PART 2
FORESTRY SECTOR INPUTS AND OUTPUTS

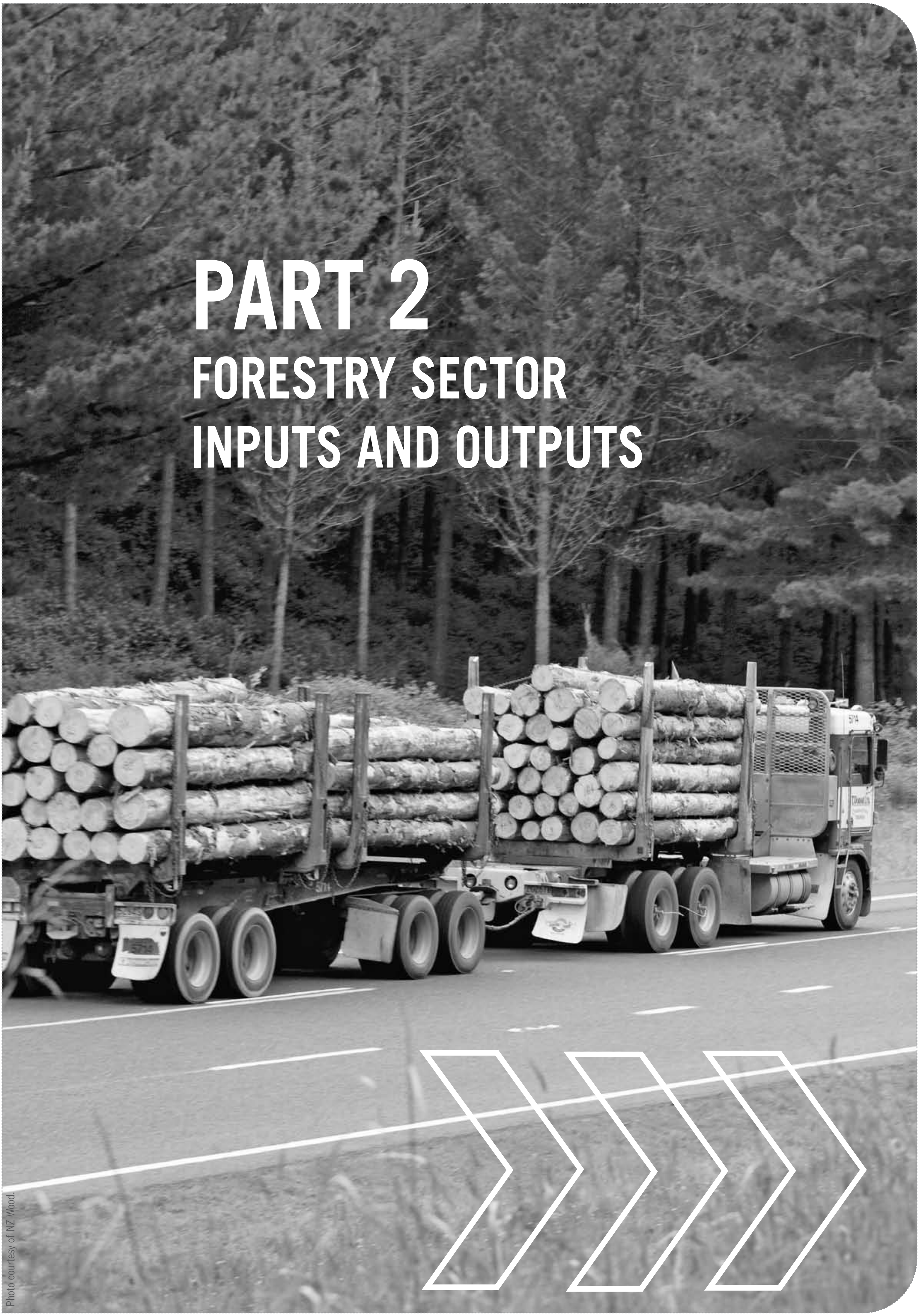


Photo courtesy of NZ Wood.

FORESTRY SECTOR INPUTS

6

OVERVIEW

This chapter considers what the forestry sector needs to make it work, such as people, finance, energy and transport.

DRIVERS

Energy and transport are important inputs that drive the forestry sector:

- The wood processing sector is New Zealand's major energy consumer and also a major energy generator.
- The wood and paper product industry is New Zealand's second-largest electricity user (after metal manufacture).
- A modern transport network is required to move wood efficiently from the forest to processors, wholesalers and customers (both domestic and international).
- New Zealand's annual sea cargo is a small fraction of international trade and it is generally treated as an extension of Australian trade routes.
- New Zealand is an isolated country at the end of the sea freight network; its closest market, Australia, is a minimum of four days' travel by sea.

THREATS

Input-related threats to the forestry sector include:

- The uncertain availability of labour with the required skills.
- New Zealand's environmental performance requirements and legislation, where these are higher than those in competing countries.
- Sawmilling profitability suffering from squeezed margins, which is exacerbated by the separation of forest ownership from sawmill ownership and the former's push for log export parity pricing.
- The silviculture and harvesting contract bidding system may keep costs down in the short-term but provides little incentive to invest in skill development.
- New Zealand's comparatively low wage rates for forestry employment, which makes the sector vulnerable to "cherry picking" by overseas companies, research institutions, other sectors and government agencies.

OPPORTUNITIES

There are a number of opportunities, however:

- A vibrant processing sector paying high prices and demanding ever-increasing volumes of wood will encourage new investment.
- Revenue may be gained from selling forest ecosystem services or carbon offset potential.
- There are opportunities for reducing the burden of freight costs, including sea freight.
- Where forestry companies include incentive payments for training, there are positive gains in workforce stability and productivity. Longer-term contracts with training recognition clauses are a significant opportunity.

INVESTMENT

Investment in the New Zealand forestry sector can be split into two related areas:

- the investment needed to maintain and/or expand the existing level of resource;
- the capital necessary to process that resource and respond to consumer demand.

A perceived lack of profitable processing alternatives will make it hard to attract new (or maintain the existing) investment in forest growing. Yet, whether it is concerns about climate change and New Zealand's options for dealing with this or about the sustainability of existing land uses, trees are increasingly being seen as an answer (Oram, 2007).

A key challenge for the forest product industries is to create value through wood processing and solution delivery.

When environmental externalities are brought into the equation, the value of trees can be seen more clearly.

General factors that influence investment decisions in forest growing and wood processing include (not in any order):

› operating costs, capital costs, size of margins and an acceptable return on capital;
› availability of labour with the required skills;
› tax regimes;
› environmental performance requirements and legislation;
› good infrastructure;
› stable institutional foundations;
› availability of government and sector support;
› belief by company managers that wood processing is desirable.

› INVESTMENT IN FOREST GROWING

The most immediate challenge to ongoing investment in the forest-growing industry is to convince potential investors that it is capable of offering reasonable investment returns. A vibrant processing sector paying high prices and demanding ever-increasing volumes of wood might make it easier to formulate that case. However, real log prices today are half what they were in 1993, and MAF's price projections do not indicate that real increases are likely; while demand is relatively buoyant at present, the harvest level today is still 10 percent lower than that recorded in 2003. (Some factors associated to current market conditions are also described in Chapter 3 sections "Harvesting" and "Land-use change".)

Differential rates of change in land prices for different uses always offer prospects of capital gain for the landowner who can sell or convert from a use with low or slow increases to one where the prices are rising rapidly. However, for such gains to be sustainable in the longer term, the increase in land value needs to be accompanied by a corresponding increase in the value of output from the land. Otherwise, the higher land price simply results in a reduced rate of return on the capital invested in the land. MAF data indicates that, excluding the capital gains from rising land prices, farming returns are typically 1 to 3 percent of invested capital. Manley (2005) indicates that forest investors typically target a 6 to 8 percent return.

Leaving aside the question of capital gains, investors might be willing to invest in forestry if their expectation was of a product worth on average $125 per cubic metre (low end) to $190 per cubic metre (high end). All-grade four-quarter average log prices for the September 2008 quarter were only $80 per cubic metre (domestic) and $91 per cubic metre (export).

There are a number of ways to close the gap between current market prices and the price required to apparently justify investing.

Firstly, investors may be prepared to accept a lower return to that indicated – particularly if forestry is only part of an investment portfolio and if, by including forestry in the portfolio, the overall risk/return trade-off for the portfolio is reduced. Investors might also believe that, over the next 30 years, either real wood prices are likely to rise or real agricultural returns (the opportunity cost of the land) will fall. Something like a 1 percent per year real price rise over the period would in some cases be sufficient to close the gap.

Secondly, because each investment is site specific, there will be cases where costs are lower than the numbers indicated or where, because of the choice of genetic material (Sorensson, 2006) and/or better product differentiation, the returns expected are greater than those indicated by the analysis.

Finally, there is the possibility of gaining revenue from more than just the sale of wood – possibly as a result of selling the ecosystem services of the forest and/or its carbon offset potential through either the compliance market or voluntary carbon markets (Pearce, 2007).

The important point, though, is it should be possible to make a case that investors in forest growing could expect to make reasonable returns, so long as there is underlying strength in consumer demand for forest products or there is additional market value for the environmental services supplied by forests and embodied in forest products.

WOOD PROCESSING

The second leg to forestry investment is attracting the capital necessary to process the resource. Unlike the growing side of the sector, here the capital requirements are often large and lumpy. Capital markets, though, are perhaps the most globalised and "free" of all international markets. For a small country such as New Zealand, the critical factor in getting investment in forest processing is being able to indicate that investments in the sector here are likely to produce an adequate risk-adjusted return compared with returns available elsewhere. Provided there are reasonable grounds for believing that is possible, and given the existence of the globalised capital markets, there is no obvious constraint in terms of a limit to the available capital for investing in forest processing.

A key challenge for the forest product industries is to create value through wood processing and solution delivery, and offer better returns on investment compared with log exports (for example, Maplesden and Turner, 2006). This issue needs to be understood in the context of New Zealand's long-term forest harvesting trends and the relationship between harvesting volumes and the proportion of logs processed into more valuable wood products (such as MDF and plywood) and remanufactured products (such as mouldings and furniture). Further processing only makes sense if it is profitable, and low profitability has been a constraint on processing investment. Some forms of processing investment require very high volumes of throughput and much of New Zealand's forestry resource is dispersed and unsuited to this type of investment.

While volumes of processed wood are increasing, they are not keeping pace with increases in the wood available for harvesting.

Much of the investment needed may have to be financed offshore because of the magnitude of investment required, although the recent advent of domestic savings and/or retirement schemes like KiwiSaver may, in the medium to long-term, provide a source of domestic-based investment funds. Increased processing investment must be complemented by corresponding market and product development initiatives. If investment in domestic processing continues to lag behind the forecast increases in the availability of wood, then log exports are likely to increase. However, it should be noted that even log exporting requires market access, appropriate infrastructure, process-efficient regulation (for example, through the RMA) and a supportive business environment.

A challenge for the sawmilling sector is squeezed margins.

A challenge for the sawmilling sector, in particular, is maintaining and enhancing profitability in a climate of squeezed margins. Profitability is necessary to encourage investment. The issue has been exacerbated by the separation of forest ownership from sawmill ownership and the

Importantly, the full benefits of new technology can only be achieved by upskilling the operators who use the equipment.

former's push for log export parity pricing. When log export prices fall, the forest owner has the option to not harvest, so the sawmiller has to raise prices to purchase logs but has limited ability to raise lumber prices, thus squeezing margins. When log export prices are high, the sawmiller has to match them, thus going around the same circle. One strategy might be for sawmills to secure a cornerstone log supply, but that is difficult in regions that have a lot of smaller-scale owners, like the southern North Island.

»» HUMAN RESOURCES

If the forestry sector is to maintain, and improve, its relative competitiveness, it needs to invest in both human and built capital (Ministry of Research, Science and Technology, 2006b: 9).

Some findings from Business and Economic Research Limited's report on *Forestry Industry Training Requirements to 2011* (July 2008) are also relevant:

- The industry places a high importance on most types of skills, especially applied technical skills and soft skills like interpersonal and leadership skills.
- 37 percent of all firms surveyed in the forestry industry said they are likely to expand in the next five years.
- Projections of additional employees needed by the forestry industry from 2008-2011 show about 600 to 1000 additional people will be needed each year due to industry growth (assuming current productivity). Simply replacing employee turnover requires a further 4000 people per year.
- The type and scope of training needed are changing as firms need to support their investment in changed production systems. This investment incorporates more automation and other innovation.

Building the skill base and productivity of the forestry sector to match the top echelons of the OECD will not occur overnight. It needs a co-ordinated effort by industry, government, the Crown Research Institutes (CRIs) and the major training providers. Together, it should be possible to develop the appropriate employment, investment and training structures needed to build the sector's human capital.

› RECOGNISING AND VALUING SKILL ATTAINMENT

Successive governments have stressed the need for New Zealanders to undertake further training, and for the country to become a high-tech and high-skill economy. The educational reforms of the past 20 years have been directed at encouraging further, specialised training, and at developing an innovative workforce.

Why then has New Zealand struggled to maintain its competitiveness against our major trading partners, and why do some international measures show us as falling behind in the competitiveness stakes (Brown and Ortiz, 2001: 53)?

One answer could be that the business models used in New Zealand do not always adequately value skill attainment and application. In the case of harvesting and silviculture work, forest owners are generally looking for the lowest tender price. Contractors are in a perpetual bidding war. While this may keep costs down in the short-term, it provides little incentive for contractors to invest in skill development.

In the small number of cases where forestry companies do include incentive payments for training, there are positive gains in workforce stability and productivity. A fundamental rethink needs to be undertaken of what are the appropriate business models for encouraging sustained, long-term productivity gains. Longer-term contracts with training recognition clauses could be an important component.

Importantly, the full benefits of new technology can only be achieved by upskilling the operators who use the equipment.

In the modern, competitive world, we cannot rely on the willingness of the New Zealand worker to try and understand how a piece of machinery operates (that is, the number 8 wire approach). Our competitors are prepared to invest heavily in upskilling, and we need to follow suit. This investment also needs to be in wages. If the sector expects a more highly skilled workforce, then forestry companies need to be prepared to pay accordingly and offer at least a degree of employment stability.

› THE STRENGTHS OF THE CURRENT LABOUR AND TRAINING MARKET

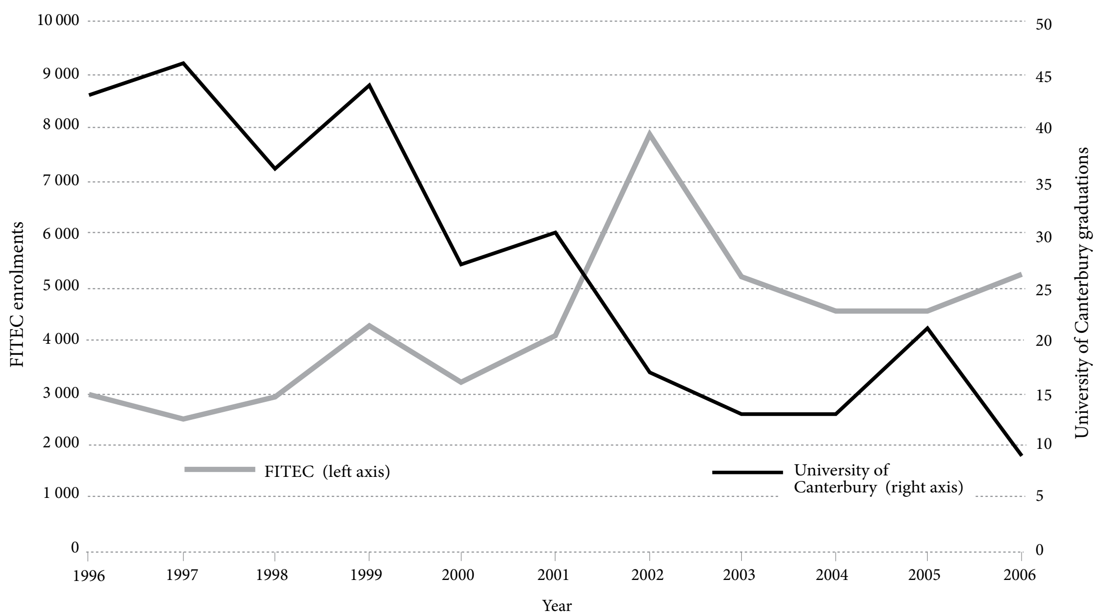
I. TRAINING STRUCTURES

There is one Industry Training Organisation (ITO) covering forestry establishment, harvesting, solid wood processing, wood panels, forest health and pulp and paper production – the Forest Industries Training and Education Council (FITEC). FITEC enrolments[12] have been increasing over time (see Figure 6.1), which partly reflects a sector-wide policy of having all workers trained or in training for the work they are or will be doing. The spike in 2002 was due to both a drive by FITEC for new enrolments and a clean-up of old enrolment records acquired through the merger of FITEC and the Logging and Forest Industry Training Board that had previously managed forestry sector training.

At the university level, New Zealand has an internationally recognised programme of forestry training through the School of Forestry (based

12 These enrolments include students training at polytechnics.

FIGURE 6.1: FORESTRY SECTOR TRAINING ENROLMENTS/GRADUATIONS, 1996 TO 2006



Source
FITEC and University of Canterbury, 2007.

at the University of Canterbury). A significant proportion of enrolments are drawn from outside of New Zealand.

There are opportunities to improve the delivery of forestry training. Areas to explore include:

- greater co-operation between the providers, so that specialist (and niche) aspects of forestry training can be delivered nationally (at a reasonable cost);
- increased dialogue nationally and regionally between the sector, FITEC and the major providers, to align sector needs with training delivery;
- formal links with Australian institutions and companies.

II. LABOUR MARKET

New Zealand has an open labour market, which allows the ready movement of staff between operations. The labour arrangements also enable overseas staff to be employed on short or longer-term contracts. These arrangements encourage the transfer of management and operational innovations.

There is increasing reliance on overseas management, scientific expertise and workers (for example, for silviculture). It is important to ensure that industry and government maintain an ongoing dialogue on workforce availability and immigration arrangements for these categories of workers. A working party, made up of sector representatives and officials, could be established to periodically review labour market issues.

› HUMAN RESOURCE CHALLENGES FACING THE SECTOR

The public perception of the forestry sector as an employer is covered in Chapter 14, "Forestry in the eyes of society".

New Zealand's wage rates for forestry employment are low.

I. CYCLICAL ENROLMENT TRENDS

The cyclical nature of enrolments in training courses impacts on the required stream of labour for the sector. Labour shortages are currently being experienced in both specialised and mainstream areas of plantation forest management and processing. These shortages may result in a more protracted recovery, particularly if companies struggle to access experienced labour, whether at the harvesting or first-stage processing level. There is a need for a steady stream of new labour, even during periods of economic downturn.

The Tertiary Education Commission, FITEC and the principal training providers could investigate the industry needs, the cyclical nature of enrolments, and the respective delivery of courses.

II. REMUNERATION RATES IN NEW ZEALAND

Compared with other OECD countries, New Zealand's wage rates for forestry employment are low. This makes the sector vulnerable to "cherry picking" by overseas companies, research institutions, other sectors and government agencies. The loss of emerging leaders and talented operational and scientific staff acts as a brake to innovation, investment and expansion.

Forestry companies and research institutions can recognise the contribution staff make to an operation in many ways (in addition to their base salary), such as:

- security of tenure;
- quality of the work environment;
- job flexibility.

››› ENERGY

The forestry and wood processing sector is New Zealand's major energy consumer (see Table 6.1). It is also the major user of renewable

TABLE 6.1: ENERGY USE BY MANUFACTURING INDUSTRY GROUP FOR YEAR ENDED MARCH 2006

INDUSTRY GROUP	ENERGY USE (PETAJOULES) (ROUNDED)	PERCENTAGE
Wood and paper product manufacturing	58.0	38
Food, beverage and tobacco	36.0	24
Metal product manufacturing	31.0	20
Petroleum, coal, chemical and associated product	13.0	9
Non-metallic mineral product manufacturing	9.0	6
Other	5.5	3
Total manufacturing industry	**152.5**	**100**

Source
Statistics New Zealand, 2007a.

The forestry and wood processing sector is New Zealand's major energy consumer.

woody biomass as an energy source. In 2005, use of woody biomass energy by the sector was an estimated 45 petajoules per year, compared with the 58 petajoules shown in Table 6.1 for 2006, with a main driver for the increase being the rising cost of disposing of processing residues as waste.

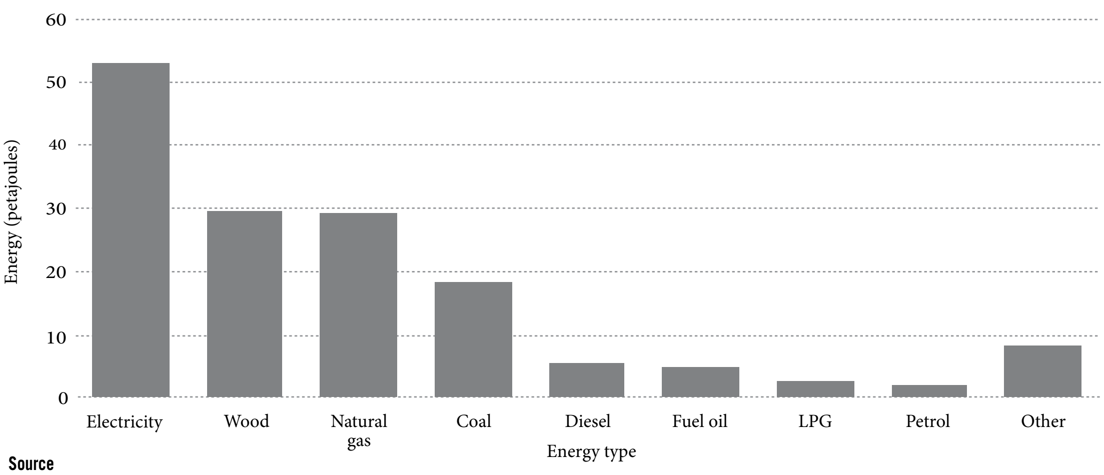
Of the 152.5 petajoules used by the manufacturing industry groups, electricity is the energy type used in greatest quantity – it accounts for almost 35 percent of all the energy used by that sector. The metal product manufacturing industry is the largest user of electricity (47 percent), with the second-largest being the wood and paper product industry (just under 25 percent of the total), followed by the food industry (under 15 percent).

The second most important energy source for the manufacturing sector is wood and wood waste (see Figure 6.2). It makes up 19 percent of total manufacturing energy use (29 petajoules) and the wood and paper product industry is the largest user of this type of energy (99 percent of the total wood energy use).

› THE FUTURE

The share of wood fuel in the national fuel mix and its role in industry is growing. Realistically though,

FIGURE 6.2: TOTAL MANUFACTURING ENERGY USE BY ENERGY TYPE FOR THE YEAR ENDED MARCH 2006



Source
Statistics New Zealand, 2007a.

the wood processing industry and the residential sectors are likely to continue to be the major users of woody biomass as an energy source. At present, 94 percent of all South Island sawmills and 74 percent of those in the North Island use biomass as fuel. Wood fuel use by sawmilling is currently some 9.5 petajoules per year.

Assuming sawmill energy use continues to follow the present fuel mix trends, a scenario where increased processing up to the point that current mill capacity is fully utilised could result in the use of wood energy increasing to approximately 50 petajoules per year by 2020. On the other hand, a scenario where log exports are around 33 percent of the total harvest and the rest of the harvest is processed before export (that is, extra mill capacity) could see sawmill energy use increasing to some 59 petajoules per year by 2020 and stabilising at around this level.

In addition to processing residue, there is also a considerable resource of residues at forest landing sites. Presently, about 250 000 tonnes of forest residues are recovered annually and used to fuel energy plants for wood processing facilities, mostly in the central North Island and some in Nelson and the Hawkes Bay (Hall and Gifford, 2007). Modelling suggests that a carbon price of $15 per tonne of carbon dioxide would, by 2020, result in a further 7 petajoules per year of harvest residues being economically competitive with coal as a source of industrial heat in the North Island. However, the significantly lower cost of coal in the South Island means that, at a price of $15 per tonne of carbon dioxide, forest residues are still not competitive with coal. A major issue for increasing the use of harvest residues is efficient and economical collection and delivery.

In 2005, it was estimated that the residential sector used about 8 petajoules of wood fuel, primarily in the form of firewood, which accounts for about 38 percent of estimated total domestic space heating energy. Following international trends, wood pellets are likely to have a significant impact on the fuel mix for heat in the residential, commercial and institutional sectors and are possibly a replacement for gas.

The second most important energy source for the manufacturing sector is wood and wood waste.

Currently, around 30 000 tonnes (0.6 petajoules) of wood pellets are sold each year. Based on current consumer interest, the use of pellets could increase to 2.5 petajoules per year by 2020 (125 000 tonnes of wood pellets per year). Increasing use of wood pellets is likely to be driven by the increasing cost of other fuels and air emission restrictions, but it could be constrained by the supply of raw material for making pellets.

Any growth in the use of wood pellets could result in increased demand for specific types of wood processing residues, especially sawdust. Currently, by utilising all of these residues, sawmills are able to be effectively self-sufficient in process heat. But a growing demand for these residues by the pellets industry could mean that mills might sell some of their higher-quality residues if a cheaper substitute fuel is available. This substitute fuel could be forest residues or possibly coal. Thus, an expanding industry for wood pellets (or, for that matter, liquid biofuels) could, perversely, result in sawmills switching to coal. One possible consequence of the success of a pellets industry, if that success is not accompanied by moves to improve forest residue recovery or to get wood waste out of landfills and into energy, is that the use of wood biomass in the sawmill industry drops by 2 to 4 petajoules per year between 2020 and 2030.

Use of wood residues in other forms, such as liquid and solid biofuels, for bioenergy production is almost certain to feature strongly over the next couple of decades, as the costs of traditional (generally non-renewable) fuels rise and concerns over climate change increase (see also Chapter 8, under the section "A biofuel future?").

TRANSPORT

Maintaining New Zealand's competitiveness as a forest products producer requires continuous investment in the nation's transport infrastructure. A modern, integrated transport network (consisting of road, rail and sea freight) is required to efficiently move the annual harvest from the forest to processors, wholesalers and customers (both domestic and international). The degree to which infrastructure developments are in place and functioning on a continuous basis is a measure of economic sustainability.

ROADING INFRASTRUCTURE

In the recent past, there have been examples of poor roading infrastructure negatively affecting the development of wood processing and exporting, for example, in Northland and the Gisborne region. That situation is being addressed.

The movement of logs from harvest sites to processing facilities can be a significant proportion of the final production cost (20 to 25 percent). Commercial forest growers rely on New Zealand's transport planners and agencies to provide a well maintained and efficient roading network that minimises the cost of movement. Through the regional land transport planning process, the forestry sector can identify those roads that need upgrading to meet wood-flow demands. This forward planning is critical to ensure that key infrastructure is in place when it is required, and that adequate funding is provided.

The roading network is funded through a combination of district council rates paid by landowners, usually in relation to land value, and funds from government-derived road user charges, vehicle registrations and fuel excise. Currently, the level of government funding for roading exceeds the revenue collected. The main issue for the forestry sector is the funding of local roads through rates. District councils have adopted varying approaches to the payment of additional roading contributions. These include:

- contributions at the time of harvest; or
- rating differentials on different categories of land (with potentially higher differentials for forestry); or
- targeted roading rates on forest growers to offset the perceived, or actual, costs of log transport on district roads.

The movement of logs from harvest sites to processing facilities can be a significant proportion of the final production cost.

Forest owners consider differential rates or targeted rates on land used for forestry to be unjustified and inequitable.

Some districts struggle to contribute their share of the local road funds due to the size of their rating base. This was recognised by the Government in the two major forest-growing regions of Northland and Tairawhiti, where a Regional Development Transport Fund of $30 million per year was established in 2002, with 100 percent government funding for agreed priority road upgrades.

In November 2006, the Government established an independent inquiry into the funding of local government. The purpose of the Rates Inquiry was to provide an independent assessment of New Zealand's local government rating system and identify options to enhance rates as a funding tool for local authorities.

In August 2007, the Rates Inquiry panel produced a report with 96 recommendations (Local Government Rates Inquiry, 2007). While a significant number of the inquiry's recommendations are not specific to the forestry sector, the following may have some more direct relevance:

4 That councils review and reduce forecast rate increases where that is consistent with their longer-term funding policies.

8 That rating differentials be removed from the Local Government (Rating) Act 2002 from an operative date of 1 July 2012.

11 That councils be encouraged to make more use of their powers for flexibility in rating so that the rating burden better reflects value in use.

21 That the Government remove legislative barriers to the funding of transport projects through the use of tolls.

33 That councils be permitted to set all fees and charges on an actual and reasonable cost recovery basis, and any Government regulations that limit such fees should be removed.

Further information is available on the Rates Inquiry website at http://www.ratesinquiry.govt.nz.

› ROAD AND VEHICLE SAFETY

Over the last few years, there have been major improvements in log truck safety through changes in load configuration and increased education and training. This has been partly responsible for a 65 percent reduction in log truck crashes, along with a 75 percent reduction in rollover crashes. The risk of a logging truck rolling over is now very similar to that of any average heavy vehicle.

This improved safety situation has enabled the forestry sector to be involved in the joint Ministry of Transport and Transit New Zealand project to investigate the potential for increasing transport productivity through concessions in the application of the existing Heavy Mass and Dimension Rules. The potential to increase heavy vehicle weights on some routes and through changes in truck configuration could have a major benefit for the industry, as forest products have a relatively low value-to-weight ratio and therefore freight costs have a significant impact on the overall costs of production. The forestry sector is actively engaged in this project.

There have been major improvements in log truck safety.

› SHIPPING

Ports in New Zealand are generally seen as being more unregulated and efficient that those in, say, the US and Australia. New Zealand has 12 ports with significant volumes of forestry exports or imports at Whangarei, Tauranga, Gisborne, Napier, New Plymouth, Wellington, Nelson, Picton, Lyttelton, Timaru, Port Chalmers and Bluff.

Storage facilities for logs and timber products at New Zealand's major ports are generally underused, so there is potential to increase throughput without the need for large amounts of additional capital.

There are also opportunities at some ports to extend loading times (for example, 24-hour loading). This would mean shorter stays in port and reduced charter and port costs. Some port activities are, however, constrained through noise, fumigation and discharge impacts when located near residential areas. The use of methyl bromide as a fumigant is of increasing public concern and the Ministry for the Environment and MAF are working with the industry on potential alternatives.

New Zealand's 40 million tonnes of cargo (annually) is a small fraction of international trade. The country is generally treated as an extension of Australian trade routes. Consequently, when there is a squeeze on capacity (as has occurred in recent years), low-volume and/or longer routes are generally the first to be restricted. This means that New Zealand industries in general (not just the forestry sector) and/or the Government have little opportunity to influence international sea freight rates. New Zealand is very much a price taker in this matter.

› TYRANNY OF DISTANCE: THE COST OF SEA FREIGHT

The forest industries face one insurmountable fact – New Zealand is an isolated country at the end of the sea freight network. Our closest overseas market, Australia, is a minimum of four days travel by sea, while the delivery time to customers in Europe or the eastern US can be upwards of four weeks.

Extended supply chains add to the cost of doing business, and they reduce the flexibility a firm has in responding to changing market conditions. If your product is on the other side of the world, it is difficult to take advantage of short-term market opportunities, for example, seasonal shortages of plywood during the US hurricane season.

Sea freight costs have often been overlooked in discussions on the competitiveness of the New Zealand forest industries, yet they are a critical component of the overall cost of supplying forest products to the market. The sea freight burden is felt particularly at the log trading end of the industry, where exporters are handling a low-value, bulk commodity.

In recent years, sea freight charges have constituted up to 50 percent of the delivered value of pulp logs to our key Asian markets. For pruned and unpruned logs, the percentage has been as high as 30 to 40 percent of the delivered value. As the manufacturing component in the forest product increases, the freight burden declines, but it is still a significant cost to carry (20 to 25 percent for rough-sawn lumber and 15 to 20 percent for pulp and paper).

The cost of moving container and bulk freight has increased sharply since the turn of the century. The pressure on freight rates has been driven by strong growth in international trade volumes (particularly from China and India), a squeeze on shipping capacity, higher insurance and security costs and the increasing cost of bunker fuel.

Our closest overseas market, Australia, is a minimum of four days travel by sea.

Between 2002 and 2004, the charter rates for "handy size"[13] and "handy max"[14] vessels more than tripled. For a 30 000 tonne vessel, the daily charter rate increased from US$6000 to US$20 000 over this period. Charter rates have decreased over the past two years (due to additional capacity coming on stream), but they are still high compared with rates during the 1990s. The charter rates for container vessels have followed a similar pattern, and these charges have flowed through to box rates. In the latter part of 2008, however, shipping costs tumbled due to the economic crisis.

There are options for reducing the freight burden. For example:

- Reduce loading times in New Zealand, particularly at secondary ports (for example, 24-hour loading).
- Pool log exports, to gain leverage with shippers and to ensure vessels are fully loaded.
- Use innovative forms of back loading, such as using car carriers for MDF and lumber cargoes.
- Where sawmillers are supplying a common market, co-ordinate freight movements and develop their own shipping arrangements.
- For small shipments of logs, carry logs on container vessels using modified sea containers.
- Investigate the option of using multiple transport modes for delivering products to the market

13 20 000 to 40 000 tonnes (deadweight).
14 40 000 to 60 000 tonnes (deadweight).

(for example, for loads to the eastern seaboard of North America, it may be more cost effective to offload cargoes in a western port and rail the cargo to its final destination).

› Use feeder services from secondary ports so that larger-capacity vessels can be used.
› The stock answer – increase the level of processing, so that manufactured (lower-volume) products are being exported.

Looking to the future, coastal shipping could play a greater role in moving forest products, particularly logs. As the capacity of international vessels increases, the number of New Zealand ports they can service is likely to decline. This will create opportunities for coastal feeder services to move logs and processed lumber products to key export hubs. This trend is also being driven by the major shipping lines, which are looking to schedule fewer port calls in New Zealand. A downside to this is that it could add significant costs because of double handling that would probably have to be balanced with efficiencies and/or savings elsewhere.

› RAIL

New Zealand's rail infrastructure is owned and maintained by the Crown (through a business entity called ONTRACK), which has allocated $200 million to rebuilding the system after a decade of underinvestment. The Crown, through KiwiRail, now also owns New Zealand's rail business having recently purchased this from Toll New Zealand.

The Government's National Rail Strategy to 2015 has a priority to encourage more freight to be carried by rail. It is recognised, however, that only a small proportion of log and containerised lumber movements would be of sufficient distance or volume to justify the cost of double handling inherent with rail cartage. ONTRACK has been pro-active in developing projects tailored to meet the needs of key sectors, including forestry. Examples include creating opportunities for increasing forestry loadings on the rail network (such as reactivating sidings and establishing loading areas or short spur lines) and improving rail links to forest product export ports.

One of the threats to the rail infrastructure is the potential for rail users to be reluctant to commit their cargoes if there is a likelihood of delays due to the state of the lines and bridges. The Government has outlined in the Rail Strategy that one of its key priorities will be to bring the network up to a standard necessary to maintain and improve market share for freight and passenger services.

Only a small proportion of log and containerised lumber movements would be of sufficient distance or volume to justify the cost of double handling inherent with rail cartage.