forestgrowers levy trust inc

PLANTATION FORESTRY AOTEAROA

A look at our industry's commitment and sustainable resource to help rebuild our economy and protect the environment.

Publication of *Plantation Forestry Aotearoa* is funded by the Forest Growers Levy Trust.

While there are recurrent themes in this document and it represents the broad interests of levy payers, there are other priorities and views too.

Neither can we list and describe what everyone is doing – which is just what you would expect in an industry with a family as large and diverse as our forest and timber one.

Forest Growers Levy Trust
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Wellington 6143
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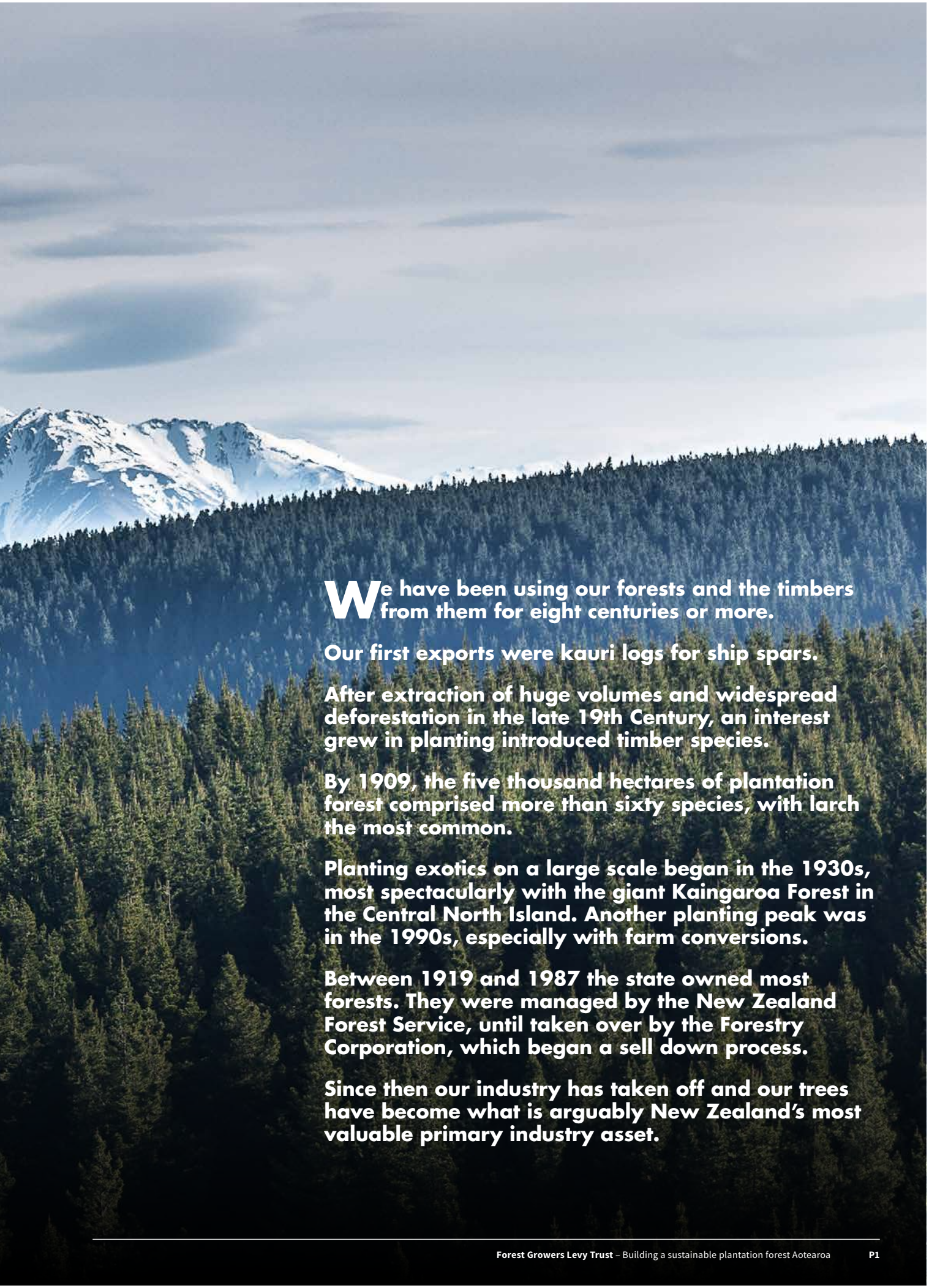
This photo and the cover are courtesy of Phil Taylor.



We have been using our forests and the timbers from them for eight centuries or more.

Our first exports were kauri logs for ship spars.

After extraction of huge volumes and widespread deforestation in the late 19th Century, an interest grew in planting introduced timber species.

By 1909, the five thousand hectares of plantation forest comprised more than sixty species, with larch the most common.

Planting exotics on a large scale began in the 1930s, most spectacularly with the giant Kaingaroa Forest in the Central North Island. Another planting peak was in the 1990s, especially with farm conversions.

Between 1919 and 1987 the state owned most forests. They were managed by the New Zealand Forest Service, until taken over by the Forestry Corporation, which began a sell down process.

Since then our industry has taken off and our trees have become what is arguably New Zealand's most valuable primary industry asset.

FORESTRY POST THE 2020 ELECTION

1. New Zealand will lose the quarter billion dollar per year India log market without an active and immediate Ministerial interest in resolving insect disinfection issues.

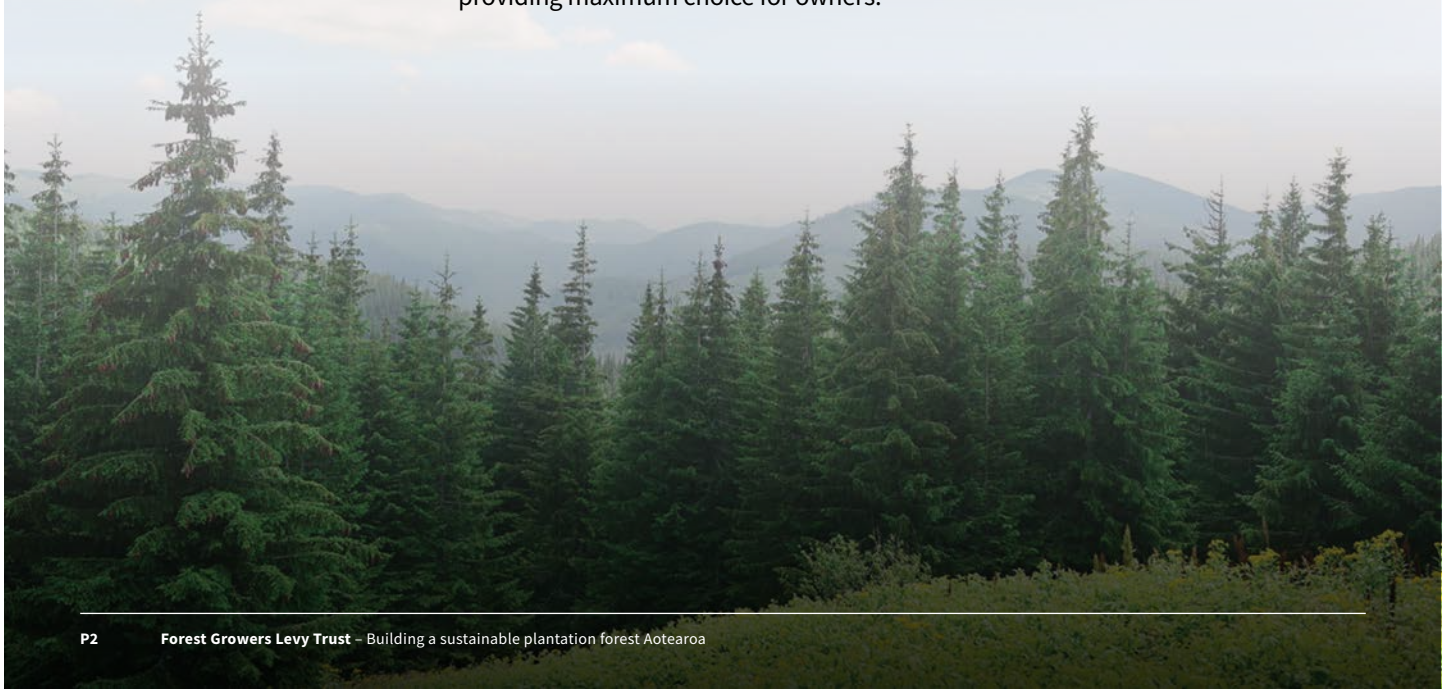
2. The outgoing government announced a range of wood friendly construction policies which it cannot let slip away.

3. If we are to progress into greater value-add then our government needs to develop and open markets for these products around the world against a growing tide of protectionism.

4. Legislative reform with both RMA and HSNO is vital to create policy consistency and clarity, as well as the international competitiveness, which the government asks of us, and the rest of the primary sector, for economic recovery post-COVID-19.

5. Easily the greatest return on investment in our industry is through applied science and the greatest damage is from populist politics, such as legislating to enforce current land use.

6. It is the role of government to provide an achievable and clear long term carbon sequestration target, including harvested wood products, with a land use policy providing maximum choice for owners.



FORESTRY ROADMAP

VISION FOR 2050

Forestry will be New Zealand's number 1 primary sector and exemplify the best plantation forest management in the world

GOAL 1
Tree growth and forest production efficiency will have both doubled

GOAL 2
Our increasingly diverse forests will provide valuable products tailored to our customers' needs

GOAL 3
People will be attracted to work in forestry because they will be safe, valued and well-trained

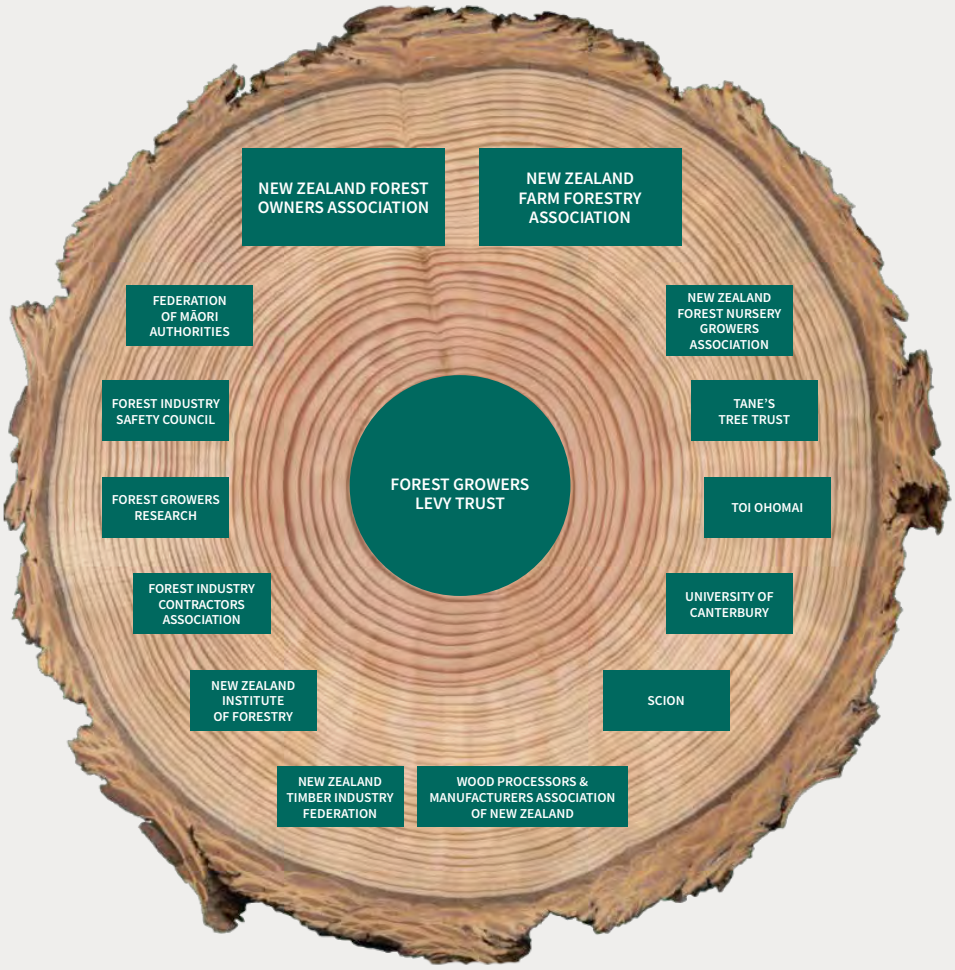
GOAL 4
Expanding commercial plantation forestry will have been the prime means of achieving New Zealand's net-zero carbon goal, while providing other substantial environmental and social benefits

GOAL 5
Our licence to operate will have widespread support

The forest industry has set out a Roadmap to go through the next 30 years – which is both the rotation period of a standard production forest, and New Zealand's Zero Carbon deadline

The Roadmap is ambitious – but in the current climate – both figurative and actual – it's very doable.

OUR INDUSTRY FAMILY



FOREST OWNERS ASSOCIATION

NEW ZEALAND FOREST OWNERS ASSOCIATION

The New Zealand Forest Owners Association has more than 100 members representing the interests of the majority of the New Zealand plantation forest estate, and all of the major forest companies. FOA joins with other industry parties in its advocacy to government departments in particular, for an optimum operating environment around licence to operate, biosecurity, research and development and forest legislation and infastructrure. FOA has just celebrated 50 years in its present form.

NEW ZEALAND FARM FORESTRY ASSOCIATION

NEW ZEALAND FARM FORESTRY ASSOCIATION

The New Zealand Farm Forestry Association has more than 25 branches, eight special interest groups and 1,500 current members, who own or manage up to 100,000 hectares of forest comprising not only pines and eucalypts, but other exotics, like blackwoods and redwoods, and indigenous species. FFA runs a specialty timbers marketplace, represents the interests of all small scale foresters to the wider industry and government, particularly the Forest Growers Levy, and promotes farm forest education.

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FOREST GROWERS LEVY TRUST

The Forest Growers Levy Trust was established by a forest growers' referendum in 2013 under the Commodity Levies Act 1990. The Levy is now 33 cents per cubic metre of harvested timber. In 2019, $9.7 million of Levy funds were invested in industry good activities, mostly in research and development. The Levy is governed by a Trust Board representing both large and small scale growers. In 2019, forest growers voted for a new Levy Order.

FEDERATION OF MĀORI AUTHORITIES

FOMA represents regional primary sector Māori assets, including large and small scale forests throughout Aotearoa, but mostly in Northland, the East Coast, Bay of Plenty, Central North Island and Te Tau Ihu O Te Waka A Maui.

FOREST INDUSTRY SAFETY COUNCIL

FISC is our commitment to health and safety. It's the first true tri-partite industry led body – owners, workers and government – in New Zealand. Working through the Safetree Programme, FISC's objective is zero fatalities and serious harm.

FOREST GROWERS RESEARCH

FGR coordinates forest grower research and manages government co-funded programmes. FGR programmes extend from tree breeding and biotechnology research, forest establishment and management and forest protection, through to the productivity and safety of harvesting and supply chains.

FOREST INDUSTRY CONTRACTORS ASSOCIATION

FICA aims to give a common voice on issues and improve the forest contracting industry. FICA has approximately 200 logging contractor members and associates. FICA runs workshops, a national discount scheme, regional industry developments and field visits.

NEW ZEALAND INSTITUTE OF FORESTRY

The New Zealand Institute of Forestry is a forum of professionals who work in all aspects of the industry. NZIF interests include timber production, as well as conservation, recreation, biodiversity, carbon storage, erosion control and water quality.

NEW ZEALAND TIMBER INDUSTRY FEDERATION

TIF champions domestic sawmilling to produce quality and environmentally superior wood products, through market development and promotion, communications and media, standards and technical matters, quality assurance and certification, the commercial and regulatory environment and advice to members.

WOOD PROCESSORS & MANUFACTURERS ASSOCIATION OF NEW ZEALAND

The WPMA advocates for members spanning the whole of the wood supply chain post-forest gate. WPMA represents currently the third biggest manufacturing export sector. Members produce; pulp, paper, sawn lumber, panels, laminated products, mouldings, biochemicals and bio-composites.

SCION

Scion is New Zealand's CRI for the forestry, wood and wood-derived materials and other biomaterial sectors. Its focus is on sustainable forest management, biosecurity, wood processing, bioenergy, waste streams and ecosystem services to inform land-use decision making.

UNIVERSITY OF CANTERBURY

University of Canterbury is the only university in New Zealand offering professional forestry degrees through the School of Forestry and College of Engineering. Students use the Wood Technology precinct and have extended field trips to forests and processors.

TOI OHOMAI

Toi Ohomai offers forest operations courses, including machine harvesting, health and safety and quality control. The forest management courses, also at the Rotorua campus, cover business planning, tree nutrition, supply chain, harvesting, silviculture and environmental sustainability studies.

TANE'S TREE TRUST

Tane's Tree Trust works with many interest groups to encourage planting and management of New Zealand indigenous trees for biodiversity, landscape enhancement, cultural benefits, and provide the option for sustainable production of high-quality timber and other resources.

NEW ZEALAND FOREST NURSERY GROWERS ASSOCIATION

The New Zealand Forest Nursery Growers Association is dedicated to raising levels of excellence in the industry and to give buyers assurance of high quality standards. It represents all nurseries which grow exotic forestry species, providing advice and advocating for the forest nursery sector.

OUR TREESCAPE

The New Zealand plantation forest estate comprises a highly productive and fully sustainable **1.7m** hectares.

Forest export returns per hectare are on average half as much again as from pastoral farming. This is despite most of the forests growing on inferior hill country land.

40% of forest land is owned by iwi.

In 2019, a record **36m** cubic metres of timber was harvested.

About **14m** cubic metres was processed in New Zealand.

More than a quarter of the forest estate comprises forests smaller than **100** hectares each.

Indigenous timber is now only **0.05%** of the total harvest.

PORT BLAKELY

PORT BLAKELY

www.portblakely.com

Port Blakely's New Zealand Forestry Division owns and manages forestland on the South and North Islands of New Zealand.

Growing, harvesting, and continually replanting radiata pine and Douglas fir, a variety of logs are offered by species, size and quality to processing mills in New Zealand and East Asia.

Port Blakely, which is Forest Stewardship Council® (FSC)-certified, also provides harvesting and marketing services to private woodlot owners. In addition, it offers recreational use of its lands, via permits, when conditions allow.

Another subsidiary, the Tauranga Barge Company, owns and operates Skookum, Tauranga Harbour's roll-on, roll-off ferry service.

The fifth-generation family-owned company from the US Pacific Northwest takes a long-term view on managing its forests, including wildlife habitat as part of its stewardship forestry approach. One New Zealand project is collaborating with the Long-Tailed Bat Working Group, to protect the animals, increase their numbers and enhance their habitat.

"This is an example of how forest landowners can be part of the solution. Sustainable and environmentally-friendly forest management is going to be a key component in minimising the effects of climate change.

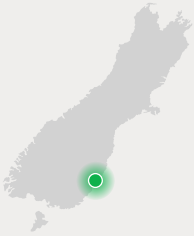
It's important business leads by example."

Phil Taylor
Managing Director and FOA President

Long tailed bat – pekapeka-tau-roa, managed protection

CITY FORESTS

www.cityforests.co.nz



www.yellow-eyedpenguin.org.nz

City Forests is owned by the ratepayers of Dunedin City. It is one of New Zealand's oldest forest companies, with more than 114 years of forest-growing history. It owns and manages more than 8.5 million trees in its 23,700 hectares of plantation forests within 80km of Dunedin.

Forest products harvested from City Forests' estate are sold to local Otago and Southland added-value processing mills and to customers in China and Korea. The company prides itself in sustainable forest management and has held FSC® certification for 20 years. It is also active in carbon forestry and participates in the New Zealand Emissions Trading Scheme.

The safety, health and well-being of its 12 staff, 80 contractors and forest visitors is important to City Forests, which is also active in the local community, supporting social and environmental initiatives, including: the Orokanui Eco Sanctuary, the Yellow-Eyed Penguin Trust, and a number of clubs and charities.

> "City Forests' purpose is to practise 'guardianship of sustainable forests for our future'. It delivers economic, social and environmental prosperity to the people of Otago and its shareholder, Dunedin City Holdings Ltd. Over $247 million has been returned to DCHL since City Forests became a local authority trading enterprise in 1990 – almost a 1,000% return on the initial capital of $25.7 million."

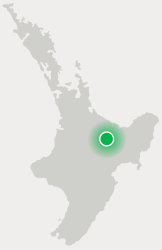
Grant Dodson
Chief Executive and FOA Vice-President

DUNEDIN CITY COUNCIL | kaunihera a-rohe o Ōtepoti

City Forests, a Dunedin City investment

TIMBERLANDS

www.tll.co.nz



www.nz.fsc.org/en-nz

Kaingaroa Timberlands Partnership is the owner of one of the largest plantation forests in the Southern Hemisphere. KT is a major supplier to both domestic processers and to China, and a significant employer in the Central North Island.

All New Zealanders are Investors in the KT Partnership through the New Zealand Superannuation Fund.

KT owns New Zealand's crown jewel plantation, the 189,000 hectare Kaingaroa Forest. The forest is one of the oldest and largest softwood plantations in the world. It is intensively tended by some 800 contractors, managed by forest management company Timberlands Limited, to produce a sustainable cut level of around 4.5M million cubic metres of high-quality logs a year.

Timberlands, with around 120 staff, is committed to managing the Kaingaroa forest, on behalf of KT to a high standard. It is FSC™ certified and adheres to the Responsible Wood New Zealand Standard for Sustainable Forest Management, which is endorsed by the Programme for Endorsement of Forest Certification.

> "Our vision is to be the best and safest production forest in the world. Mo ake tonu atu. We have the right people with the right know-how to sustainably double our productivity by 2050. This is an exciting journey and one that I believe will have a lasting positive impact on our people, our communities, our customers, our suppliers and our owners."

Ryan Cavanagh
Chief Executive Officer

NZ FARM FORESTRY ASSOCIATION

NEW ZEALAND FARM FORESTRY ASSOCIATION

www.nzffa.org.nz

Adding value

We recognise the risks of exporting big numbers of logs to a small number of countries, and would like to process more logs here, add value and export a wider range of products.

Sector leaders have been meeting regularly with Te Uru Rākau to discuss this, and have developed a set of principles that should help guide the Industry Transformation Plan which will identify pathways to more successful local processing, and the interventions needed to achieve it.

NZFFA has pointed out that if there is greater local demand and less emphasis on export logs, it will be important to aggregate small forests to ensure a regular log supply to processing plants, and economies of scale for harvesting.

Barriers to aggregation include tax regulations, education, growers' different expectations (on when they'll be paid) the need to match equipment to terrain, and log prices varying over time.

It would also help if the National Exotic Forest Description was more accurate, there was regional supply planning, and processors offered long term purchase contracts which would assure growers of steady demand.

None of this will be easy, but success would be hugely significant for our economy.

Hamish Levack, NZFFA President

MOSAIC FORESTRY

NEW ZEALAND FARM FORESTRY ASSOCIATION

www.nzffa.org.nz

Model to plant more trees

Mosaic forestry is an attractive way of alleviating some publics' negative perceptions about planting large forests to mitigate climate change.

'Mosaic forestry', is where many landowners plant a variety of species in a large number of hand-picked locations. Farmers are equipped to measure, manage and reduce their own greenhouse gas emissions. This reinforces the initiative of He Waka Eke Noa – the Primary Sector Climate Action Partnership.

If every sheep and beef farmer identified the least productive 10 percent of their farm – perhaps land that's remote, eroding or needed as a riparian reserve – and this were planted with trees, it would increase national forest cover by around 850,000 hectares. The loss of this marginal pastureland would not significantly reduce or harm farm outputs, jobs or rural communities.

Stocking the area would require almost a billion trees. If they were radiata pine, the carbon sequestered over 17 years would be 340 million tonnes, worth about $17 billion carbon value to the landowners (i.e. $20,000 per ha) assuming carbon prices of $50 / NZU at that time. Log returns would be additional.

Of course, this would only happen if farmers agreed it was attractive, which suggests education and encouragement from lobby groups such as Fifty Shades of Green, whose supporters say they recognise the benefits of planting trees and woodlots where they complement grazing.

To date, there has been little uptake of the idea despite rising carbon prices and incentives from Te Uru Rākau. Three things are in play:
(i) some farmers cannot afford the additional costs of planting and managing trees;
(ii) some lack the know-how and doubt the commercial benefits; and
(iii) some may be waiting to see what He Waka Eke Noa delivers.

In the past, farmers met the costs by offering joint ventures to third parties who would plant and manage trees on their land. There is an appetite for 'small-forest' investment amongst young people but who cannot afford to buy land. Know-how can be addressed with 'forest extension,' teaching farmers how to grow and manage trees. However, Te Uru Rākau will not run such a programme; the Farm Forestry Association cannot afford to; and while Beef + Lamb NZ is considering one, its levy mandate extends only to education about farming animals, with trees limited to shade, shelter, and erosion control.

Farmers hope, probably unjustifiably, that He Waka Eke Noa will deliver them a commercial, legal and practical alternative to the Emissions Trading Scheme by 2025. But while farmers are protected from an ETS impost, their land values continue to rise with carbon prices. Waiting costs them nothing.

FARM FORESTRY

An under-recognised star

“Forestry has been something of a stand out performer in recent years.

Not that you would know it from following the general or rural media. Amidst the gloom of dairy and the disgruntlement of meat producers, it has been a nice earner.

Someone really ought to tell our politicians, business commentators and academics about it.

I can vouch for the good returns from forestry. I have just harvested a five hectare, 27-year-old radiata stand and netted $180,000. Adding in the $3-4,000/ha netted from two production thinnings and I am looking at close to $40,000/ha over the 27 years. A nice little earner as I say.

It was also a cheap logging operation on easy Manawatu sand dunes, and, despite a very wet spell during the harvest, expenditure on the access track was a restrained $3,500.

Inevitably I, and others I’m guessing, will be asking how this would compare with returns if left in the second-rate pasture it carried previously. In two words, “it doesn’t”. Forestry wins hands down.

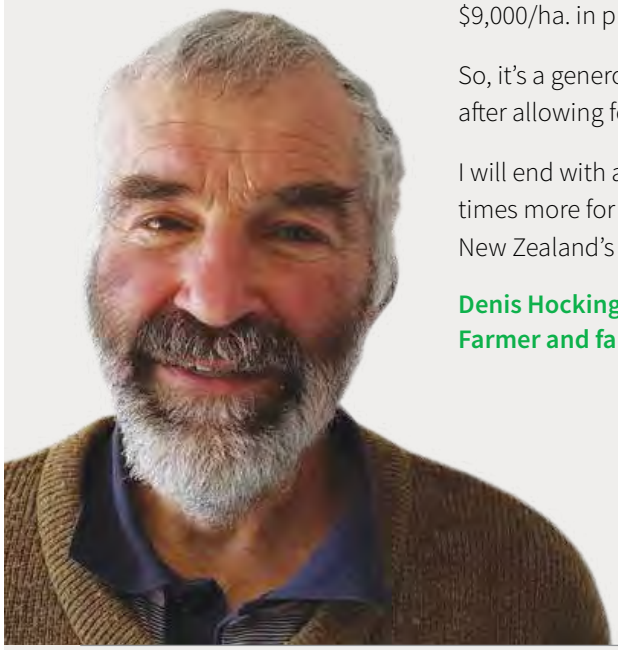
I certainly can’t claim to be the best sheep and beef farmer and others might do rather better. But I think this class of land – relatively easy, but summer dry and exposed sand dunes – could carry 6-7 stock units per hectare maximum.

In the past four, average to moderately good, years my gross margins for sheep and beef have been around $50 per year per stock unit. Thus, I would estimate the potential return from livestock over the 27 years would have been no more than $9,000/ha. in present day dollars.

So, it’s a generous $9,000 income from livestock, versus around $30,000 for forestry, after allowing for the initial investment. Need I say more?

I will end with a question though – why are livestock farmers prepared to pay 2-3 times more for land than foresters when they are getting much lower returns? One of New Zealand’s eternal mysteries. ”

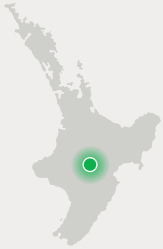
Denis Hocking
Farmer and farm forester



LAKE ROTOAIRA FOREST TRUST

Lake Rotoaira Forest Trust

www.lrft.co.nz



The Lake Rotoaira Forest Trust (LRFT) was established in 1973 to represent the interests of the owners of 85 separate Māori land titles located on the slopes of mounts Pihanga, Tongariro, Kakaramea and Kuharua, around the shores of Lake Rotoaira and Otamangakau, and in the upper Wanganui Basin.

LRFT is a Māori authority which administers the land interests of almost 11,000 owners and nearly 23,000 hectares of land including 9,600 hectares in productive world class plantation forestry in the central North Island of New Zealand.

Their purpose is to sustainably use and protect our taonga in an optimal way which safeguards the environment and enhances the lives of owners and community, with a vision to transform LRFT from a forestry business into a fully diversified asset management company.

"The foresight of our forebears in 1973 to productively and sustainably utilise our lands, while returning an economic return to our owners, is now bearing the fruit of their vision. The employment opportunities, recreational activities such as hunting and the protection of culturally significant sites, have kept our whānau connected to our ancestral lands and helped improve our lives."

Bubs Smith
Chairperson

EXPORT LOG FUMIGATION DEADLINE

The near and present danger of losing export markets

28th August 2021
The date on which log exports to China and India can no longer be fumigated with methyl bromide

Fumigation for insect pest in logs at ports exporting to China and India will have to end in August 2021 unless one of two breakthroughs is achieved.

Either the present use of methyl bromide is extended. Or an alternative fumigant, ethanedinitrile (EDN) is approved by both New Zealand and importing country authorities.

As it stands, from next August, use of methyl bromide at ports will end. All log exports to India (worth $245 million last year) will stop. Above-deck exports to China (worth $441 million last year) will also be at risk, with only a limited capacity of debarking as an alternative.

Progress to retain these markets through the Environmental Protection Authority for both fumigants has stretched frustratingly and unreasonably over the past few years.

New Zealand compliance with the Ozone Layer Protection Act 1996 led EPA to rule in 2010 that for log fumigation, no release of methyl bromide to the atmosphere would be permitted after 28 October 2020. The deadline for compliance was later extended to August 2021. Total recapture is technically impossible to achieve.

Realising that the use of methyl bromide cannot continue indefinitely, an application to use EDN as an alternative was filed with the EPA in July 2017 – expecting an approval process to take six months. That was three and a half years ago.

Even were the EPA to approve EDN now, the protracted RMA approval process for individual fumigation facilities lies ahead. It will take at least two years to get EDN approved at the Port of Tauranga, our main export log port.

STIMBR

www.stimbr.org.nz

Plant & Food™ Research
Rangahau Ahumāra Kai

www.plantandfood.co.nz

STIMBR

Stakeholders in the Use of Methyl Bromide is a group of organisations working since 2012 to find environmentally and socially acceptable alternatives to methyl bromide, using voluntary industry funds and with government support.

STIMBR has introduced a world first scrubbing technology to recapture and destroy methyl bromide. STIMBR funded Plant and Food Research testing on no fewer than half a million Hylurgus and Hylastes bark beetles proved EDN is highly effective at controlling the insects of concern.

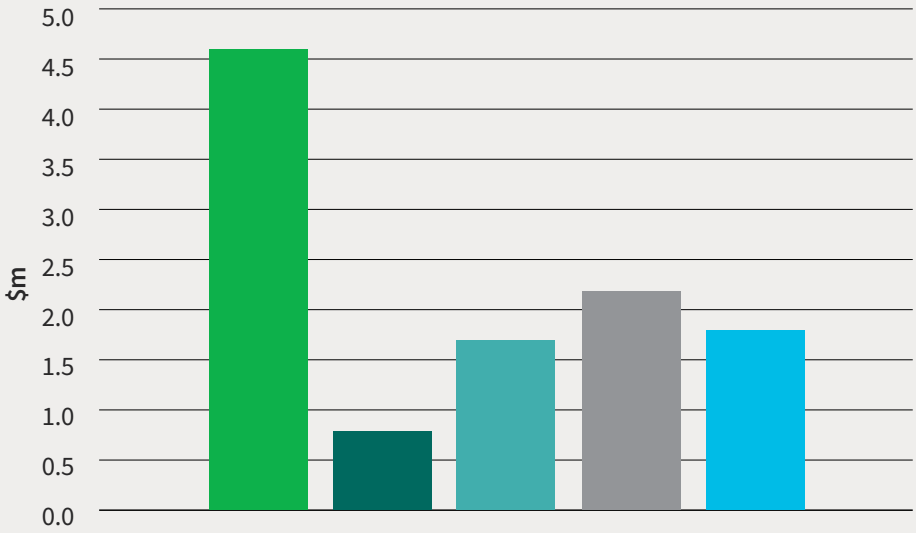
PRICEWATERHOUSECOOPERS REPORT

www.pwc.co.nz

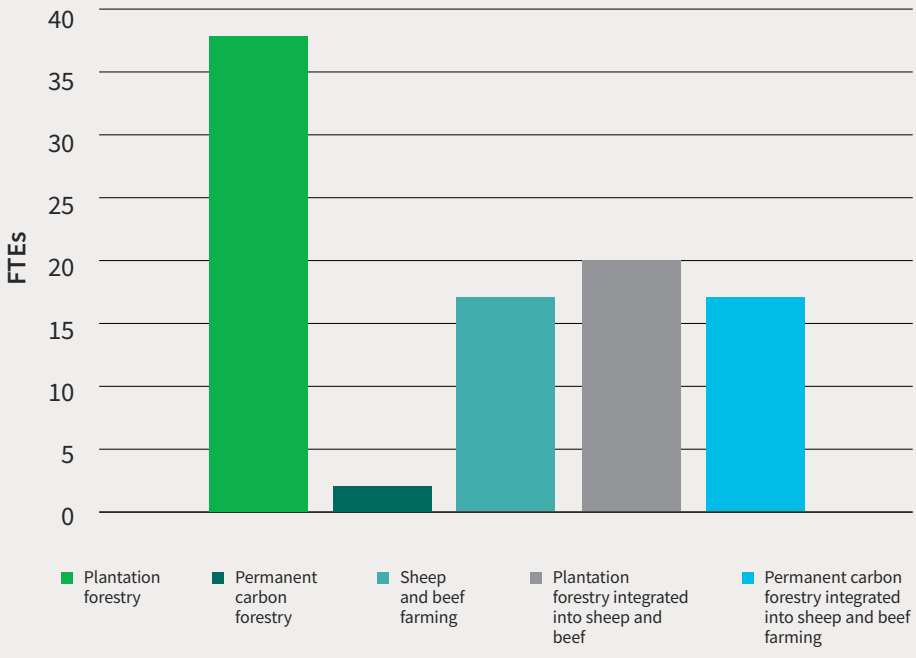
In late 2019, MPI commissioned Pricewaterhousecoopers to investigate the relative economics of forestry and hill country farming.

Commentators had been claiming that forestry was destroying farming-communities jobs and income. The PwC Report, as you can clearly see from the two graphs below, reaches a very different conclusion in favour of forestry.

Annual total value chain impact per 1,000 hectares – value-add by land-use



Annual total value chain impact per 1,000 hectares – FTEs by land-use



PLANTATION PINE MYTHS

Myths and forest legends

MYTH	FACT
Pines are an unnatural monoculture	They are less a monoculture than pasture or some beech forests. Many natural forests overseas are single species dominant. The proportion of indigenous vegetation in plantation forests is comparable with that on sheep and beef farms.
Pines are poisonous	Pines are not poisonous. They are no more harmful to wildlife and people than native tree and plant species and a lot less dangerous than some.
Pines cause hay fever	Just because pine pollen is large and can be seen on the ground, doesn't mean that it will cause an allergic reaction. A thick waxy coat helps make pine pollen a lot less likely to cause hay fever than ryegrass, privet or wattle pollen.
Pines are shallow rooted and fall over in storms	They can, but many other species, such as tōtara, can fall as well. Fast growing pines have often been planted to stabilise eroding farmland. After harvest, and until new trees are established, the land is near as erodible as it was before afforestation. But over the full rotation it is more stable under forestry than in pasture.
Pines dry out the land	Pines are drought resistant. While some rainfall may not get to the roots of the trees and cause runoff, that is the nature of all forests. Trees protect the land from heavy rain and release water into streams during dry periods. Wetlands in forests are almost never drained and are valuable habitats for wildlife.
Growing pines needs lots of chemicals	Some forests need a copper spray to combat dothistroma fungus. Copper is one of the oldest and safest fungicides in existence and its runoff is well below allowable levels. Herbicide use is restricted to just after planting. Pesticides to kill insects are not used on plantation pines. Per hectare, fertiliser applications average only one percent of dairy fertiliser applications.
Forest slash in rivers kills wildlife	In massive quantities it can. In the infrequent and small amounts which do reach streams, the forest debris is a normal environmental feature and used as a natural habitat by fish and insects. The slash usually breaks down in a year or two.
A pine forest can't be converted back to farmland	Many thousands of hectares of radiata pine have been successfully turned into pasture in Canterbury and the Central North Island, including Landcorp forests converted to dairy farms.

NEW ZEALAND INSTITUTE OF FORESTRY

NEW ZEALAND INSTITUTE OF FORESTRY INC.
Te Pūtahi Ngāherehere o Aotearoa Inc.

www.nzif.org.nz

The New Zealand Institute of Forestry represents New Zealand's forestry professionals.

We provide a forum to exchange ideas, opinions and information. We encourage and help our members attain and maintain the highest standards of their profession.

Established in 1927, our membership is open to those who work in all aspects of forestry, including forest management and utilisation, processing, research, education and consulting.

Our interests include forests which are used for timber production, as well as those used for conservation, recreation, biodiversity, carbon storage, erosion control and water quality. We cover exotic and native forests.

We are focused on ensuring the sustainability of forestry in New Zealand – both the management of our valuable forests, and the health of our forests as they evolve and grow.

We have performance standards and a robust Code of Ethics which all our members must follow so they provide the very best of advice and service.

The NZIF is an Incorporated Society, governed by our Council, represented around New Zealand by our Local Sections. We have a Registration Board to regulate our members' registrations.

"Forests are intrinsically linked to humanity. They provide shelter, food, recreation opportunities, clean water and help clean our air. They remove carbon from the atmosphere and improve our biodiversity. Without forests the human race would not survive. So managing them well and planning for their existence for generations to come is imperative for everyone in forestry and every Government.

To quote the Lorax "Unless someone like you cares a whole awful lot, nothing is going to get better. It's not." NZIF's and my role is to "speak for the trees for the trees have no tongues." I look forward to making some real progress over the next three years."

James Treadwell
President

EXPORTING TO THE WORLD

New Zealand forest product exports returns are on a par with those from the meat and horticulture industries.

Logs are New Zealand's second most valuable single export category after whole milk powder.

New Zealand forest exports are mostly to Eastern Asia. Each of nine Pacific Rim countries and India import at least $100 million of products per year from us.

Besides China being the major log and pulp market, Japan is the main panels importer, Australia the most important paper and paperboard purchaser and the United States is our number one sawn timber destination.

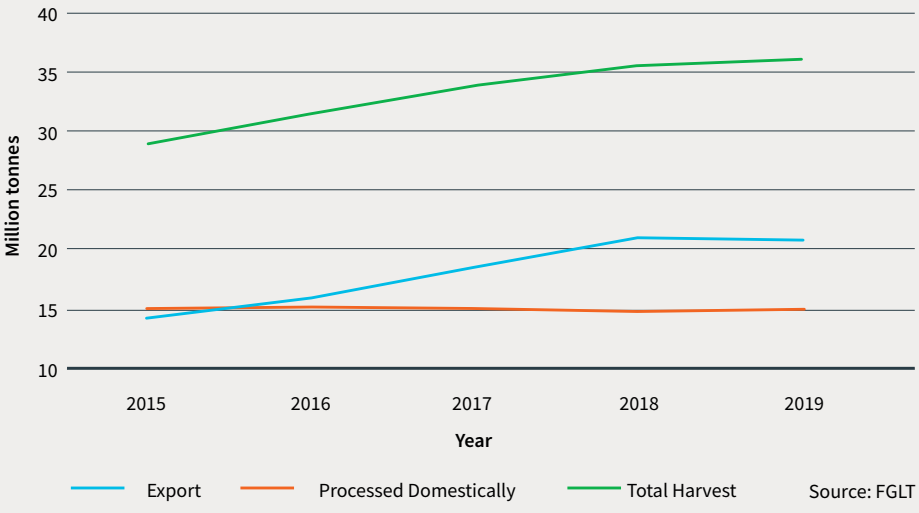
Due to an increasing harvesting rate over recent years, log exports comprised 55% of total export returns of $6.2 billion in 2019, while processed timber production and exports have remained static.

This demonstrates how difficult the policy and regulatory environment is for anyone interested in processing wood in New Zealand.

Ten New Zealand ports each export more than $100 million worth of log and timber per year. Tauranga is the leading export port. It shipped $1.7 billion worth of logs and timber in 2019.

45%
of timber export returns are from processed products

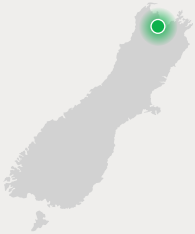
NZ Log Harvest – Domestic vs Export



A looming threat to our markets is the rush of spruce harvesting in Europe. Their forests are suffering from huge infestations of bark beetles brought on by climate warming. Salvage cutting before the damage is too great, with subsidised European mills built to process sawn timber, will overhang both our log and sawn timber markets for the next decade.

NELSON PINE INDUSTRIES

www.nelsonpine.co.nz



Nelson Pine Industries has manufactured Medium Density Fiberboard since 1986 and Laminated Veneer Lumber since 2002.

It operates one of the world's biggest single site state-of-the art manufacturing facilities at Richmond near Nelson and supplies markets in New Zealand and Japan.

Nelson Pines' innovative thinking enables it to provide customers with top products and services.

Over the past three decades Nelson Pine has added several billions of dollars to the New Zealand economy. It employs more than 250 FTEs directly when processing around 1 million tons of logs per year which is more than a third of the region's total log harvest.

Nelson Pine, together with Tasman Pine Forests, operate a vertically integrated supply chain with Tasman Pine managing 36,000 hectares of sustainable radiata pine plantation forests.

> "Nelson Pine Industries is supplying high performance construction and building materials, the LVL and MDF which are required for the increasing consumption of timber products in low, mid- and high-rise buildings.
>
> LVL, MDF and other engineered wood products have strong environmental credentials and sequester carbon for many decades over their lifespan, which significantly contributes towards New Zealand's target to become carbon neutral on a sustainable basis."

Kai O. Kruse
CEO

INVESTMENT IN CHINA

China is our main market for forest products. It is dominated by the log trade. We are China's main log supplier. Here is a snapshot of where these exports originate and go to, the recent history of our log trade and comparisons with other export industries and countries.

SEVEN PORTS TAKE 77% OR MORE OF NEW ZEALAND LOG EXPORTS TO CHINA

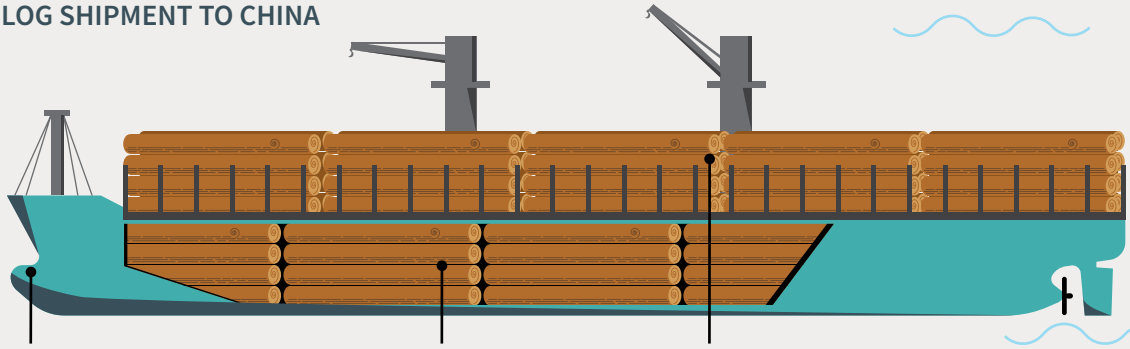
"China is the world's biggest net importer of forest products – by a huge margin. New Zealand holds about a 10% market share. This access to China is hard earned, and envied by our international competitors, who are striving to match New Zealand for quality and cost.

New Zealand's estate is tiny by world standards at only 1.7 million hectares, which is less than 2% of the world's plantation forests.

The US has more than 25 million hectares, Europe more than 40 million and Brazil more than 8 million. We are meeting and beating this competition."

Steve Walker
FOA Director

LOG FUMIGATION ON A TYPICAL LOG SHIPMENT TO CHINA

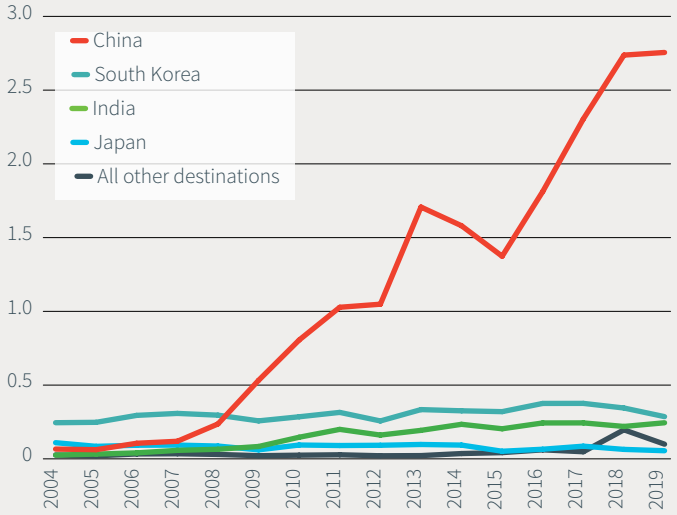


More than **500** shipments per year supply our log market in China, with frequency declining during the New Zealand Christmas/New Year and then Lunar New Year holidays in China

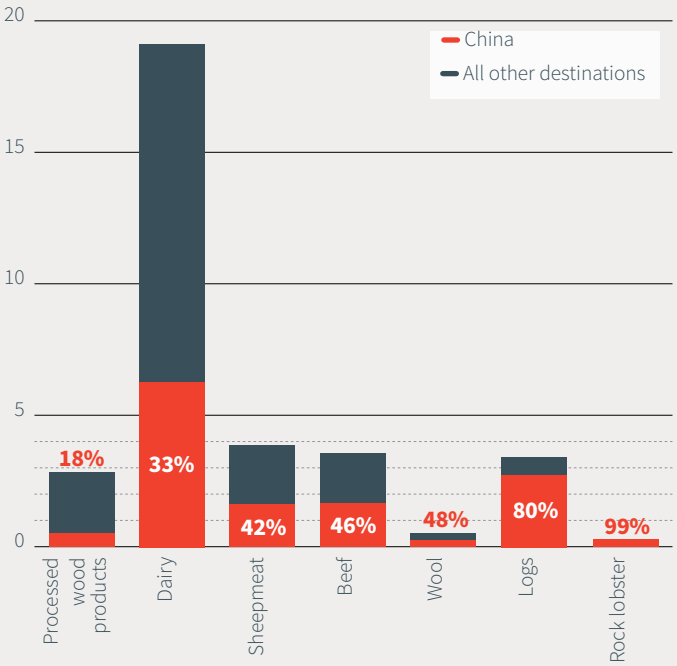
In 2019, **76%** of the logs on average were stored below-deck and treated en-route with phosphine to kill insects.

The remaining **24%** of the cargo was stored above deck. This comprised **16%** of the shipment total treated with methyl bromide in New Zealand, and the remaining **8%** was debarked in New Zealand.

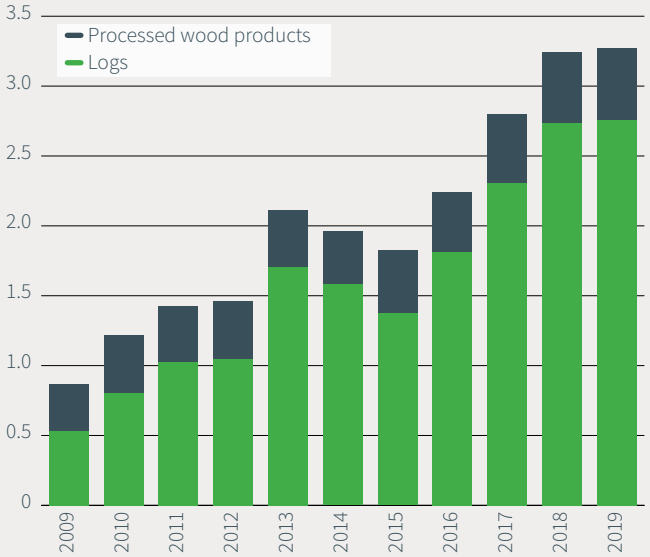
NEW ZEALAND LOG MARKETS SINCE 2004 (NZ $BILLION)



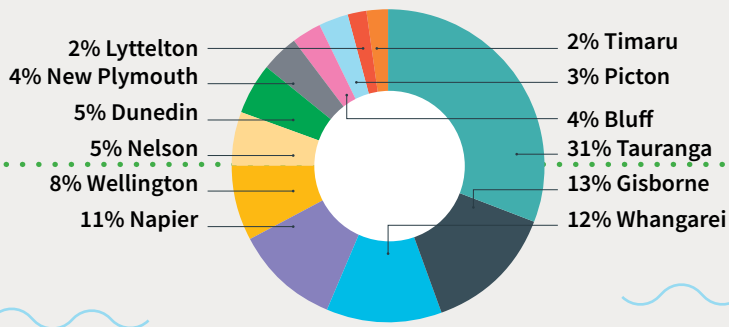
SELECTED NZ PRIMARY SECTOR TOTAL EXPORTS AND % TO CHINA (NZ $BILLION) 2019

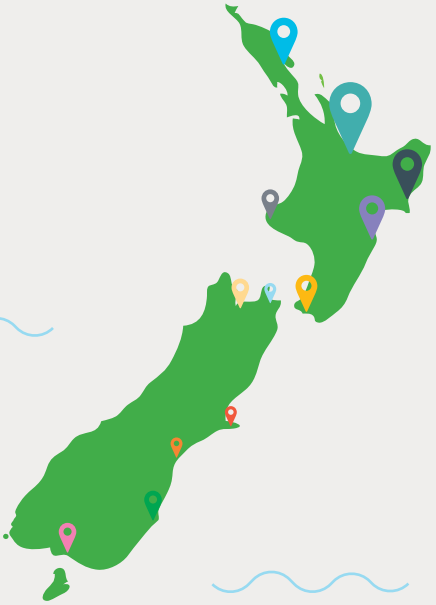


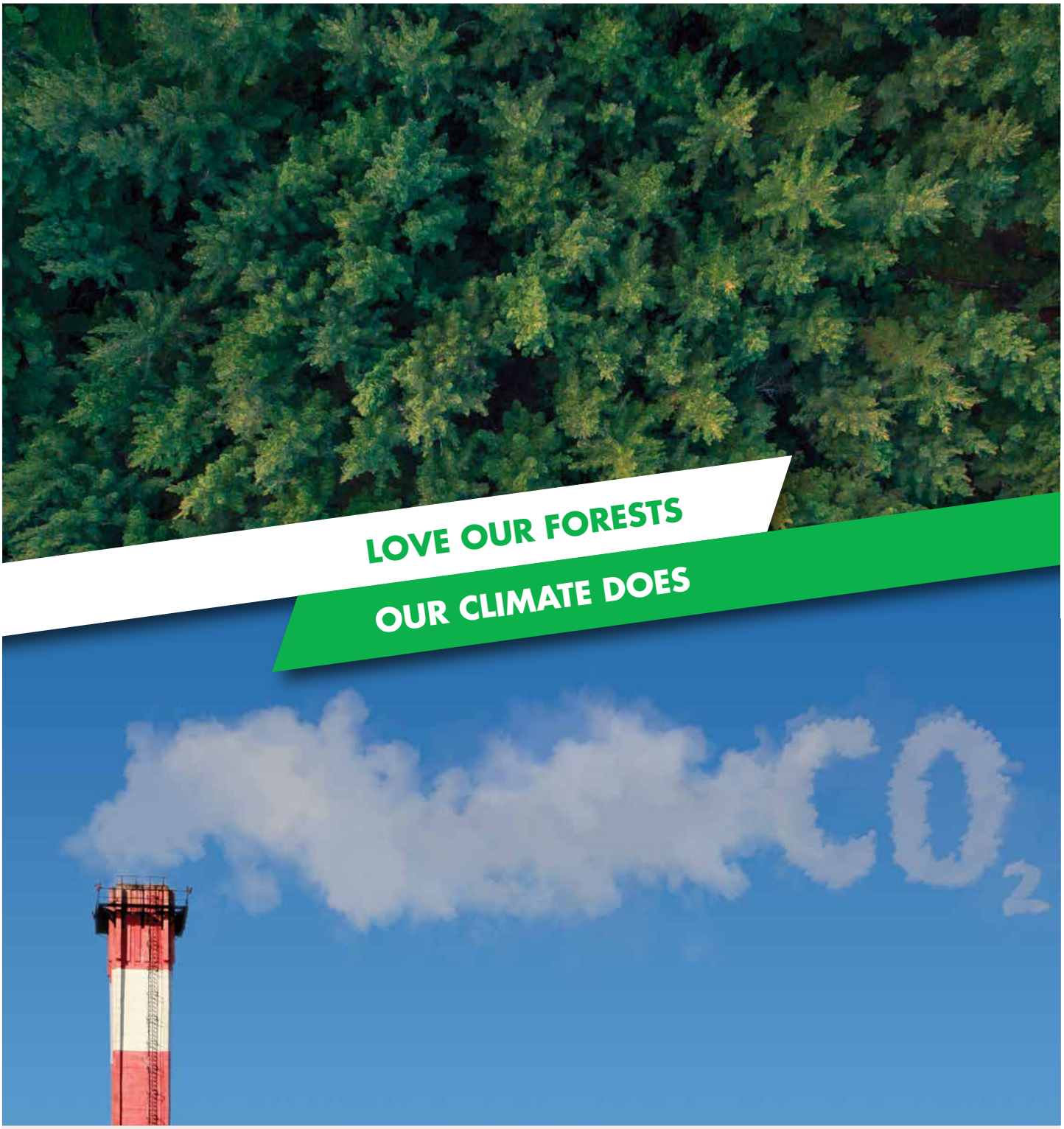
NZ FOREST PRODUCT EXPORTS TO CHINA 2019 (NZ $BILLION)



LOG EXPORTS FROM NEW ZEALAND ARE FROM MANY PORTS







Industries and vehicles produce carbon dioxide gas which causes dangerous climate change.

Fortunately, trees reabsorb that carbon and safely lock it up in solid wood.

Planting more fast growing trees is the only tool which is powerful enough to get the New Zealand economy to carbon neutral by 2050.

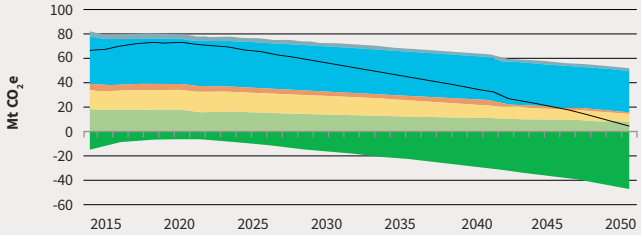
A FOREST/CARBON SCENARIO TO 2050

The Productivity Commission has presented three pathways to achieve a carbon neutral economy by 2050. All pathways heavily rely on new forest planting.

The pathways are; Policy Driven, Disruptive Decarbonisation (e.g. artificial meat widespread in the market) and Stabilising Decarbonisation (e.g. methane vaccine for cows becomes available).

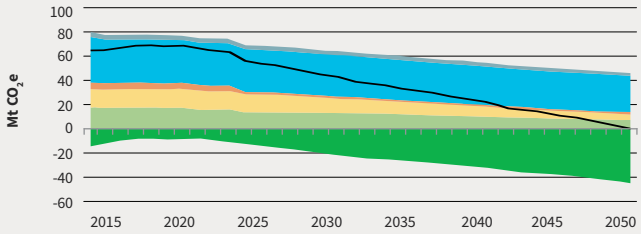
Policy Driven

2.8 m ha new forest (1.9 m ha exotic, 0.9 m ha indigenous)
45 $MtCO_2e$ forest carbon sequestration



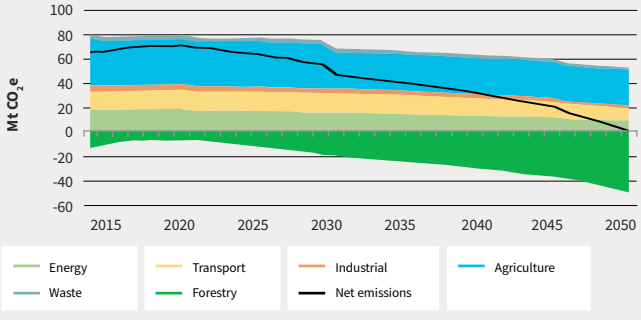
Disruptive Decarbonisation

2.1 m ha of new exotic forest
45 $MtCO_2e$ forest carbon sequestration



Stabilising Decarbonisation

2.3 m ha new exotic forest
50 $MtCO_2e$ forest carbon sequestration



Source Productivity Commission Low-emissions economy, Final report, August 2018

There is vital and clear, but relatively short term, need for plantation forests to sequester enough carbon from the atmosphere to meet New Zealand's net greenhouse gas emission targets in 2030 and 2050.

Pending recommendations from the Climate Change Commission, these are 2018 Productivity Commission's scenarios presented for the role of tree planting to achieve Zero Carbon.

THE CARBON ENGINES

The many species of indigenous trees have a deep emotional value for New Zealanders and many other valuable environmental and spiritual qualities.

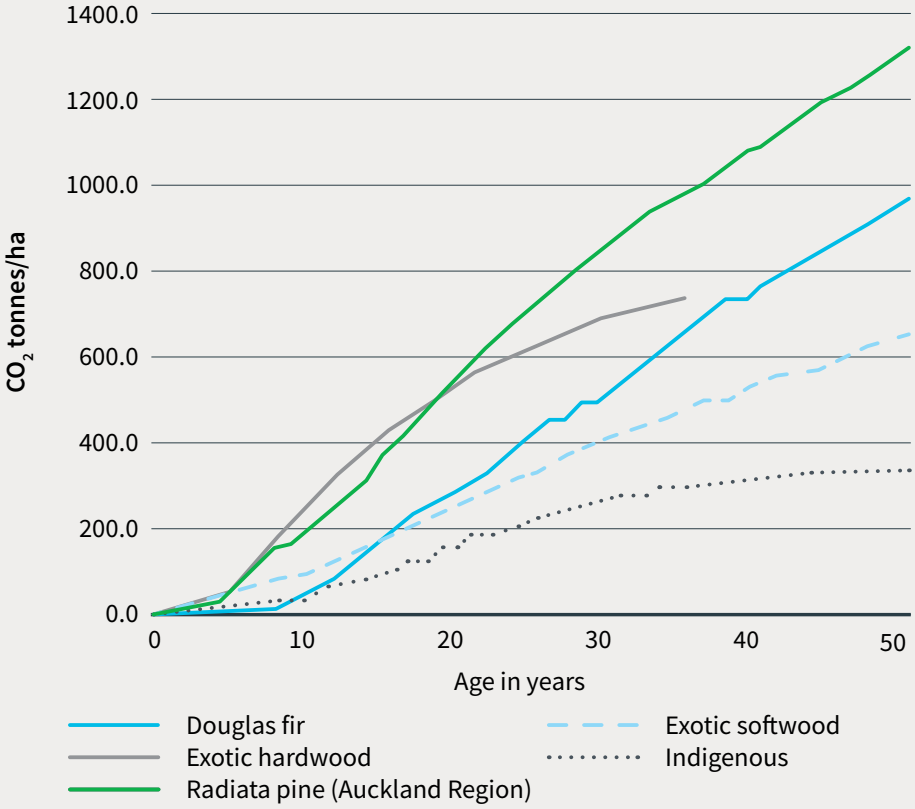
However, at least in the short term, fast carbon-sequestration is not one of them.

It takes 100 years or more, before an indigenous tree could outperform and replace a radiata pine in carbon lock-up capacity.

Radiata pine accumulates carbon extremely quickly

Parliamentary Commissioner for the Environment, October 2016

Default Yield Tables of CO_2 Storage for Radiata and Other Tree Species



Most radiata pine forests will eventually revert to indigenous forests, especially if there are seed stocks. Some native trees, such as tōtara, are, like pines, shallow rooted, and so subject to windfall when they reach about 300 years.

WELLINGTON CITY COUNCIL

Absolutely Positively Wellington City Council
Me Heke Ki Pōneke

www.wellington.govt.nz

PROJECT CRIMSON
renewing pohutukawa and rata

www.projectcrimson.org.nz

Forestry is playing a big role in Wellington City Council plans to make the capital city zero-carbon by 2050.

Increasing the hectares under Permanent Forest Sink Initiative covenants is one of the 12 indicators of success in WCC's comprehensive Te Atakura First to Zero implementation plan, which seeks a 43 percent reduction in emissions by 2030.

The plan refers to the carbon sequestration potential of WCC's 1,453 hectares of regenerating native forest, which are already registered as PFSI covenants and generating 8,000 carbon credits a year.

Another 100 ha of naturally regenerating and planted native forest has already been identified to add to WCC's PFSI covenants.

Other current WCC forestry plans include gradually replacing existing forestry plantations with regenerating native forest, staged removal of exotic blocks following severe storms and harvesting selected blocks, maximising timber value to help fund native forest restoration, along with weed control and wilding pine regrowth.

WCC also encourages city residents to plant carbon sinks . It supports the Trees that Count tree-planting initiative, managed by conservation charity Project Crimson, and the WCC native plant nursery annually provides 100,000 trees for community, partner and council planting initiatives.

> "Last year, Council was the first to declare both an ecological and climate emergency. Over the past 30 years, we've embraced our city in one of the world's best city reserve networks. My ambition is to complete that network and continue our city's incredible ecological restoration journey, being a city set in restored native forest, predator-free, alive with bird-song and surrounded by a treasured coastline. That forest, indigenous and exotic, also plays an important role in our climate change response, offsetting 85,767 tonnes of CO_2 equivalent in 2019."

Andy Foster
Mayor, Wellington City Council

THE FOREST GROWERS LEVY TRUST

www.fglt.org.nz

This statutory levy body was established in 2013 under the Commodities Levies Act 1990 to collect funds from harvested wood and is used for the benefit of forest growers generally.

As a process it has been successful, as shown by a renewal referendum nearly two years ago which voted for a new 6-year term with an 84% pass from both large and small growers.

The levy is administered by a six person board representing large and small growers with the growers' representatives electing a Chair, making seven in total. The Board has no outside appointments, but is presently considering a re-constitution to take on a wider role in plantation forestry leadership, including advocacy for the sector.

From establishment the Board set the priorities which are largely continued today. It identified forest work safety as needing a new approach and it formed and funds the Forest Industry Safety Council. A bad record with forestry related fatalities has substantially improved working in with WorkSafe.

Forestry research has taken most of the spending and a close relationship with Scion in Rotorua has been formed. Research into productivity gains, other species benefits, fibre benefits, fire resistance and the like are funded. Biosecurity is an important feature for forestry and the Board funds constant surveillance and readiness for any serious incursions.

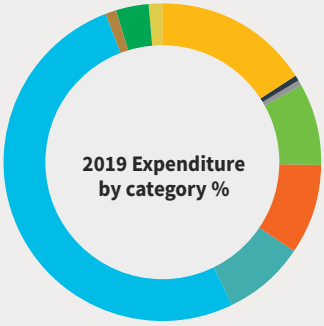
The Trust contracts its administrative resources from the Forest Owners Association to avoid costly duplication and operates through committees served by the Secretariat. The committees are volunteers from large and small scale forestry.

With recent harvesting of up to 36 million tonnes a year, the income totals about $10 million. The Board has just agreed to increase to levy rate to 33 cents a tonne – the first increase in seven years.

While the COVID-19 Level 4 lockdown was difficult for many, for the industry as a whole, it was not a disaster. Export and domestic demand for radiata has emerged relatively vigorously from the lockdown. On the basis of current indications, the Board predicts future demand will continue to be strong.

Geoff Thompson
Chair

WHERE THE LOG HARVEST LEVY IS INVESTED



2019 Levy income
$11.2 million

51.3% Research, Science and Technology

This is the largest single investment in the FGLT portfolio. It aims to improve profitability and sustainability for all forest growers in projects from genetics to harvesting. A priority is to reduce the incidence of forest slash on steepland. The programme also works on new product options of trees other than radiata pine, to give land owners greater confidence to grow these species.

15.9% Operational Costs (incl. Administration)

This expense is for collection of the Forest Growers Levy, database and business compliance costs, funding the FGLT secretariat to deliver the annual Work Programme. In 2019, expenses were incurred with the successful Harvested Wood Materials Levy Referendum of forest owners.

8.3% Forest Biosecurity

Forest biosecurity surveillance of high-risk sites. The surveillance app – Find-A-Pest – has been jointly funded with MPI and other stakeholders, and a Plant Production Biosecurity Scheme has been developed.

0.5% Fire

The Levy helps fund the FENZ seasonal awareness campaign. The Fire committee also partners with FENZ to support rural fire prevention and management.

3.3% Training and Careers

The Training and Careers Committee brings together all the organisations in forest training and careers, for plantation forestry standards, qualifications, training needs, government reform and promotion of the industry as a career choice. Training providers are funded and resourced, as is the Future Foresters group for careers development.

0.7% Forest Resources and Environment

Developing policies on forest growing and environment, including FSC™ biodiversity certification, climate change, freshwater management and carbon sequestration. The committee advises government on environmental issues. It supports conservation management of rare species in forests.

9.2% Health and Safety

This is the joint industry contribution to support the Forest Industry Safety Council (FISC) including work in, certification, Growing our Safety Culture initiative, a mobile phone health app, the Safetree website and Facebook page.

8.4% Promotions

Primarily the Love our Forests campaign in print, radio, television, social media, brochures, highway billboards and public opinion surveys.

1.2% Small and Medium Forest Enterprises

Is a forum for owners and managers. Its activities include fieldays, publications, website, workshops and newsletters, as well to identify the particular research needs of small growers.

1.3% Transport

The committee works with the Log Transport Safety Council. The committee has published a Forest Engineers Manual, and introduced a Log Transport Calculator to analyse transport volumes. The committee advocates to local and central government.

FGLT WORK PROGRAMME EXAMPLES

Improved felling techniques to reduce tree breakage

One way to reduce the risk of woody material moving downstream onto neighbouring land is to minimise tree breakage during harvesting.

A project in 2019 investigated felling technologies with greater control over felling direction and rate of tree fall. Trials demonstrate that a fixed felling head has fewer breakages, longer stem lengths and smaller top diameters, than those trees felled with the standard 'dangle-head'.

Felling with the fixed head significantly reduced the amount of tree breakage during felling. Trees felled with the fixed head had longer stem lengths and smaller top diameters than those felled with the 'dangle-head'.

TV commercials

A range of television commercials were produced and broadcast in 2019 with, in particular, a response to the claims made by the East Coast farmer campaign against plantation forestry, 50 Shades of Green.

The commercials were a high-profile response to the accusations that forestry was destroying local communities and thus presented a risk to the forest industry's licence to operate.

The commercials pointed to the official evidence that forestry employed more people for the same area of land than sheep and beef farming does, and that forestry has a far greater return in export income than farming on a per hectare basis.

Levy support for Forest Engineering programme

Levy support for the Forest Engineering programme at the University of Canterbury has given it greater visibility and as a result 15 new students have entered the Forest Engineering programme in the past two years, compared with the average of seven or eight in previous years. Levy funding has supported graduate students and the appointment of Campbell Harvey, a PhD candidate studying harvest residues.

FISC initiative a finalist in H&S Awards

FISC's Growing our Safety Culture initiative was a finalist in the New Zealand Workplace Health and Safety Awards in 2019.

The Awards recognise excellence in health and safety, so the finalist nomination was a great acknowledgement of all the work that went into creating the Safety Culture initiative.

Georgia Tech

www.gatech.edu

21 Century Tissue Culture Programme

A new partnership aims to produce large quantities of radiata pine varietals.

The high-volume production system is part of the 21 Century Tissue Culture Programme carried out by Scion with the Georgia Institute of Technology in the US, and funded by the FGL, Scion and MBIE. The programme aims to use automation and robotics to produce and develop embryos right through to the plants in the nursery.

The system uses an automated bioreactor system to make the initial cell masses and encourage plant embryo formation. The bioreactors produce cells and embryos with much less manual handling and risk of contamination. Already embryo production has been doubled and the time taken halved.

Small scale harvesting innovation

Regional workshops engaged with small-scale growers on their harvesting needs to cope with increasing volumes of woodlot harvesting. Research targets; lower capital costs, less environmental impact, greater versatility and mobility and at the same time enhancing health, safety and personnel working conditions.

Steeplands Harvesting

Notifiable injuries from harvesting steeper forest blocks more than halved between 2010 and 2018, as a result of the Steeplands Harvesting project to mechanise tree extraction – to get the boots off the slopes and operators into mechanical harvesters.

The use of mechanical felling throughout the industry has advanced from 23 percent of harvesting operations, to more than 83 percent now. As well, the $7.6 million joint industry government project returned an estimated $230 million in net economic benefits.

The machinery developed from the project, such as the grapple camera, has become a substantial domestic and export industry earner.

Using nature to grow seedlings

Fertilisers and fungicides have been routinely applied to pine seedlings to give them an early-life boost. But the suspicion that these applications instead harm beneficial soil mycorrhiza led to research across 46 sites in New Zealand. The research shows that reducing these chemical applications, and making them specific to the planting site, results in vigorous mycorrhiza which leads to faster tree growth rates which last for many years.

FORESTS' BIG PLACE IN THE EMERGING BIOECONOMY

Wood is a prime candidate to take a lead in the global economic transformation to sustainably meet the challenge of climate change. Wood is vital for the circular bio-economy to replace the many fossil fuel products in our lives which add to greenhouse gas emissions.

Using products derived from our forests results in no more emissions of carbon than the trees have recently extracted from the atmosphere in the first place.

Wood is relatively cheap per volume. Processing logs for construction leaves an ideal feedstock of raw materials for extracts and combining with other substances to make products from.

The bioeconomy is based self-evidently on renewable biological resources, and converting them into food, feed, energy or a multitude of other products such as textiles, plastics and chemicals.

It will help resolve worldwide social, resource and economic issues as well as contributing to the fight against climate change.

Scion, as part of its Strategy to 2030, is working on wood fibre, pulp, biopolymer, packaging and biochemical industries, their biomass side-stream, and wood derived bio-energy. Scion estimates the strategy will deliver $30 billion to New Zealand.

ROBO-FORESTS

Te Mahi Ngahere i te Ao Hurihuri

The biggest single research project in our forests will increase safety and productivity.

Automation of harvest work could increase productivity by 70%

Te Mahi Ngahere i te Ao Hurihuri – Forestry Work in the Modern Age, is a seven year, $29.36 million, government industry partnership managed by FGR. Automation of harvest work is designed to increase productivity by 70 percent and so save $9.71 per cubic metre from stump to customer, which totals $338 million by 2030.

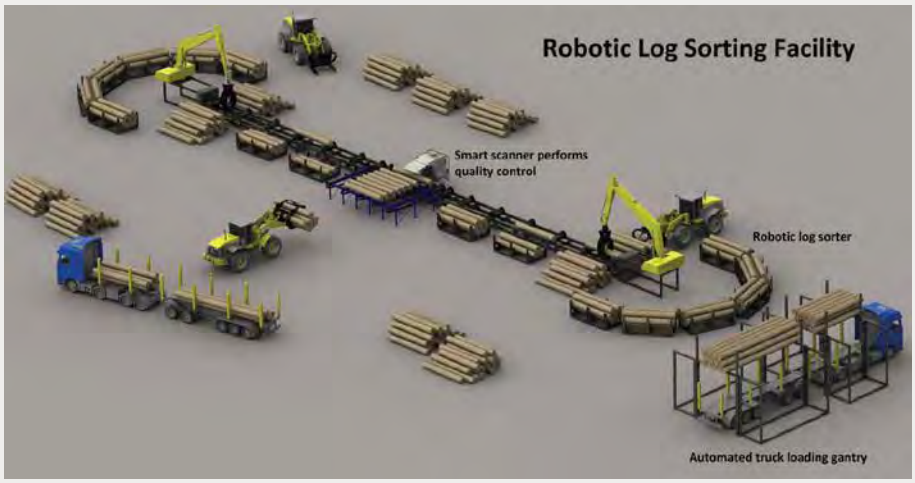
By moving workers from in-forest landings to offsite sort yards, serious harm rates are anticipated to fall from 28 per year down to 10, by 2025. The programme will in particular help harvest the 1990s small scale plantings, which are often on steeper and isolated terrain.

High Productivity Motor Vehicles, will decrease the frequency of log truck trips on public roads. The key change is relocating log sorting from the harvest landings to hubs where log branding and sorting, scaling and truck loading can be rationalised, automated and made more detailed and reliable.

The forest landings can be only a quarter of their present size, decreasing harvest costs and disruptive earthworks. The ability to conduct more debarking in the forest could result in a reduced use of chemical fumigation at the ports.

The largest slice of industry funding for the project comes from individual forest companies and contractors, with a contribution of more than $10 million over seven years. The Forest Growers Levy Trust is investing nearly $7 million.

The government is providing 40% of the cost, at nearly $12 million.



FORESTRY – FIT FOR A BETTER WORLD

FIT FOR A BETTER WORLD
AOTEAROA NEW ZEALAND

www.fitforabetterworld.org.nz

Forestry is way down the track helping in the government's post-COVID-19 economy vision for the primary sector, the Fit For a Better World, launched in July 2020.

The concept of Te Taiao (alignment with the natural world) is a major focus. Forestry is intrinsically well equipped to take a lead. Likewise, with the large Māori investment in forestland and employment, the centrality of Māori in Fit for a Better World is already laid down in forestry.

We are mindful that the government expects forest products by 2030 will deliver an extra $2,600 million a year in exports, which is more than a quarter of the estimated $10 billion of extra primary export earnings.

Our industry does not have chronic animal welfare perceptions, falling prices, cheap synthetic alternatives, escalating overseas market protectionism, water discharge rules and an imminent Emissions Trading Scheme impost.

Forestry will be joining both the horticulture, and pastoral/arable sectors to each be earning another $2.6 billion a year in exports by 2030
FFBW Roadmap

But we do have two challenges.

Firstly, in adding value to our forest exports. We are world class at producing trees. Not so much with processing. Historically, with limited investment in processing, it is difficult to complete against massive, sophisticated, highly subsidised and protected overseas processing factories – no matter how much innovation we put in.

Secondly, while we welcome the opportunities for forestry in the Sustainable Food and Fibre Futures Fund, and other government initiatives, it is still sad but true that we constantly need to remind the government that forestry is part of the primary sector.

We may not produce food, but we are a hugely significant and integrated part of New Zealand productive and farm landscape. Our role is to do much more for the economy than be relegated to a means of erosion control in the back country.

Wood Fibre Futures

Another government initiative which will markedly increase the diversity and export value of the forest sector is Wood Fibre Futures.

This scheme is to develop or adopt processes which will turn the up to ten million tonnes of wood waste produced every year during log harvesting into biofuel energy sources.

These products would help replace the current reliance on non-renewable and petroleum fuels. They are up to 80 percent less carbon intensive than the liquid fossil fuels we consume now.

Dairy processors are already paying more for their carbon emissions than what they are paying for coal. Wholesale conversion to burning wood to heat milk-powder processors would require many hundreds of thousands of tonnes of wood.

A Big Vision

A transformation of the timber processing industry is high on the government's agenda, as it seeks to fill the huge economic hole left by the COVID-19 induced collapse of the tourism industry.

The Forest Industry Transformation Plan is a subset of the Fit for a Better World project, which aims to shift volume driven exports to value driven exports, and thereby add $44 billion to New Zealand's export earnings within the next ten years.

At the same time the government wants a primary sector that is orientated to Te Taiao, which means sustainability, more indigenous biodiversity, improved water quality and reducing greenhouse gas emissions.

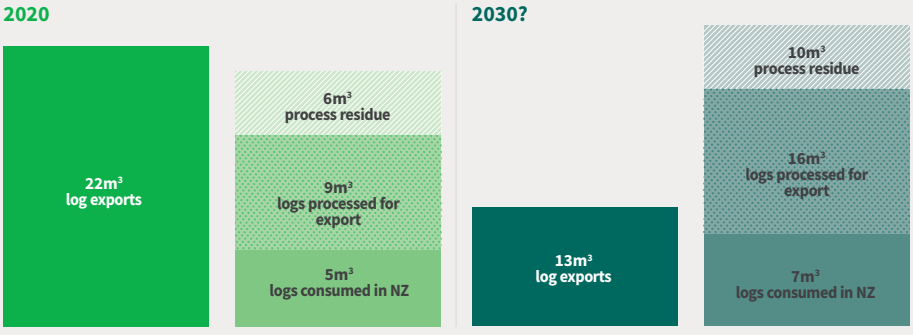
Exotic plantation forestry is a contributor to all these environmental outcomes, particularly carbon sequestration to reduce net greenhouse gas emissions. With diverse higher value wood products being produced within New Zealand, regional processing clusters will be vital for efficiency and economies of scale.

15 more primary sawmills will be needed by 2030

The government leadership role here is inescapable. So too is the prospect of policy driving afforestation for local feedstock supplies. Forest owners hope the viability economics of such a vision will include prices higher than currently for non-millable wood.

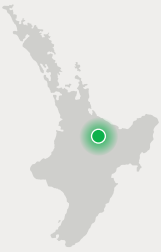
Ultimately though, the challenge is to develop markets for the expected end products. Importing countries want to employ labour too, and they can do that best by importing logs rather than finished products. The success of the Industry Transformation Plan for forestry rests on the effort put into market access and promotion, as much as clever science and building modern timber processing here in New Zealand.

One Transformation Scenario for New Zealand's Forest Industry



RED STAG TIMBER

www.redstagtimber.co.nz



Red Stag Timber is an independent, privately owned timber company, based in Rotorua. It is New Zealand's largest sawmill, producing high-quality timber products for residential construction in New Zealand, Australia, and the Pacific Islands.

"Red Stag and the wood processing sector are looking forward to engaging with the new government. While much of the past three years has focussed on forests, of equal importance to climate change, jobs and GDP, is the wood processing sector. The building blocks are now coming into place for successful government-industry collaboration. In particular, programmes such as Building for Climate Change and the government's announced procurement strategy to prioritise lowest carbon materials. The key now will be to use 2021 to fully implement these programmes. If the sector sees firm rules to cap carbon per m^2 and require public buildings to prioritise lowest embodied carbon, then it will invest in response to this market signal in scale factories. Another key initiative this term will be to distribute the benefits of harvested wood products carbon accounting to the wood processors who earn them. These initiatives will help level the field with heavily subsidised competitors in Australia and Asia."

Marty Verry
Chief Executive

WOOD PREFERENCE

A start has been made – let's keep going

Right at the end of the term of the previous government two major initiatives were taken to increase the use of timber in construction, following a Labour manifesto 'Wood First' promise in 2017.

Building for Climate Change was driven by an appreciation that wood is an absorber of carbon, while steel and concrete are responsible for 13 percent of our national greenhouse gas emissions.

Builders will be required to report on and meet emission limits, so by 2030 construction is emission zero.

Modern timber construction, such as Laminated Veneer Lumber and Cross Laminated Timber, will come into their own as timber construction gets taller.

The government's second decision was to instruct government departments, when they are designing their own buildings, to measure and select the options with the lowest emission profile.

The FGLT has been a major contributor to the Timber Design Guides, a series of advice information for designers and specifiers on how to appreciate wood, and design accordingly. For too long, other materials have been the default choice, simply because in larger construction there has been insufficient updated information on wood use, or prejudices, such as the false belief that wooden beams are not fire resistant.

"Our Wood First Policy encourages the use of wood as a preferred, sustainable building material and requires wood to be used in all council building projects. The policy highlights our commitment to develop a sustainable future for our community."

Tania Tapsell
Councillor at Rotorua Lakes Council

ROTORUA LAKES COUNCIL
Te Kaunihera o ngā Roto o Rotorua

www.rotorualakescouncil.nz

LOVE OUR FORESTS

THE SECRETS REVEALED

The clever scientists at Scion have produced a gene sequence of the *Pinus radiata* (radiata pine) tree – by far our most popular plantation timber species.

It wasn't easy. *Pinus radiata* has 25 billion DNA bases. We humans have only 8 billion.

Gene sequencing is a major step to finding which genes do what things. With the gene sequence, tree breeding is much less hit and miss – important when you have to wait more than two decades for a tree to show you its rate of growth, rigidity, disease and pest resistance and local adaption.

During the past 30 years we've achieved a tree productivity improvement of more than 20 percent. So, we can look forward to increasing that productivity rate for the nearly 100 million *Pinus radiata* we are now planting every year.

PINUS RADIATA

An uncommonly good tree

New Zealand is fortunate to have introduced radiata pine in the latter half of the 1800s. The plantation tree proved ideal for our climate and our soils. Experience and research over the past 150 years have produced a pine tree which is the green-envy of other countries.

With stand management we can grow large diameter trees in 25 to 30 years. With timely pruning and thinning, combined with tree improvement, we can produce clearwood that is the equal of the best softwoods in the world.

Radiata pine's natural quick growth in New Zealand has been enhanced by years of specialist breeding and management so that trees mature for harvest at an increasingly young age.

This is an advantage in carbon dioxide sequestration rates, which are exceeded in New Zealand only by eucalypts and is much earlier and faster than for indigenous species.

The average New Zealand plantation radiata pine is 19 years old, while average harvest age is currently 29 years. The average harvest cycle of the next most important species, Douglas fir, is 45 years.

While dothistroma and red needle cast can do some harm to radiata pine, fortunately the trees' most serious pests and diseases remain beyond New Zealand's borders.

Tree scientists use decades of breeding records, along with modern drones and GPS, to find and identify, not only top performing trees for the next and better generation of forests, but also to select the best trees for particular sites. In effect, new varieties of radiata pine are under development.

The wood qualities, such as taking nails without splitting and its readiness to absorb timber treatments, make it an exceptionally versatile timber.

> "We need to deliver fast growing trees which are resilient to pests, diseases and climate, that also provide improved wood and fibre quality attributes, using every available tool."

Paul Watson
CEO, Radiata Pine Breeding Co

RPBC®
Radiata Pine Breeding Co

www.rpbc.co.nz

MT POKAKA TIMBER PRODUCTS

www.mtpokaka.co.nz

www.bunnings.co.nz

Mt Pokaka Timber, in launching Laminata, has seized a niche using lower grade timber to create high technology Cross Laminated Timber products which would otherwise be going into making pallets or pulp.

Mt Pokaka is a family-owned sawmill in Northland adding value to timber with its products for New Zealand's construction and agriculture industries.

Owner Mark Hewitt was just 22 when he started his own logging business in 1985, primarily harvesting farm woodlots and processing logs, sustainably sourced from Northland forests, into farm fencing posts. Business grew and by 1991 Mt Pokaka was established in Kerikeri, as a tanalising plant, with a sawmill added soon after in 1995.

Today the business, still owned and run by Mark and wife George, processes around 140,000 tonnes of logs annually and employs more than 100 staff and full-time contractors. Mt Pokaka Timber Products supplies all the major timber and hardware merchants nationwide.

Products include a wide outdoor range of treated timber for fence palings, sawn posts and decking, and treated roundwood and poles for in farm fencing, horticulture structures, vineyards and retaining walls. Mt Pokaka Laminata sheds are now on sale in Bunnings.

> "We are focused to double the capacity of our Laminata value-added side of our business from 12 to 24 employees over the next two years. The key to our success has been a strategy of continuous improvement and steady reinvestment in plant and equipment and development of our people."

Mark Hewitt
Managing Director

Laminata

www.laminata.nz

OTHER COMMERCIAL EXOTICS IN THE FORESTSCAPE

Douglas fir – the noble timber

Douglas fir is our second most planted commercial species. More than half of the 103,000 hectare total is grown in the Otago Southland region, in areas less suitable for radiata pine. The timber is prized for its stability. Douglas fir seeds are however also a risk for producing wildings, one of the reasons for a decrease in planting rates over the past 15 years.

Eucalyptus – Australian import yet to really go to work

At 22,000 hectares, eucalyptus are New Zealand's third most numerous commercial species. They grow quickly with an average harvest age of only 21 years and sequester carbon rapidly. The main virtue of eucalypt timber is its stiffness. More research is needed to make the most of these species. Eucalyptus in New Zealand have so far proved not to be vulnerable to attack from myrtle rust.

Cypress – shelterbelts to timber

Cypress trees are grown commercially around the world. Here they are ranked as our fourth most important timber species, with macrocarpa the best known, grown as shelterbelts on farms. Cypress wood is easy to work, looks good and is durable.

Redwood – A tall tree in demand

Redwood grows faster than Douglas fir, and redwood timber is worth more. The natural range of redwood is small and there are no large-scale plantings anywhere in the world.

THE NEW ZEALAND REDWOOD COMPANY

www.nzredwood.co.nz

The Redwood Company was formed in 2001 to create a New Zealand redwood resource and has imported improved genetics from California which it propagates through using tissue culture. With knowledge gained from its New Zealand establishment trials NZRC offers informed advice to its redwood tree customers.

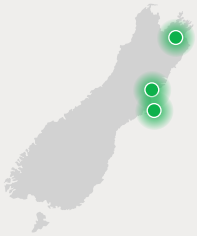
NZRC surveys indicate some 10,000 hectares of redwood forest has been planted since 2000. Much of this is in the King Country where a specialist sawmill cutting 200,000 cubic metres of logs will be needed and will provide up to 100 jobs.

NEW ZEALAND DRYLAND FORESTS INITIATIVE

NZDFI IP
NEW ZEALAND DRYLAND FORESTS INITIATIVE IP LTD
breeding tomorrow's trees today

XyloGene
Nature's Green Diamond

www.nzdfi.org.nz



The Dryland Forests Initiative plans to supply 320,000 ground durable eucalyptus seedlings to growers next winter.

NZDFI is a collaborative enterprise to harness the natural durability of some eucalyptus species to replace the need for timber treatment, or exotic imports, to avoid post decay. For organic horticulture in particular this can be a sensitive issue.

There are more than 700 species of eucalypts. Some are well known to be ground durable for many years - *Eucalyptus bosistoana* and *E. globoidea* in particular.

However, until the Drylands Initiative there had been no systematic comparison of genetics and evaluation of durability in New Zealand conditions.

Uses extend to posts for viticulture and many outdoor structures such as decking, as well as being a component of high strength engineered timbers, such as Laminated Veneer Lumber.

A wide range of genetic contributors were assembled for field trials in 33 sites in New Zealand, such as through the dryland climate range of the Marlborough Region.

Growth, form, wood quality and durability have all been tested from pure and trial crossbred strains.

The New Zealand Farm Forestry Eucalypt Action Group has been a key part of the project, as has funding from the government's One Billion Trees Partnership Fund, and is part of the FGR Speciality Wood Products Programme.

OTHERS IN THE TEAM

PROSEED

Vineyard Timbers Ltd

UC UNIVERSITY OF CANTERBURY

MARLBOROUGH RESEARCH CENTRE
Te Rito Hiranga o Wairau

INDIGENOUS FORESTS – A FUTURE IN OUR HERITAGE

www.tanestrees.org.nz

Tāne's Tree Trust

Tāne's Tree Trust is a non-profit Charitable Trust to encourage the use of New Zealand indigenous tree species for biodiversity, landscape enhancement, cultural benefits, and provide the option for sustainable production of high-quality timber and other resources.

"The indigenous forests of New Zealand include a suite of species with unique biological character and timber properties, and it is particularly ironic that despite this they barely feature in national planting and forest management statistics."

Peter Berg
Chairman, Tāne's Tree Trust

Northland Tōtara Working Group

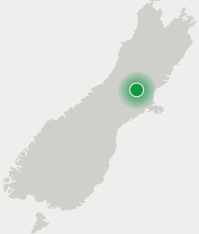
Tōtara are common in Northland. They regenerate on poor erosion-prone hill country and along riparian margins. Substantial areas of dense second-growth tōtara stands on farmland are potentially a sustainable farm-timber resource.

The Northland Tōtara Working Group (NTWG) was established in 2005 to research and promote this potential, with support from District and Regional Councils.

"These nine year old Kauri, I would say, in 40 years time, would be millable, in the favourable conditions here at Matakana just north of Auckland."

Don Turner
Owner, Takana Nursery

www.takana.co.nz



WOODSIDE BLACK BEECH FOREST

Trials over the past 40 years at Woodside at Oxford have produced clear sawn boards from 37 year old black beech trees, with a thinning and pruned rotation harvest expected to be every 60 years producing 14 cubic metres per year per hectare.

INTO THE GREAT OUTDOORS?

INTO SCIENCE?

INTO TECHNOLOGY?

INTO ENGINEERING?

LOVE OUR FORESTS

YOUR FUTURE DOES

OPPORTUNITIES FOR EVERYONE AT

FORESTRYCAREERS.NZ

FOREST INDUSTRY CONTRACTORS ASSOCIATION

www.fica.org.nz

The workforce

FICA is an incorporated society representing the forestry frontline workforce of more than 4000 New Zealanders in silviculture, harvesting and infrastructure, from seedling to ship. We currently represent contractors who harvest approximately 75% of the annual harvest.

Working alongside our industry partners to provide a workplace which ensures our contractors are sustainable, safe, professional and have access to innovation to achieve productive businesses.

FICA PRINCIPLES INCLUDE:

- leadership as a voice for our members
- collaboration with our stakeholders to align policies, funding and strategies
- professionalism as a highly skilled sector
- fairness, building relationships across the value chain
- people first
- honesty and integrity

KEY FICA PROJECTS:

- Certification: FICA highly regards the Safetree Contractor Certification programme which offers credibility, competency and safety for our people. We will be working to ensure this continues to develop.
- ROVE: We are committed to driving our presence across the review of vocational education (ROVE) to make a difference to the way training is delivered to our industry, making it accessible, affordable and credible.
- Industry Awareness: FICA will step up to ensure we are playing an active role in the chain of custodian duty and responsibility for the forest industry.

> “I enjoy working amongst an industry with good honest, humble people who have a passion to move the industry forward through technology and innovation. It’s all about improving safety and its increasing productivity. That is not only in mechanisation and remote-operated machines, but also through looking further into ways to advance smarter and more intelligent harvesting systems and ways to develop leadership and our workforce performance which in future will require a different skill set. It is very exciting to be part of that.”

Prue Younger
CEO

Myrtle rust infected ramarama
Roanne Sutherland, Scion

LOVE OUR FORESTS BY PROTECTING THEM

The forest industry's national surveillance for pests and diseases benefits all New Zealanders

The myrtle rust fungus, for instance, is a threat to all of our eucalyptus plantations, native rātā and pōhutukawa, and to feijoa orchards.

When we keep an eye on our forests, we are also watching out for everyone who has a tree in their backyard, grows crops, or who enjoys a walk in the bush.

BIOSECURITY

SCAN ME

www.findapest.nz

Protecting the borders

An introduced pest or pathogen could devastate our industry and close export markets.

The response to eradicate an insect invader would also compromise the virtually chemical-free management of our main forest species. Vigilance at the borders is vital, as is constant monitoring of other naturally high risk areas, and within our forests.

The forest industry has funded its own national forest health surveillance system for more than 60 years. When some exotic pests and pathogens did arrive in New Zealand, the growers of the main commercial species were able to adapt. Minor species have proved more vulnerable.

On behalf of the industry, FOA signed the Government Industry Agreement (GIA) for Biosecurity Readiness and Response five years ago, well before any of the major pastoral industries.

The GIA has successfully raised the profile of biosecurity and enhanced collaboration between sectors, and with government officials, for readiness and risk management.

The FOA, with MPI, introduced the Forest Biosecurity Surveillance programme in 2018 to cover the entire plantation estate and it is an effective early warning system. The FBS is currently the only national surveillance programme delivered under GIA.

Other surveillance systems complement the FBS, such as the Non Model Allocated surveillance, as well as Forest Health Assessments run by individual forest owners who report unusual finds to MPI.

The Find-A-Pest App delivers crucial identification of new pests in our forests. Early identification increases the speed of a response and thus the chances of containing or eradicating an incursion.

The app has identification descriptions and pictures of priority pests. Anyone in a forest can then submit photos and GPS locations if they think they have found a match. All reports are triaged by entomologists in almost real time, and any potential serious reports can be directed to specialists or MPI's Plant health Incursion investigators for rapid action.

One feared pathogen we want to keep out is *Phytophthora ramorum*. The disease suddenly spread in California 25 years ago. It swept through forests in the United States and Europe. FGLT funded tests in the US have shown the logs of radiata pine are not vulnerable to *ramorum* infection, though young trees are susceptible to being inoculated with the organism.

A pine plantation is the habitat of choice for the endangered Kārearea – the New Zealand falcon.

That's where many of the remaining 4,000 pairs of this spectacular bird live. A freshly harvested forest block makes ideal nesting and hunting territory. Tall adjacent pines give the adults vantage points for spotting their prey.

FOREST STEWARDSHIP COUNCIL CERTIFICATION AND BIODIVERSITY PROTECTION

www.nz.fsc.org/en-nz

Forest Stewardship Council certification

FSC™ certification is internationally recognised as the most rigorous environmental and social standard for responsible forest management. Its great strength lies in its ability to encourage dialogue between various sectoral interests. This partnership, among business, the public sector, and civil society, provides a unique tool for enhancing the benefits forests have on our environment and communities.

FSC CERTIFICATION STATISTICS

1,167,885 ha
Area under certification

920,589 ha
Area planted in forest

9,315 ha
High conservation value areas protected

$1,368,000
Spent on enviro-management in year to July 2019

Biodiversity protection

PLANTATION FORESTS HARBOUR NATIVE WILDLIFE

- New Zealand Falcon
- North Island brown Kiwi – doing well in pine forests, especially in Northland. Most of the bigger forestry companies have kiwi recovery projects and predator control in forests.
- New Zealand Robin – prolific in pine forests in the Central North Island.
- Weka – common in forests in the Eastern Bay of Plenty and around Nelson
- Kaka – found in pine forests in the North and South Islands
- Whio (Blue Duck) – in streams within pine forests in the Central North Island and Eastern Bay of Plenty.
- Long-tailed cuckoo – Common in pine forests in the spring summer breeding period, before they fly to the Pacific Islands for winter.
- Besides birds, plantation forests harbour other endangered native species, such as short and long-tailed bats, kakabeak shrubs, galaxid fish, woodrose, barking and green geckos, Archey's and Hochstetter's frogs and sea-lions on the Otago coast.

Kiwi and weka might forage in farm paddocks on the edge of forests but the others need forest habitat. Kiwi are vulnerable to farm dog attacks.

www.keaconservation.co.nz

KEA PROTECTION

The FGLT has invested with the Kea Conservation Trust in a programme to better understand kea behaviour in plantation forests in the South Island. Kea are attracted to forest landings and harvest areas and it is important to understand how to protect them there. Kea are banded and monitored to check nesting and mating behaviour, to help develop guidelines for harvesting crews to protect these endangered birds.

LEGISLATIVE REFORM

Resource Management Act – reform is overdue

If the government's plans for industry transformation are going to succeed then the foundation must be reform of the Resource Management Act 1991 to restore legislative balance between protection of the environment and economic utilisation of that environment.

A recurring theme is the difficulty in getting approvals to build new wood processing facilities. The number of mills and employment in the processing sector has dropped – while production has remained static.

The roadblocks encountered by City Forests 2003 to get regulatory approval for a sawmill in Otago, and the Environment Court decision to not grant a resource consent to Ernslaw One for a sawmill at Whangapoua in 2004 (objecting to potential 'pine odour'), put a halt on greenfields developments throughout New Zealand. Only one small greenfields mill has been built in New Zealand since then.

The Significant Natural Areas regulations are another example of how far interpretation of the RMA has drifted, to where the better custodians of the natural environment are the ones most deemed to be required to restrict their commercial activities as a result.

Regional Plan alignment with the National Policy Statement – Plantation Forests is sadly lacking. Work is necessary to properly appreciate and evaluate the ecosystem benefits of planation pines, rather than in too often the case where courts or local government rely on guesswork or naive assumptions in ruling on pine forest activities.

The recent High Court case of Marlborough timber company Zindia, shows the uncertainty and interpretation confusion of the RMA.

RMA

GENE EDITING

HSNO

Catch up with the rest of the world

A paranoically rigid interpretation of the Hazardous Substances and New Organisms Act 1996 is preventing New Zealand food and fibre producers taking advantage of technology now becoming mainstream in the rest of the world.

The gene editing work at Scion to create sterile trees – trees which could not create a wilding problem and would conserve their energy for growth and not seeds – is stuck in the lab.

CRISPR gene editing does not shift and mix genes between species, as earlier transgenic technologies did. It activates or deactivates or selects genes which are already naturally within that organism. The technology has been recently approved for stopping browning in mushrooms in the US and apples in Canada.

Genetically modified animals are used in medical research in New Zealand. Mutagenesis, inducing random mutations, has always been allowed in New Zealand.

We eat large quantities of imported food which comes from genetically modified plants. Trees, modified to grow faster, need less area to produce the same amount of wood and captured carbon. Trees can be made resistant to particular diseases, meaning for some, such as potentially Kauri, the actual survival of the species. For others, it means less pesticide and fungicide use. For all, it means greater ability to adapt to climate change.

The Royal Society Te Apārangi says there is an urgent need for an overhaul of the regulations governing gene technology. A Scion funded poll found 70 percent of people accept gene editing to prevent spread of wilding conifers. A similar FGLT funded survey also found no groundswell of opposition to gene editing.

Section 2 of HSNO gives regulations the ability to define some genetic processes as outside the scope of the older and unpredictable transgenic technologies. At the very least the government should investigate this option.

> “Gene editing technology is getting easier and cheaper and so is being used more frequently (overseas).”
>
> **Royal Society Te Apārangi**

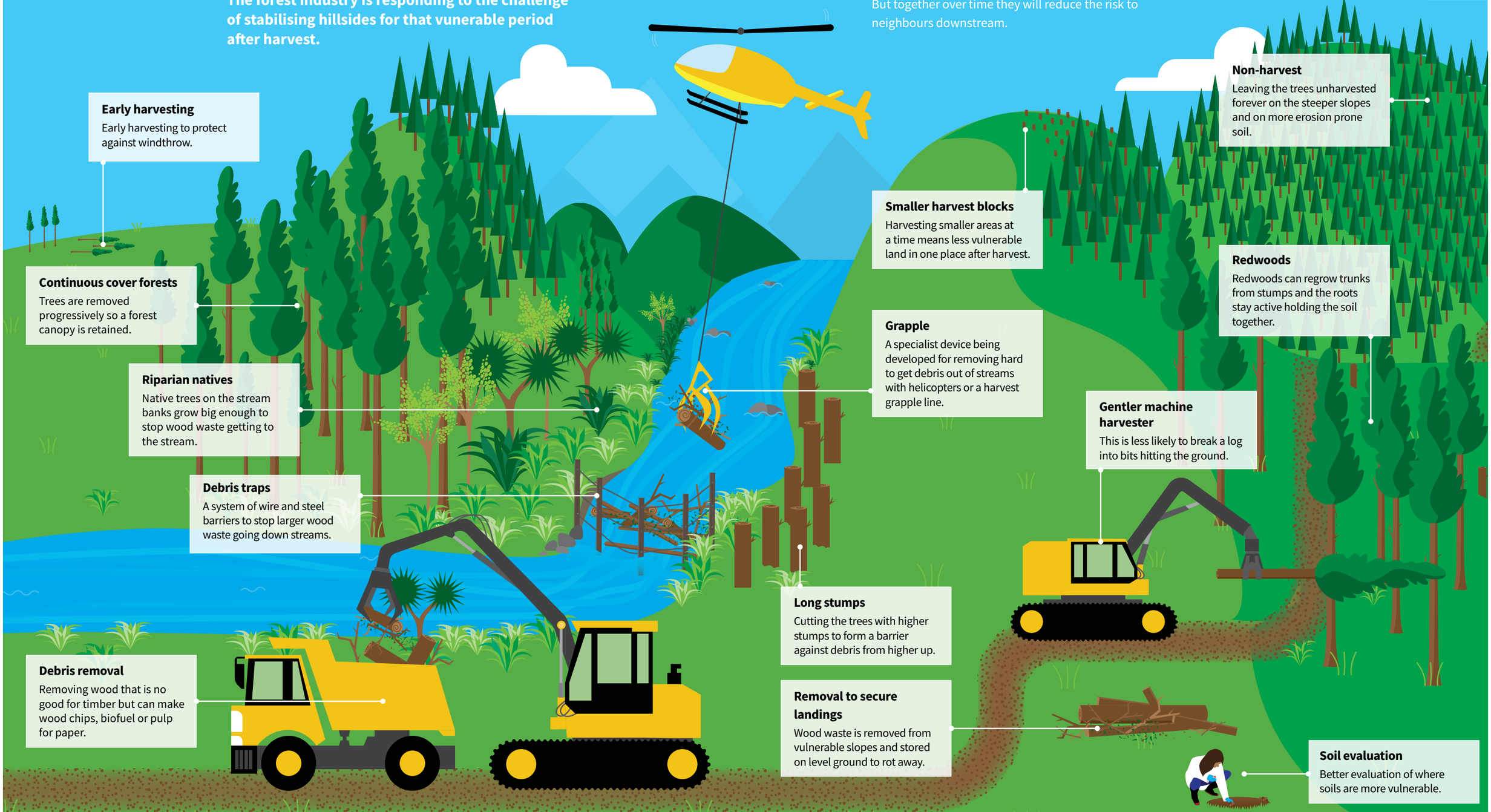
https://www.royalsociety.org.nz/what-we-do/our-expert-advice/all-expert-advice-papers/gene-editing-technologies/

REDUCING THE RISK OF DEBRIS FLOODS

The forest industry is responding to the challenge of stabilising hillsides for that vunerable period after harvest.

New legislation and modern best practice mean some areas will never again be planted for harvest.

For harvested forests, we are working on many approaches. Some are only at concept, some are very long term and some are not viable in many locations. But together over time they will reduce the risk to neighbours downstream.



Early harvesting
Early harvesting to protect against windthrow.

Continuous cover forests
Trees are removed progressively so a forest canopy is retained.

Riparian natives
Native trees on the stream banks grow big enough to stop wood waste getting to the stream.

Debris traps
A system of wire and steel barriers to stop larger wood waste going down streams.

Debris removal
Removing wood that is no good for timber but can make wood chips, biofuel or pulp for paper.

Smaller harvest blocks
Harvesting smaller areas at a time means less vulnerable land in one place after harvest.

Grapple
A specialist device being developed for removing hard to get debris out of streams with helicopters or a harvest grapple line.

Long stumps
Cutting the trees with higher stumps to form a barrier against debris from higher up.

Removal to secure landings
Wood waste is removed from vulnerable slopes and stored on level ground to rot away.

Non-harvest
Leaving the trees unharvested forever on the steeper slopes and on more erosion prone soil.

Redwoods
Redwoods can regrow trunks from stumps and the roots stay active holding the soil together.

Gentler machine harvester
This is less likely to break a log into bits hitting the ground.

Soil evaluation
Better evaluation of where soils are more vulnerable.

EIGHT REGIONAL WOOD COUNCILS

There are eight regional wood councils to represent local industry interests, especially on local government regulations and in industry training; Northland, Central North Island, Eastland, Hawkes Bay Forestry Group, Southern North Island, Marlborough Forest Industry Association, Canterbury/West Coast and Southern.

Eastland Wood Council

www.eastlandwood.co.nz

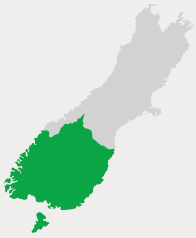
The Eastland forest industry runs the Generation Programme – a 'real world' learning experience combining industry training and employment.

There is a six week Base Camp which gets the trainees 'work ready', with site visits and work placements across all sectors – from silviculture, harvesting, logistics, port operations and wood processing, fitness training, nutrition and Waratah simulator training. An individualised two year training and career pathway follows, to earn while you learn with paid employment, supported learning, pastoral care and regular reviews. There's flexibility to change mid-stream to other parts of the industry.

There have been five GPs since 2018. Some 42 trainees have successfully completing the programme. There were 29 placed into employment, and a total of 26 New Zealand Certificates in Forestry Operations awarded.

Southern Wood Council

www.southernwoodcouncil.co.nz



The Southern Wood Council is an independent and united voice for the forestry industry in Southland and Otago and a conduit for communication to national bodies and initiatives. Members include the CEOs of forest growing, management, wood processing and port companies, along with government, local council and training organisations.

Marlborough Forest Industry Association

www.marlboroughforestry.org.nz

The MFIA has been working hard recently with the Marlborough District Council to protect forest company rights. Contracted inspectors were visiting forests without notification and not complying with forest health and safety rules. They also were posting claims online without giving the companies the right to respond to the accusations.

FIRE

www.fireandemergency.nz

The risk of the spark

Fire is a constant threat to our forests. There have been two major fires already this summer and the Pigeon Valley and Port Hills fires in recent times.

The most significant issue for forestry is to make sure that Fire and Emergency New Zealand dedicates enough equipment and people to rural areas to protect the many investments there.

There is an unwarranted belief that forests are prone to fire. But most forest fires start outside the forest, or from external causes such as power lines.

Plantation forests are typically protected by significant fire infrastructure, such as fire breaks, advanced fire-fighting equipment, tankers, and dams. Trained forest crews are a valuable rural fire resource for all rural landowners and are often deployed overseas.

Insured forest owners pay a Fire Levy. Harvest crews maintain a sophisticated real-time monitor of when to stop operations when risks are high.

Foresters work closely with FENZ, and others, to reduce risk, such as through public education during the fire seasons, or developing alert technologies.

With climate change, fire risks are going to increase, with super-fires, which are more dynamic and dangerous than the fires we have ever had before.

www.scionresearch.com

Scion is researching these types of fires in forests and the best ways to fight them.

Fire booklet

Based on the industry *Forest Fire Risk Management Guidelines, Rural Fire – a guide on how to manage the risks* was produced for farmers and contractors throughout New Zealand and distributed in early 2020 just as the Australian fires were at their peak, ensuring interest this side of the Tasman.

Rural Fire was published in close cooperation with FENZ and was cobranded by Federated Farmers. The advantage to foresters is that *Rural Fire* seeks to reduce the incidence of fires which start on land outside forests.

FOREST INDUSTRY SAFETY COUNCIL

FOREST INDUSTRY SAFETY COUNCIL
TOGETHER TOWARDS ZERO

www.fisc.org.nz

FISC is leading efforts to improve health and safety in forestry

FISC's harm reduction activities focus on improving leadership, risk management, capability, engagement in health and safety and the industry's health and safety performance.

Recent milestones include:

LEADERSHIP

- Nominated as a finalist in the 2019 NZ Workplace H&S Awards.
- Delivered leadership courses to 268 crew members, frontline leaders and health and safety reps in 2019.
- Commissioned research by BERL into the economic drivers of good health and safety.
- Asked by ACC to share our experience with other sectors as the first pan-industry health and safety group.

RISK MANAGEMENT AND WELLBEING

- Launched an initiative for forestry people to have free access to the KYND Wellbeing app, supporting people to take charge of improving their own mental and physical wellbeing.
- Created packs of 'tailgate meeting cards' to give crews simple information on managing common risks.
- Co-ordinated the creation of pan-forestry industry COVID-19 working protocols, and updated these for changing Alert Levels.

WORKER AND INDUSTRY ENGAGEMENT

- Running the 'Toroawhi' worker engagement pilot with WorkSafe and First Union, where two experienced forestry people are working to increase worker involvement in health and safety.
- 1106 people have participated in the Growing our Safety Culture initiative.

CAPABILITY

- 224 contractors are now Safetree Certified, with another 159 becoming certified.
- 355 workers are now Safetree Certified.

PERFORMANCE

- Industry performance: Serious injuries have trended down. There have sadly been two fatalities this year, but it is the lowest number in six years.

The Forest Industry Safety Council was set up after the 2014 Independent Forestry Safety Review. The Council comprises representatives and funding from industry, government, Māori and unions.

Successful work

Health and safety is an outcome of the way work is done. It's about 'successful work' that is safe, healthy and productive. That's why we work, and talk, differently to traditional health and safety groups.

Capability is critical to achieving good health and safety. Leadership and communication skills, and knowing how to run a business, are as important as having a good health and safety policy.

Businesses should develop a 'learning culture', not just 'tick box' compliance.

Health and safety is 'caring about people', involving them in decision-making and so improving safety.

Safety initiatives focused on individual companies have their place. But creating a safe, healthy industry requires the participation of a range of stakeholders.

Medium/long term funding is not secure for our organisation. COVID-19 reduced the FGLT income. Other funding from WorkSafe is project by project basis. ACC have indicated that there is unlikely to be further funding for specific projects beyond June 2022.

ECOSYSTEM SERVICES

Another and big contribution from forestry

Gone are the days of thinking that if a land-based industry or company meets regulatory standards then that's all there is to it.

Their impact on society and the environment is now closely monitored and questioned.

Fortunately, forestry comes out pretty well. Our trees sequester carbon, protect biodiversity, stabilise the landscape, reduce flood peaks, are great for recreation and are very efficient at cleaning runoff of sediment and nutrients. Game animals, such as pigs and deer live in forests. Shade crops, such as ginseng, are grown in forests.

These considerations should be key in national and rational decision making on land use policies. The ecosystem services framework is a way to connect natural resources, their attributes and their service to human well-being in the widest sense.

DEFINITION OF ECOSYSTEM SERVICES*

Ecosystem services calculate a monetary value on environmental externalities, the non-market benefits and threats, now or in the future.

A Scion study on land in the Central North Island in 2015 found the environmental benefit of forestry was about $1,200 per hectare a year, while dairy land was negative – at a cost of about $700 per hectare per year.

Another Scion study of the Ohiwa catchment in 2014, concluded the value of the net ecosystem services per hectare per year was $5,609.

Extrapolated over the 1.7 million hectares of the plantation estate, this amounts to a national ecosystem services value from forestry of nearly $10 billion a year.

Much more needs to be done to fine-tune the studies, assessments, values and recognition for national accounting and decision making.

SCION™
FORESTS ▪ PRODUCTS ▪ INNOVATION

www.scionresearch.com

*The ecosystem structure refers to biological, physical and chemical components.

WILDINGS

Wilding conifers cover more than 1.8 million hectares of New Zealand and despite control efforts they are spreading at five percent a year. Wildings grow as unwanted trees on unmanaged land downwind of a seed source. They compete with native plants for sunlight and water, supress them and so transform landscapes.

1.8m hectares of New Zealand is covered in wilding conifers

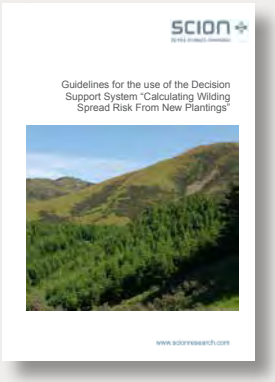
These conifers, along with other weed species, such as gorse, are a major threat to New Zealand's ecosystems, land and farms. Wildings are growing in the high country, even above the native bush line, and on public conservation land.

The species and sources are generally historical plantings for shelter, riparian and erosion control, or just a previous generation of upwind wildings.

Radiata pine, with its heavy seeds and juvenile palatability to stock, is not a significant contributor to the problem. But other pine species, not used in commercial forestry, such as contorta or nigra, have been spreading widely in the high country, ever since they were introduced to control erosion caused by rabbits, deer or burnoff.

Wildings however can provide timber, fuel and carbon sequestration opportunities. Before planting, conifer forests have to be assessed for the risk of spreading to land outside the plantation. The Wilding Tree Risk Calculator must be used in the consents process.

Douglas fir is preferred in areas where snow will damage other species. However, due to the potential for wilding spread, its use is restricted. Development of a sterile Douglas fir using gene-editing would be a major breakthrough offering an important additional option to land owners.



Scion Guidelines for an assessment of wilding risk for new afforestation projects.

Forest Heartland

There is no part of New Zealand without a forest industry. The further you travel from Wellington the more important forestry is likely to be.

NZIER calculates the plantation forestry sector is a major employer in Gisborne and in Northland – both regions with chronic unemployment.

Forestry injects money into local economies. NZIER found in 2017 that each year the industry contributes some $340 million to the Gisborne Region and $490 million to Northland. Nationally, there are 9,500 FTEs directly employed in the forest sector, with more than 2000 truck drivers and 900 port workers. New Zealand has 80 medium to large scale wood processing companies.

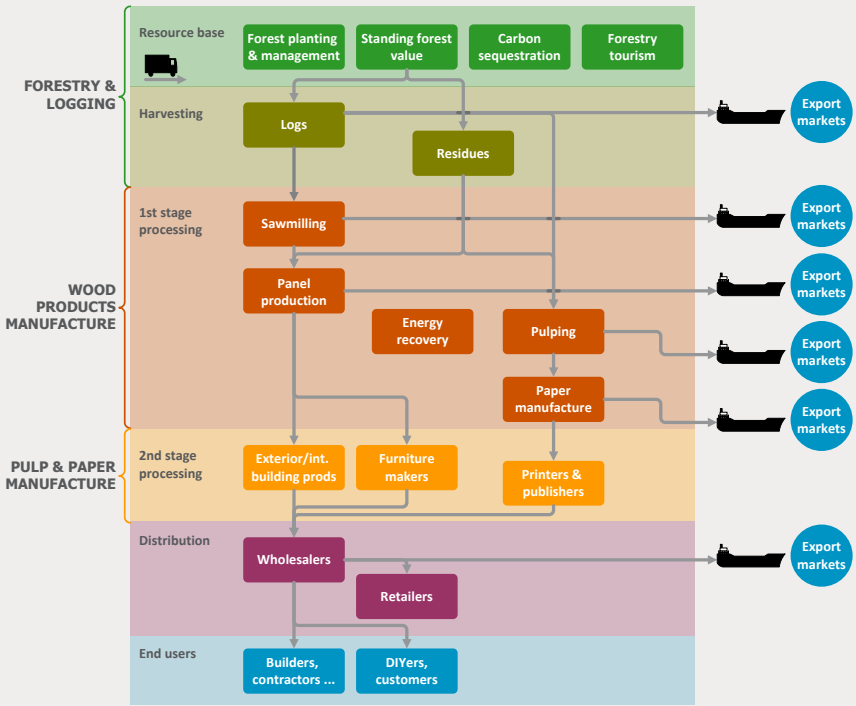
There are 13 ports which each handle more than $100 million worth of forest product exports a year, headed by Tauranga which puts about $1.7 billion dollars worth of forest product across its wharves every year.

Log prices are relatively stable, compared with the huge fluctuations of the Global Dairy Trade during the past decade (which lead to a period when forest production in the Bay of Plenty was worth more to the local economy than dairy production was).

NZIER
NEW ZEALAND INSTITUTE OF ECONOMIC RESEARCH

www.nzier.org.nz

Connections between industries in the forestry sector



Source: NZIER

Log trucks off the road

More logs should be carried by rail. Heavy vehicles servicing rural properties, be they milk tankers twice a day, or logging trucks every thirty years, are not welcomed by other road users.

The revival of the Napier to Wairoa rail line, the recent government initiative of expanding the marshalling yards at Marton, and the use of the Masterton to Wellington rail line for log transport, are examples of getting logging trucks off roads. More and strategic investment is needed, to plan for long term use and remove the bottlenecks which prevent more frequent use, such as lack of rolling stock and locomotives.

Better Roads

Rural communities need good roads to carry the heavy goods they produce. But the rating base for some regions, such as Wairoa, is not large enough to pay to build and maintain them.

It would cost $200 million to fix all the roads in Eastland to a heavy traffic standard. The same for Northland. These costs are well below the investment in roads of national significance.

FOA has engaged with the Road Controlling Authorities Forum (RCAF), to investigate options for heavy vehicle traffic on low volume roads, and more recently, dealing with dust where heavy traffic breaches National Air Quality Standards.

Best practice national guidelines are likely to be used by some Councils in their Long-Term Plans. But this will not address the more fundamental issue that the rating base cannot support the network under the existing funding model. A greater proportion of the revenue is required from Road User Changes for District Councils.

Improving log transport

LOG TRUCK SAFETY

The Log Truck Safety Council Council works to make accidents less frequent. The 2001 Log Truck Safety Accord, between the Forest Owners Association, Road Transport Forum New Zealand, Log Transport Safety Council, and the Farm Forestry Association, is being updated with initiatives on fatigue management, training and driver safety.

The technology being adopted includes devices to raise the alert for a fatigued driver and electronic recording of driver hours.

LOG TRANSPORT SAFETY COUNCIL

www.logtruck.co.nz

CORRECTING SOME MORE INDUSTRY MYTHS

MYTH	FACT
Foresters are taking over New Zealand's sheep and beef country to chase carbon credits	The forest industry has always made it clear that carbon sequestration from its forests is only a short term solution to getting New Zealand's net greenhouse gas emissions down. While plantation forests are a vital tool to meet the 2050 zero emissions target, through offsetting, we are well aware that only buys some time for the actual emissions to be lowered which must occur well before 2050.
Forestry is to blame for rural decline in New Zealand	Rural decline is worldwide with many causes. In New Zealand, increasing mechanisation (on and off farm) on-line services, farm amalgamation, smaller families, big box retailing, easier transport and succession issues, have contributed to shrinking retail and service communities in some regions for decades. Rural populations have fallen in districts with no forestry.
Forestry is basically a crude extractive industry armed with axes	Technology is driving our industry; from selecting better genetics through LIDAR and drones, sequencing the radiata pine genome, to mechanised harvesting and imminent robot handling, modern timber construction technology, a suite of bio-economy and timber quality measurement innovations on the horizon and world leading forest management.
The hill country should be protected for sheep farming	Labour's 2020 manifesto supported exports of food, and fibre as well, presumably referring to wool from sheep. Wool was once New Zealand's main primary export. Now, farmers are lucky their wool cheque will pay for their sheep to be shorn. New Zealand produces 333 times more wood fibre than it produces wool fibre. 42% of the wood is processed in New Zealand, and that percent is going to increase significantly. Only five percent of the wool clip is processed in New Zealand.

OVERSEAS INVESTMENT OFFICE

Takeover mythology

Overseas investment in New Zealand has been crucial for key sectors of New Zealand's primary sector.

It brings capital, technology, market access and different perspectives to our industries. This investment is closely monitored by the Overseas Investment Office, which implements the Overseas Investment Act 2005 to ensure any such investment is beneficial to New Zealand.

A provision for 'fast tracking' forest investments was introduced in 2018. The provision removed much of the red tape around approvals. It was not a free ride. Unfortunately, the 'fast track' has been incorrectly interpreted as opening a flood gate of overseas investment which destroys jobs and communities under a blanket of carbon-farming .

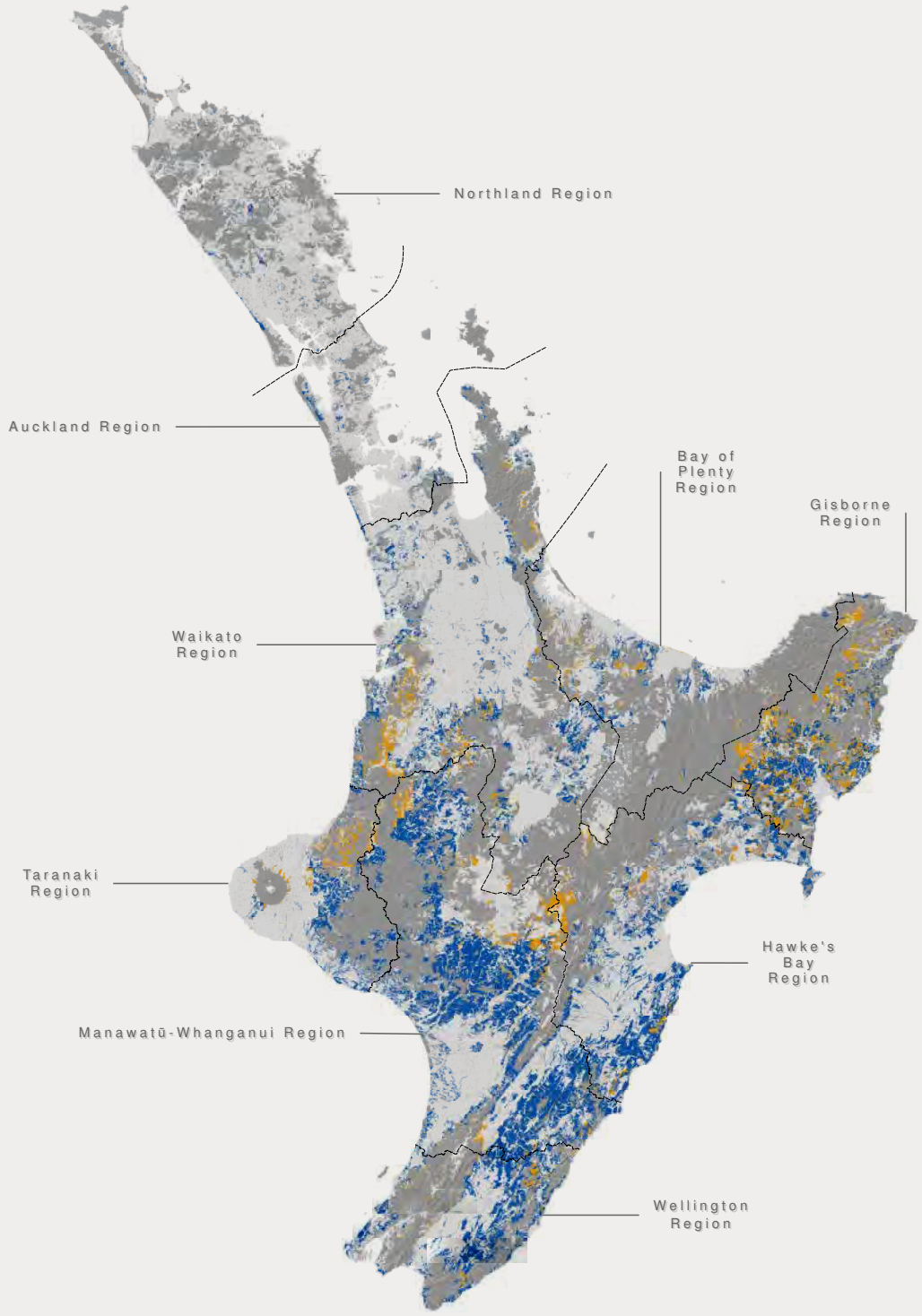
The fact is that this is not legally possible. The OIO will not approve any 'fast track' application for carbon farming. There are no overseas investments in carbon forests.

One prominent, and frequently mis- cited exception, is a single approval under the alternative Overseas Investment Office 'benefit to New Zealand ' test for carbon planting, for Te Puna, a former sheep and beef station near Wairoa. Te Puna was a majority foreign-owned sheep and beef property. It was sold for carbon farming under OIO approval to a 60% New Zealand owned company.

In 2019, when journalists were writing lots of stories about overseas forest investment of New Zealand farmland, the actual areas involved averaged less than 1,000 hectares per month. That amounts to a total of less than 0.1% of New Zealand farmland.

In 2020, investment fell considerably, to a rate that it would take thousands of years for all farms to go into overseas direct investment. In the same past two years, it must be pointed out, overseas investment in New Zealand's dairy industry, such as Westland Milk Products, has been much higher than of purchases of farmland for planting trees.

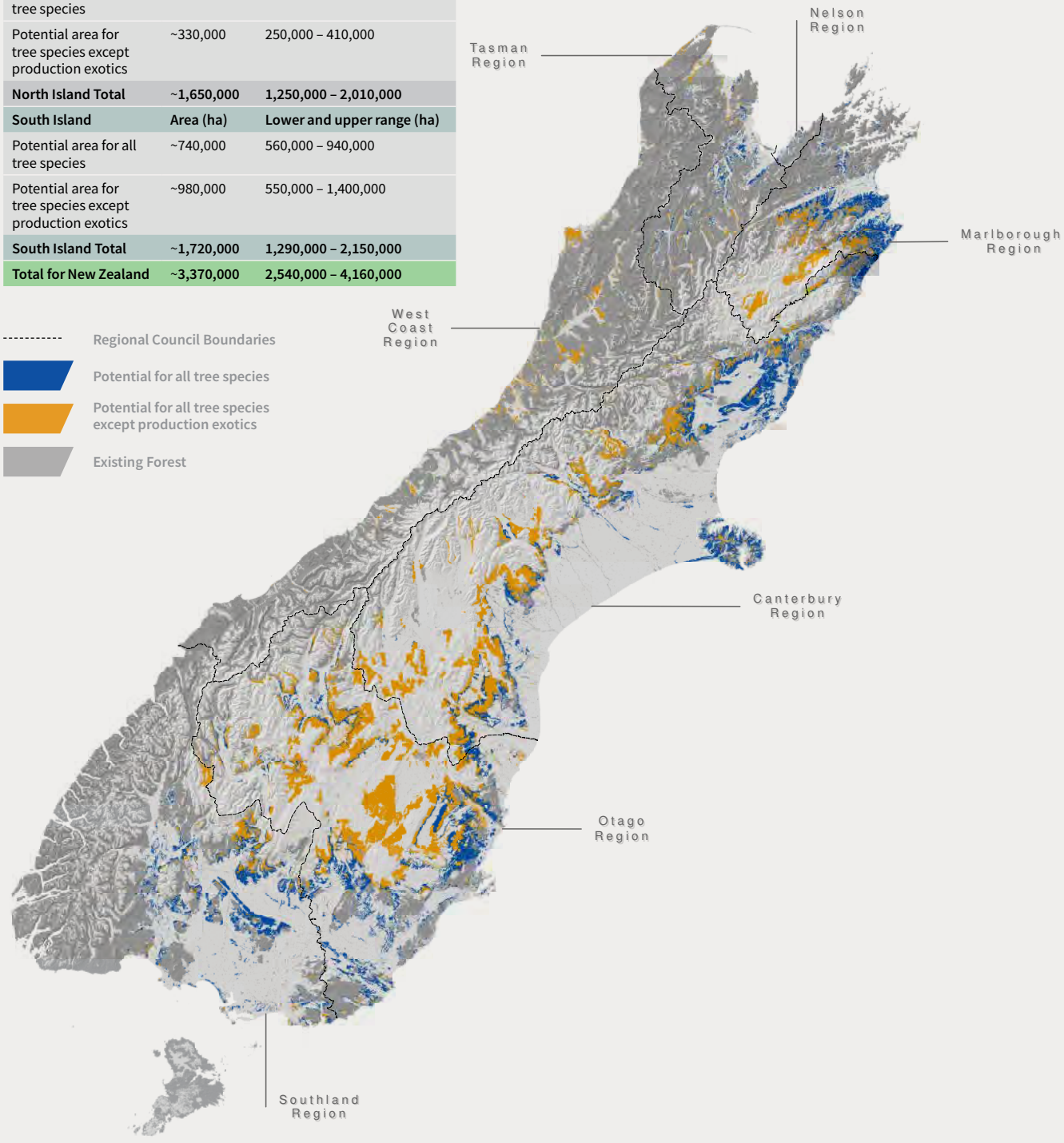
LAND SUITABILITY



Te Uru Rākau
Forestry New Zealand

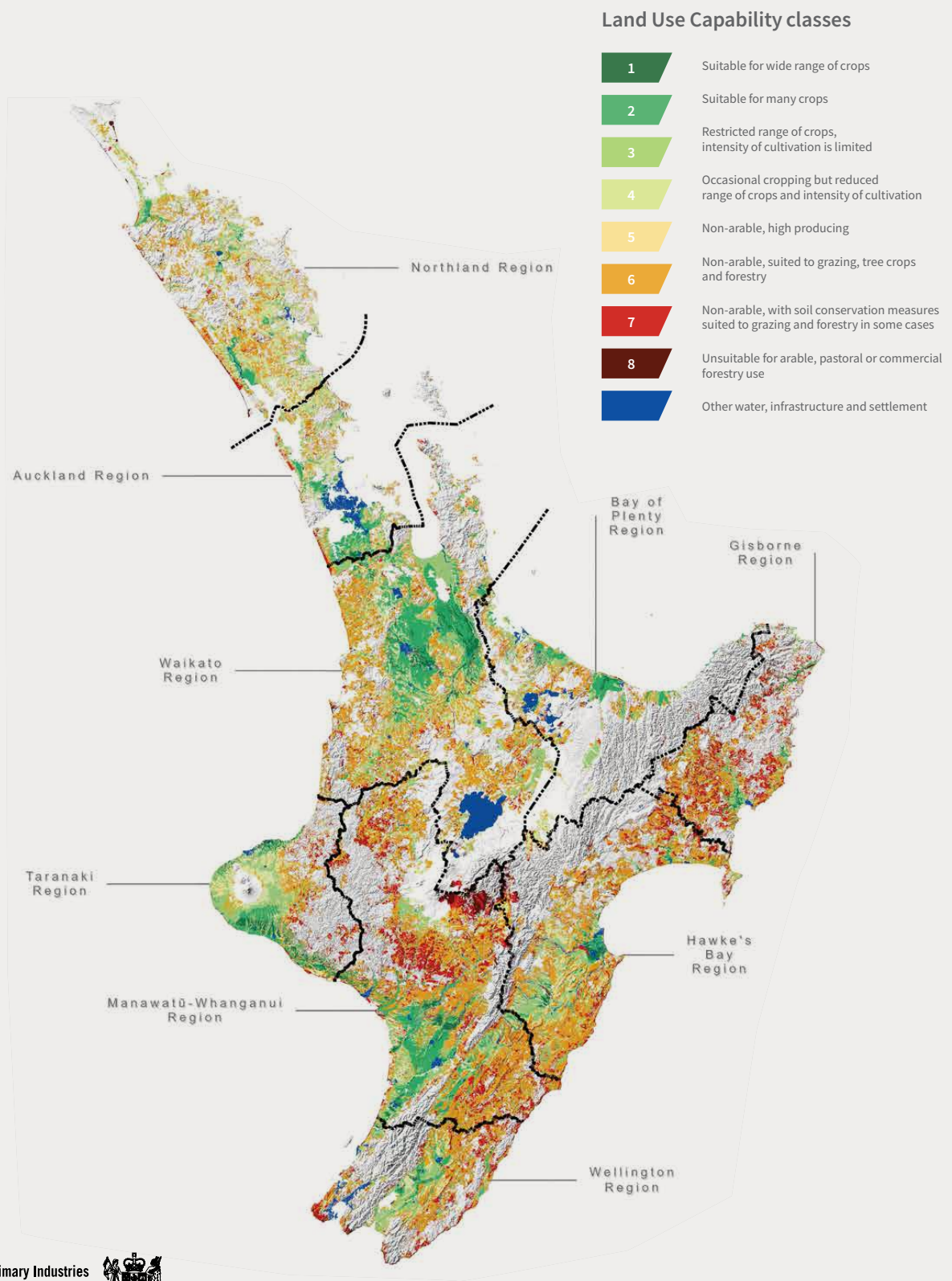
Terrain and climate are the main determinants of what is the right place for the right tree. The land suitable for production exotics is between 1.6 and 2.5 million hectares, and concentrated in particular regions.

Summaries accounting for ±25% margins of error of input datasets:		
North Island	**Area (ha)**	**Lower and upper range (ha)**
Potential area for all tree species	~1,320,000	1,000,000 – 1,6000,000
Potential area for tree species except production exotics	~330,000	250,000 – 410,000
North Island Total	**~1,650,000**	**1,250,000 – 2,010,000**
South Island	**Area (ha)**	**Lower and upper range (ha)**
Potential area for all tree species	~740,000	560,000 – 940,000
Potential area for tree species except production exotics	~980,000	550,000 – 1,400,000
South Island Total	**~1,720,000**	**1,290,000 – 2,150,000**
Total for New Zealand	**~3,370,000**	**2,540,000 – 4,160,000**



Te Uru Rākau
Forestry New Zealand

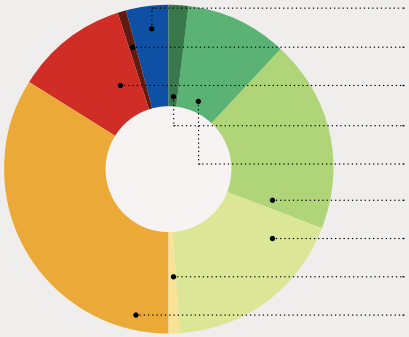
LAND USE CAPABILITY



Ministry for Primary Industries
Manatū Ahu Matua

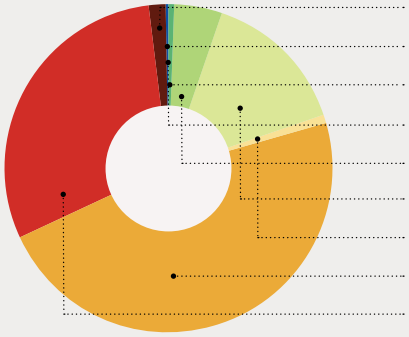
Surveys of existing land use show nearly a quarter of plantation forests are on the flatter LUC classes 3 and 4. The cost to foresters buying this land is higher, but the infrastructure and harvest costs are lower and increasingly with improved genetics the productivity is greater.

LUC of Private Land with no forest cover (this is what is shown on the map)



- Other – 760,000 ha **6%**
- Class 8 – 174,000 ha **2%**
- Class 7 – 1,226,000 ha **10%**
- Class 1 – 181,000 ha **2%**
- Class 2 – 1,156,000 ha **10%**
- Class 3 – 2,240,000 ha **19%**
- Class 4 – 2,046,000 ha **17%**
- Class 5 – 161,000 ha **1%**
- Class 6 – 3,979,000 ha **33%**

Proportion of exotic forests by LUC



- Class 8 – 31,550 ha **1.72%**
- Other – 3,763 ha **0.2%**
- Class 2 – 12,805 ha **0.7%**
- Class 1 – 1,568 ha **0.09%**
- Class 3 – 84,786 ha **4.61%**
- Class 4 – 265,720 ha **14.46%**
- Class 5 – 12,987 ha **0.71%**
- Class 6 – 874,929 ha **47.61%**
- Class 7 – 549,496 ha **29.9%**

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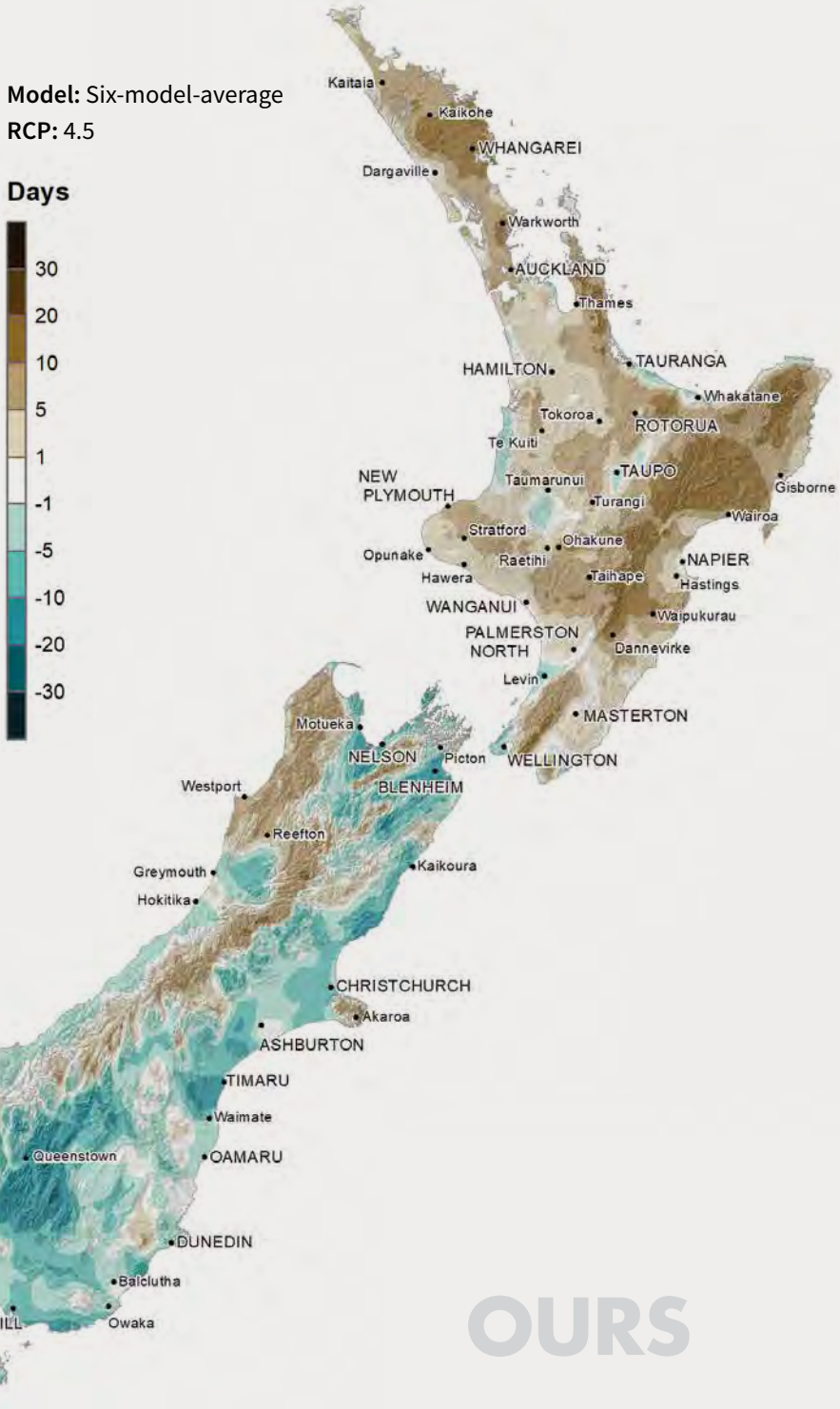
ANTICIPATED SOIL MOISTURE DEFICIT

NIWA
Taihoro Nukurangi

www.niwa.co.nz

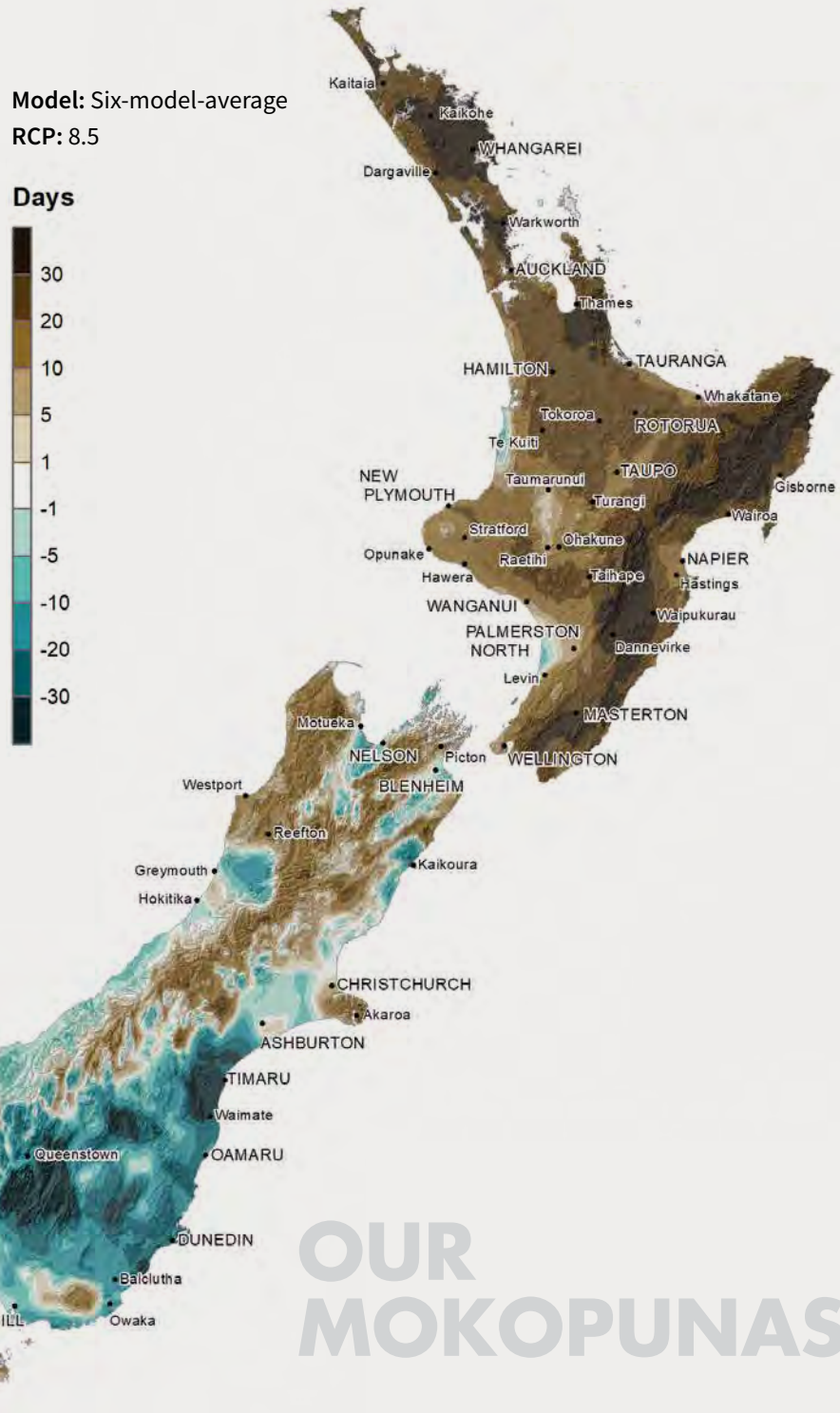
Change in Number of Annual Soil Moisure Deficit Days between 1995 and 2040

Model: Six-model-average
RCP: 4.5



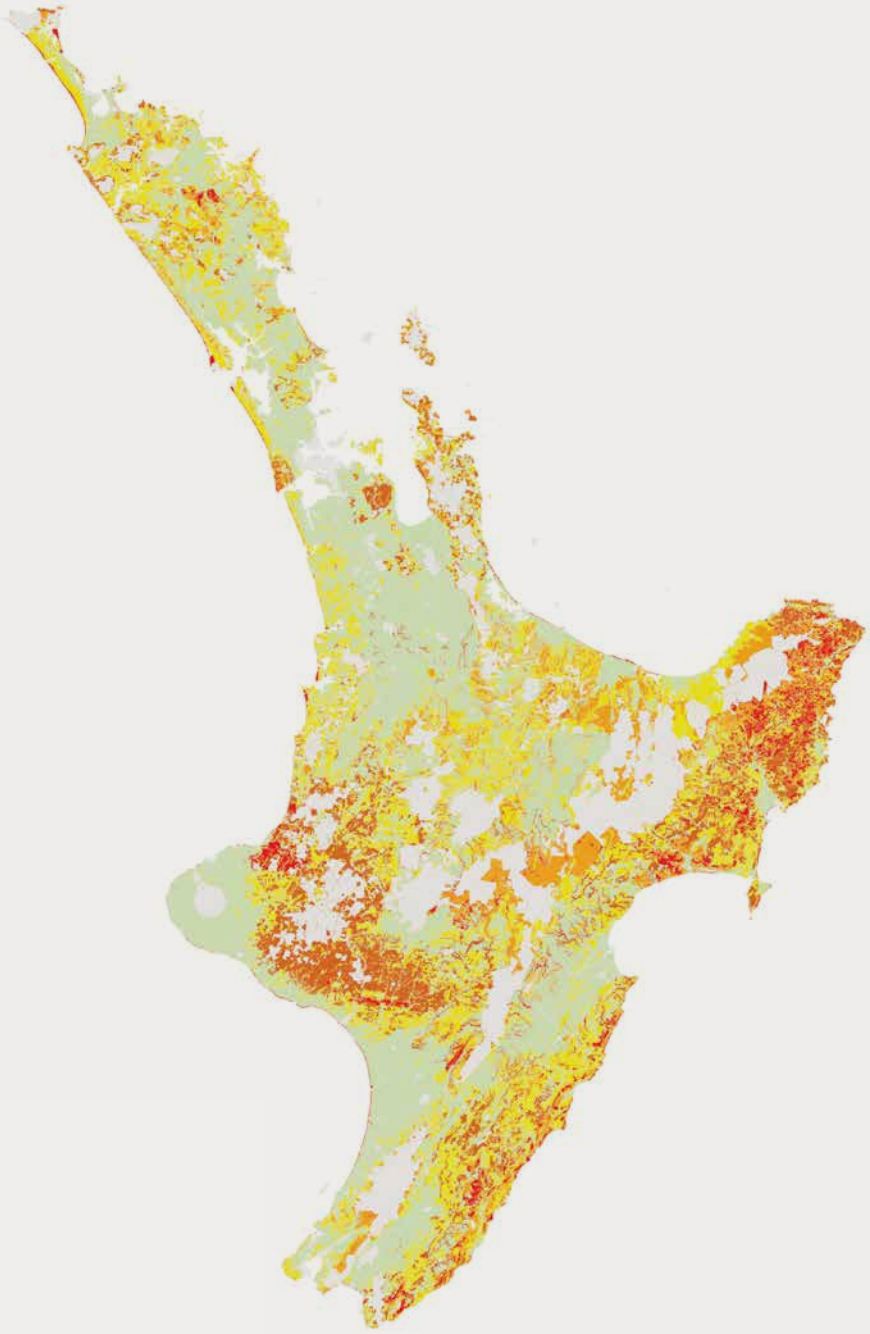
NIWA's models of the anticipated change in the days per year of soil moisture deficit, driven by climate change over the next few years, show marked regional variations in getting wetter or drier, which raises profound questions for the viability of existing land use in some regions.

Change in Number of Annual Soil Moisure Deficit Days between 1995 and 2090



NATIONAL ENVIRONMENTAL STANDARD – PLANTATION FORESTS

ESC-Terrain Reclassification



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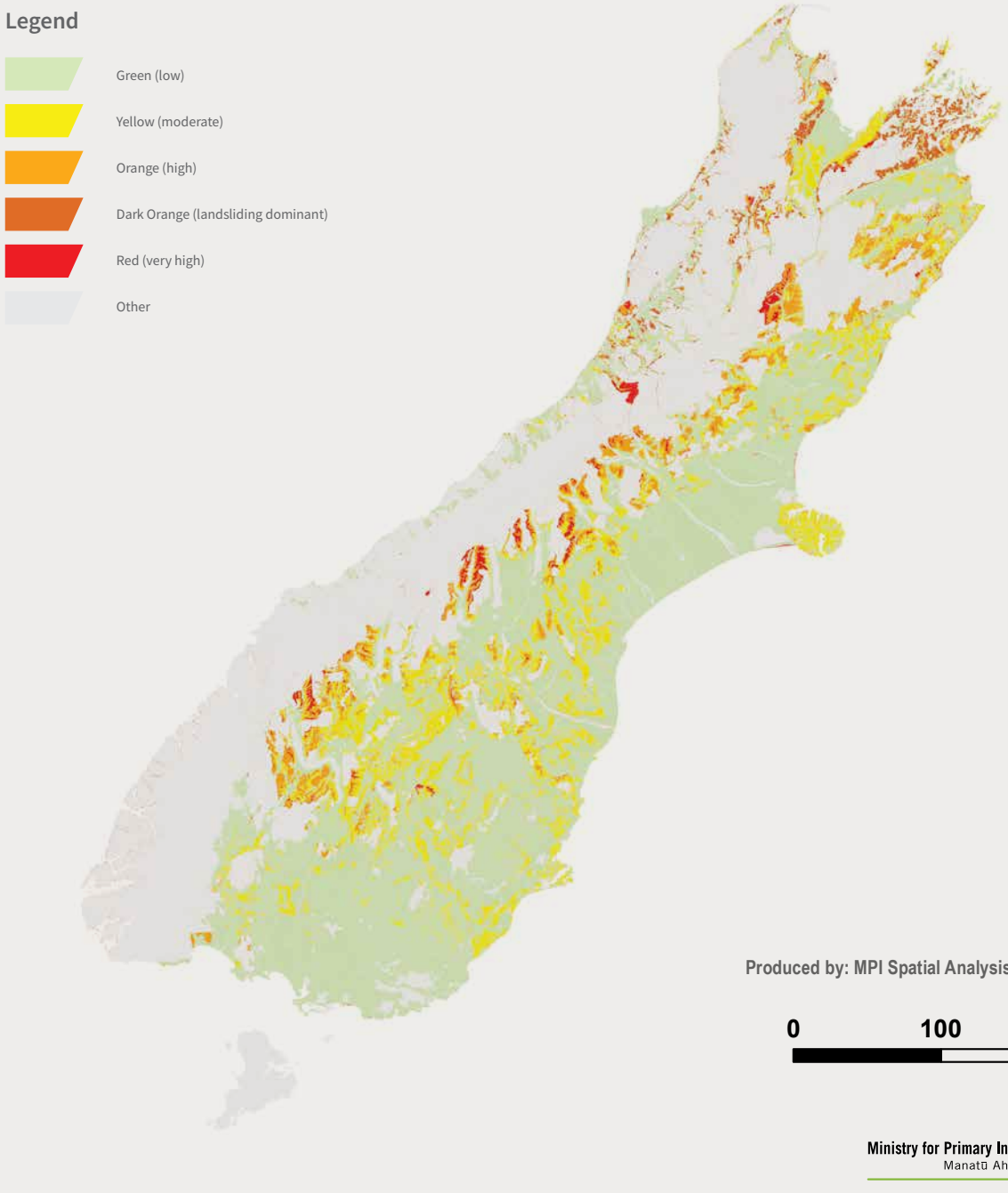
www.mpi.govt.nz

The NES-PF is the most extensive regulatory tool in the RMA, introduced in 2017 after eight years of consultation with industry. One major feature is the introduction of restrictions on planting the orange and red zones which are more erosion prone.

The orange and red zones are the most logical sites for carbon forestry as there is no post-harvest erosion risk. However, as the value of carbon credits rise, the incentive to plant forests elsewhere solely to acquire carbon credits increases. As the PwC Report shows, while carbon farming can supply a quick and good return, it doesn't employ many people.




FOREST CALL NZ
LOVE OUR FORESTS
TELLING THE STORY
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