deforestation.

Study objective

This study is aimed at quantifying the most current (2017) domestic consumption of pruned logs by supplier for each pruned mill within the CNI. Based on the historic influences of changes in forest management, along with historic changes in age class structure, pruned wood flows are then forecast for a 12-year time period to 2030. The data collected from each of the pruned mills has been combined, and as such the results and conclusions presented are general.

CNI forest resource

Geographically, the CNI region is broadly bound by Bombay in the north, Taumarunui in the west, Turangi in the south and Lottin Point in the east. For the purpose of this study the source of pruned logs is presented as coming from the following four forest estates.



By 2030 pruned log supply from the CNI is forecast to be reduced by 70%

Kaingaroa Timberlands

This large forest estate produces up to 4 million m³ of high-quality logs per annum and supplies almost all of its pruned logs to domestic customers, i.e. little or no pruned logs are exported.

Taumata

Managed by Hancock Forest Management NZ, this large forest estate also supplies most of its pruned logs to domestic customers, with only a small quantity of very short length pruned logs being exported.

Medium-sized forests

This grouping comprises up to 18 corporate-based forests. Consumption of pruned logs by the CNI pruned log mills is primarily sourced from Lake Taupo and Lake Rotoaira, OTTP and Tiaki forests.

Small-scale growers

This grouping comprises the high rates of new land planting in the 1990s and early 2000s. In the CNI an average of 5,000 ha was planted annually between 1992 and 2002.

CNI pruned mills

The CNI contains 12 mills that process pruned logs and most of these are designed to process exclusively pruned logs, with just a few also processing structural logs. Over 25 years these pruned mills have developed markets for the supply of clear boards into the US and Australian large retail stores, and the supply of clear boards into Europe. Much of these are modified using various processes to improve durability and stability and then go into the market to compete against tropical hardwoods.

The looming concern for most of these 12 pruned log mills is that as the large-estate forest growers

transition their forest management away from the supply of pruned logs, the market opportunity to transition to processing unpruned logs is highly unlikely. The transition to sawing structural logs is dominated by two large-scale CNI sawmills that supply the domestic and Australian markets. Furthermore, the transition into remanufacturing involving defecting of knots and finger jointing is not considered an option based on low market demand and it is only viable upon availability of low-cost logs.

To obtain the required data, each of the pruned mills was requested to provide the number of employees, the total annual consumption of pruned logs, and the business annual turnover. The mills were also requested to provide a breakdown per log supplier annualised for the last year (2017).

The forest management transition to higher wood volumes and value per hectare

Commencing in 1996, management of the Carter Holt Harvey Forests estate was rapidly transitioned to what was called the 'Millennium regime', which was aimed at significantly increasing wood volume and value per hectare. This regime did not incorporate management to produce pruned logs.

The primary motivation in transitioning forest management to higher final crop stockings not incorporating pruning is to increase wood volumes, and to significantly increase net return per hectare. Such increased net return at harvest is achieved by not having to carry the cost of pruning for some 20 years, higher tree stockings and harvest volume, and with the aid of improved genetics and silviculture the rotation length can be shortened.

To compensate for the lower net returns per hectare achieved from the current 'direct' sawlog regime incorporating pruning, it is estimated that a premium for pruned logs versus structural grade logs of at least \$80 m³ delivered is required. There is general consensus that for the past 20 years the pruned log price differential has rarely reached the required threshold. In fact, since 2003 the differential has averaged around \$40 m³. This is well below the required threshold.

Obviously, the criteria to determine the merits or otherwise of adopting a high-volume, high-value per hectare regime will differ between growers, along with forest owner specific costs and returns. Some medium-sized forest owners have undertaken regime analysis that has shown no benefit in moving away from a pruned regime, while other forest growers are adopting a mix of pruned and unpruned regimes to spread any market risk.

Forecasting the pruned log supply reduction

For the Taumata, Kaingaroa Timberlands and medium-sized forests group, pruned log wood flow forecasts were provided by the forest owners. The

percentage annual increase or decrease was calculated for each forest using the most current (2017) consumption volume as the start volume. This current volume consumed, as derived from the pruned mills, was for some forests less than what is harvested. This additional volume is exported, or in some instances supplied to pruned mills outside of the CNI.

The wood flow forecast for the small-scale growers was based on the Ministry for Primary Industries (MPI) planting statistics for the CNI. An average harvest age of 25 years has been assumed, which means the most current (2017) harvest relates to the area planted in 1992. Due to the current 24-year high log prices many woodlots are being harvested younger than 25 years of age. Some pruned mills have a minimum age restriction of 25 or 26 years, so such younger pruned logs may be exported.

For growers close to the port, exporting can achieve a higher price compared to selling to a pruned mill. For these reasons, it is assumed that only 60% of the pruned logs from the small-scale growers will be processed domestically. However, based on a survey of harvesting and marketing providers, and on the current very high demand and log price, approximately 90% of the CNI pruned log supply is being processed domestically.

Results

Using the most current (2017) study data the CNI:

- Contains 12 pruned log mills
- Processes 1.226 million m³ of pruned logs
- Employs 1,575 staff
- Has an annual turnover of \$734 million.

Kaingaroa Timberlands is currently the largest supplier of pruned logs amounting to 37% of the total, followed by the medium-sized forests group at 26%, followed by the small-scale growers at 22% and the Taumata estate at 15% (see Figure 1).

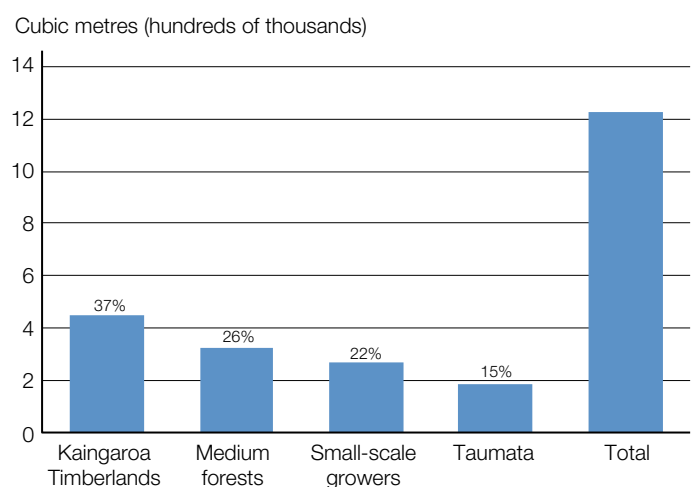


Figure 1: Quantity and source of CNI pruned logs processed domestically 2017



25 years of market development and investment in wood processing of pruned logs

Forecasts for each of the four suppliers through to 2030 are detailed in Figure 2 and are summarised as follows:

- Annual supply of pruned logs from the Kaingaroa Timberlands estate is constant at over 400,000 m³ until 2037 when the supply concludes
- The medium-sized forests group reduces the annual supply of pruned logs by 170,000 m³ due to mature age class structure and declining harvest
- The small-scale growers provide an additional increased supply of pruned logs peaking at almost 400,000 m³ annually, but declining below the most current (2017) annual supply by 2028
- The Taumata estate reduces and concludes its supply of pruned logs by 2024, resulting in the loss of 200,000 m³ annually
- The total reduction of pruned logs from the CNI declines from the most current (2017) annual consumption of 1,226,000 m³ to 850,000 m³ in 2030. This represents a reduction of over 375,000 m³, being 30% below the current total annual domestic consumption.

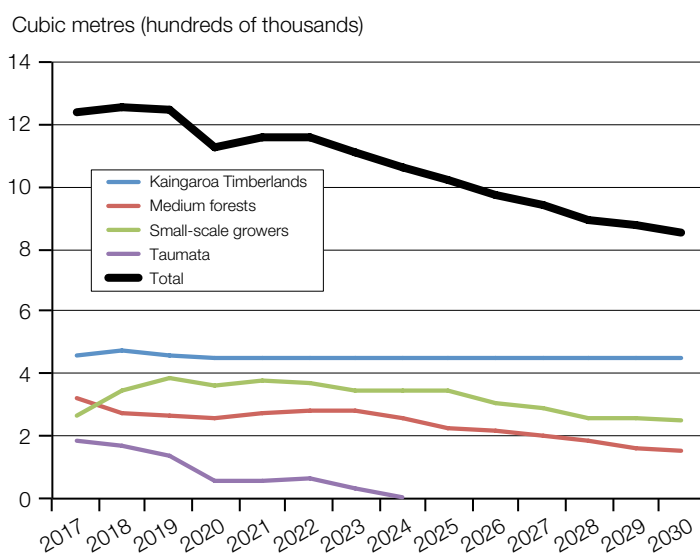


Figure 2: CNI pruned log supply forecast to 2030 for domestic processing

- In 2037, the yield of pruned logs from Kaingaroa Timberlands is scheduled to conclude, resulting in an annual reduction of over 450,000 m³. Combined with the reduction of pruned logs from the CNI

in 2030, this represents a total annual reduction of 875,000 m³, a 70% reduction from the current (2017) domestic consumption

- Any emergence of large-scale export knotty lumber markets would be welcomed, but will not be the saviour of the pruned log mills.

Adoption of a high-volume, higher-value regime by the medium and small-scale forest growers

Rationalisation of a high-volume, higher-value per hectare regime by the Taumata and Kaingaroa Timberlands forest estate owners should be viewed in the context of a very low-cost structure of getting logs to market. The Kaingaroa Timberlands estate comprising 190,000 ha is considered one of the crown jewels of international forestry. With largely flat terrain and pumice soils, Kaingaroa Timberlands has low-cost roading, harvesting and cartage that incorporates rail. With such a low-cost structure, further savings regarding the cost of money associated with pruning, and increased volume and value per hectare resulting from a higher stocked non-pruned regime, is considered to be significant.

In contrast, much of the remaining CNI forest estate has considerably higher roading, harvesting and cartage costs. A commonly high cartage cost relates to most of the unpruned logs being transported by truck to the Port of Tauranga, while pruned logs are generally carted a much shorter distance to a local pruned mill. In fact, for many growers, particularly those on the outer reaches of the CNI forest estate, if it wasn't for the pruned log component, forestry would struggle to be a viable investment. Unlike the two-large pumice plateau corporate growers, the increased volume of knotty grade logs that have to be trucked long distances to the port does not result in higher net value per hectare.

If in the unforeseeable future large-scale markets for knotty lumber versus logs should eventuate, and such market demand justified considerable investment in large-scale regionally-based sawmills, then cartage costs of knotty logs would be considerably reduced. Such an eventuality could be the trigger for such growers to adopt a higher volume and value per hectare regime similar to the two pumice plateau large corporate growers.

Forecasting peak wood harvested from small-scale growers

To determine when peak wood will occur from the small-scale growers resulting from the 1990s new land planting spike, a questionnaire was instigated across the five key CNI harvesting/marketing providers who are responsible for the harvesting of most of the wood from the small-scale growers. These providers stated that the average harvest age was 25 years and that on

average 90% of the pruned logs were being supplied for domestic processing, and just 10% were being exported. This means that currently (2017) on average harvesting is occurring on the age class of stands planted in 1992 and, given the planting boom spiked in 1994, that peak wood will occur in 2019 as shown in Figure 2.

It is also interesting to note that the projected increase of pruned logs from the small-scale growers offsets the decline of pruned logs from the medium-sized forests, due to reduced age class structure resulting from the decline in new land planting in the late 1980s.

For pruned log mills enduring the decline in pruned log supply from the Taumata forest estate, alternative supplies from small-scale growers is likely to be scarce.

Conclusions

- Twelve pruned log mills located in the CNI currently (2017) process 1.226 million m³ of pruned logs, employ 1,575 staff, and have a collective annual turnover of \$734 million
- Kaingaroa Timberlands is currently the largest supplier of pruned logs amounting to 37% of the total, followed by the medium-sized forests group at 26%, followed by the small-scale growers at 22% and the Taumata estate at 15%
- Due to changes in age class structure and forest management practices, over the following 12 years to 2020 the annual supply of pruned logs will reduce by 375,000 m³, representing a reduction of 30% relative to the current domestic consumption
- Furthermore, in 2037 the scheduled conclusion of pruned log supply from Kaingaroa Timberlands will amount to the loss of more than 450,000 m³ annually, representing a total reduction of 70% relative to the current domestic consumption
- The looming concern for most of the CNI pruned log mills is that as the large estate forest growers transition their forest management away from the supply of pruned logs, there is little or no current market opportunity to transition to processing unpruned logs or to remanufacturing
- The 30% reduction of pruned logs over the following 12 years through to 2030 will be a commercial disrupter, particularly for the small pruned log mills
- The reduction of pruned log supply in 2037 amounting to 70% will commercially compromise most of the CNI pruned log mills
- Due to the higher cost structure of the medium and small-scale owned forests, it is unlikely that such forest owners will transition their forest management to non-pruned regimes.

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