

Facts & Figures

2017/18

NEW ZEALAND PLANTATION
FOREST INDUSTRY



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Minister's Foreword

Growing the value of our forestry industry

This Government has a bold and ambitious vision for our forestry sector to create sustainable jobs, diversify our economy and catalyse new opportunities in regional New Zealand.

Forestry is a major employer in regional New Zealand and contributes around \$6.4 billion a year to our economy in export earnings. This publication provides a snapshot of that success and highlights the chance we have to add more value to our forestry and wood processing sectors.

A flourishing forestry sector will be uniquely positioned to deliver sustainable, future-proofed jobs, while helping New Zealand transition to a low-emissions economy through carbon sequestration and the development of a new bio-economy.

This Government is committed to helping the forestry and wood processing sectors live up to their full potential. That's why we set up Te Uru Rākau/ Forestry New Zealand to raise the profile of forestry, and provide long-overdue strategic direction to this proud sector.

In 2018, we launched the One Billion Trees programme, with the goal of seeing a billion trees planted over the next decade. At the heart of the programme is the recognition that to guarantee a successful future for forestry, we need to get the right tree, in the right place and for the right purpose.

With the support of those in the industry, I know we will work to revitalise our regions, diversify our economy, and create further opportunities for success.

There's a bright and exciting future ahead for forestry and I look forward to continuing to work with you all.

Hon Shane Jones

Forestry Minister



SECTION 1

New Zealand Planted Forestry Highlights



New Zealand Planted Forestry Highlights

1,706,429 ha is the estimated net stocked plantation forest area at 1 April 2017. This is an increase in the plantation forest area of 1,682 ha from 1 April 2016.

1



A RECORD

35.4 million m³

OF TIMBER WAS HARVESTED IN THE YEAR 2018, AN INCREASE OF 10% ON THE PREVIOUS YEAR, WITH VOLUMES EXPECTED TO BE HIGH FOR THE NEXT DECADE.

2

\$6.38 billion

was the export value of forest products to June 2018, comprising \$3.3 b of logs and \$3 b of other forest products.

3

\$3.55 billion

is the total contribution of the forest industry to New Zealand's GDP; \$1.39b from forestry and logging and \$2.16b from downstream activity.

4

Source **Box 1** NEFD 2016
Source **Box 2** Forest Growers Levy
Source **Box 3** SOPI Dec 2018
Source **Box 4** NZIER March 2017

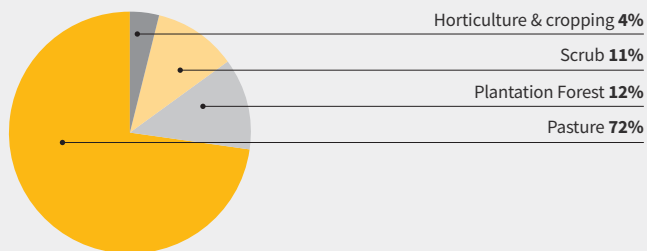
New Zealand Planted Forestry in Summary

Area and standing volume statistics	1 April '15	1 April '16	1 April '17
Net stocked forest area (ha)			
Total estimated area	1,717,715	1,704,747	1,706,429
Growth characteristics			
Standing volume (000 m ³)	501,716	501,460	519,297
Average standing volume (m ³ /ha)	292	294	304
Area-weighted average age (years)	17.1	17.08	17.39
Area by species (ha)			
<i>Pinus radiata</i>	1,544,480	1,532,734	1,535,510
Douglas-fir	1054,999	104,173	103,726
Cypress species	10,123	10,140	9,855
Other softwoods	22,361	22,743	22,539
Eucalypts	23,260	23,182	22,307
Other hardwoods	12,493	11,775	12,492
Planting statistics			
	Year ended 31 Dec '14	Year ended 31 Dec '15	Year ended 31 Dec '16
New planting (ha)			
Total estimated new planting	2,500	3,000	2,500
Restocking	41,353	39,948	40,610
Harvested area awaiting restocking			
Harvesting statistics			
	Year ended 31 Mar '15	Year ended 31 Mar '16	Year ended 31 Mar '17
Harvesting			
Area clear felled – all species (ha)	49,896	45,342	44,770
Volume clear felled – all species (000 m ³)	26,492	25,008	24,512
Volume production thinned – all species (000 m ³)	325	419	328
Total volume removed – all species (000 m ³)	26,817	25,427	24,840
Average clear fell yield – all species (m ³ /ha)	537	552	555
Area-weighted average clear fell age for <i>Pinus radiata</i> (years)	28.4	29.1	28.4
Estimated planted forest roundwood removal (000m ³)	29,660	29,068	30,650

Source **New Zealand Planted Forestry in Summary** NEFD 2017

Land Use and Returns

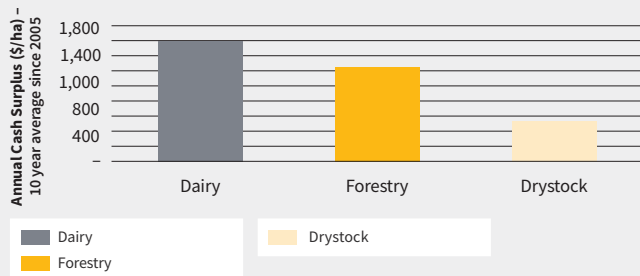
Share of Rural Land by Land Use 2015^{1,2}



Export Value Comparisons^{3,4,5,6}

Export product category	million ha 2016 [†]	2018 exports billion \$ [*]	Per ha/yr 1000 \$
Horticulture & vegetable	0.19	5.38	28,316
Dairy	2.6	16.66	6,408
Forestry	1.7	6.38	3,753
Meat & wool	8.5	9.54	1,122

Annual Cash Surplus⁷



Notes

- Estimates of forestry only include plantation forests. Natural forests, excluded from these estimates, make up approximately 29% of New Zealand's land area.
- The total area of rural land decreased between 1990 and 2015 by about 3.5 million hectares, or in percentage terms by about 20%. This is a result of rural land being converted to non-rural uses. Rural land includes all farm land and plantation forests.
- The forested area is expected to increase during the next two years and MPI anticipates the yearly export value of forest products to increase to \$6.59b. In contrast, MPI expects meat and wool export income to decline to \$9.52b by 2020 and the area is likely to diminish as well.
- These land use/export return figures do not take into account the different land class ratios used for the four listed industry categories, nor the shift of product across categories, such as beef from dairy cows.
- Neither charges nor payments under the Emissions Trading Scheme are calculated into these figures.
- These are export figures alone and do not reflect the different domestic consumption levels across the primary sector, nor do they reflect different ROI levels.
- Dairy and Forestry is 10 year averages since 2005. Drystock is for East Coast hill country. Beef & Lamb NZ data.

Source **Share of Rural Land by Uses 2015** Productivity Commission April 2018

Source **Export Value Comparisons** [†]MFE/Stats 'Our Land 2018', ^{*}SOPi December 2018

Source **Annual Cash Surplus** Scion Nov 2015

Comparative Export Earnings and Predictions

MPI anticipates that in the year to June 2019 returns from New Zealand forest product exports will be

\$6.66 billion, which is ahead of beef and sheepmeat combined and horticulture returns.

1

MPI Predictions for Primary Industry Sector Export Values 2021 (\$billions)



MPI Predictions for Primary Industry In-sector Export Values 2021 (\$billions)

Export	Billions \$
Whole milk powder	\$6.63
Butter, AMF & cream	\$3.83
Non-log forestry	\$3.14
Logs	\$3.13
Sheepmeat	\$3.02
Beef	\$2.86
Kiwifruit	\$2.22

Source **Box 1** SOPi Dec 2018

Source **MPI predictions for Primary Industry In-sector & Sector Export Values 2021** SOPi June 2017

Contribution of the Main Plant Species to New Zealand GDP

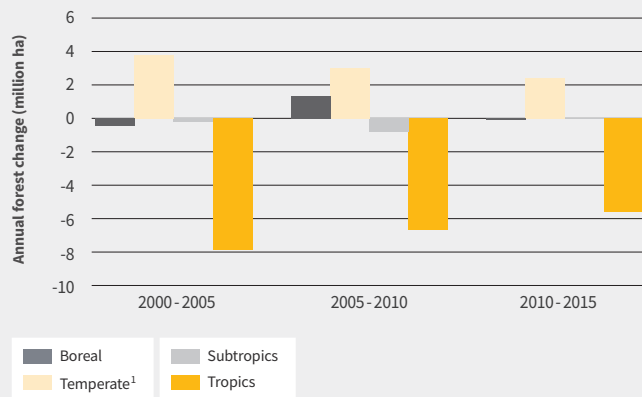
Plant	Total impact on GDP in 2012	Ranking #
Ryegrass	\$14,537,000,000	1
<i>Pinus radiata</i>	\$4,454,000,000	2
Clover	\$2,334,000,000	3
Kiwifruit	\$807,000,000	4
Douglas-fir	\$200,000,000	12
Eucalyptus	\$41,000,000	23
Cypress	\$17,000,000	32



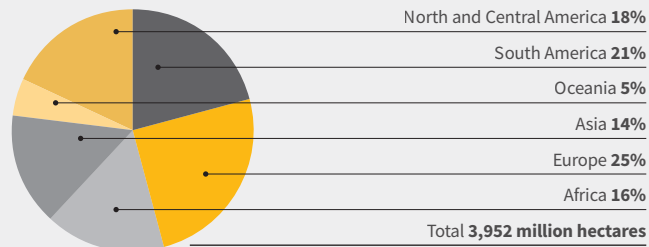
Source Contribution of the Main Plant Species to New Zealand GDP NZIER July 2016

Global Forests

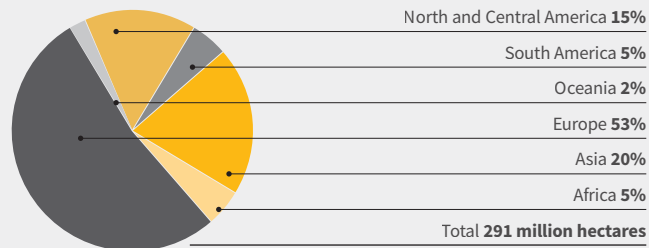
Net Annual Average Forest Area Change, by Climatic Domain (million ha per year)



Global Forest Areas



Global Planted Forest Areas



Notes

¹ New Zealand = Temperate.

Source Net Annual Average Forest Area Change FAO State of the World's Forests 2016

Source Global Forest Areas & Planted Forest Areas FAO Global Forest Resources Assessment 2015

46% *Pinus* spp. makes up approximately 46% of the estimated 53.4 million hectares of planted production forest worldwide, with Eucalypts the next largest at 26%. 1

ACCORDING TO THE FAO
“AFFORESTATION IS THE ACT
OF ESTABLISHING FORESTS
THROUGH PLANTING AND/
OR DELIBERATE SEEDING
ON LAND THAT IS NOT
CLASSIFIED AS FOREST,
WHILE REFORESTATION
REFERS TO THE RE-
ESTABLISHMENT OF FOREST
THROUGH PLANTING AND/OR
DELIBERATE SEEDING
ON LAND CLASSIFIED AS
FOREST, FOR INSTANCE
AFTER A FIRE, STORM OR
FOLLOWING CLEARFELLING.” 2

The Global Forest Resources Assessment (FRA), coordinated by the UN Food and Agriculture Organisation, found that the world’s forest area decreased from 31.6 percent of the global land area to 30.6 percent between 1990 and 2015, but that the pace of loss has slowed in recent years. 3

Acting as carbon sinks, (world) trees and forests absorb the equivalent of roughly 2 billion tonnes of carbon dioxide each year. However, deforestation is the second-leading cause of climate change after burning fossil fuels and accounts for nearly 20 percent of all greenhouse gas emissions — more than the world’s entire transport sector. 4

Source **Box 1** FSC Strategic Review on the Future of Forest Plantations 2012

Source **Box 2** FAO Global Forest Resource Assessment 2010

Source **Box 3 & 4** FAO

SECTION 2

New Zealand Planted Forestry



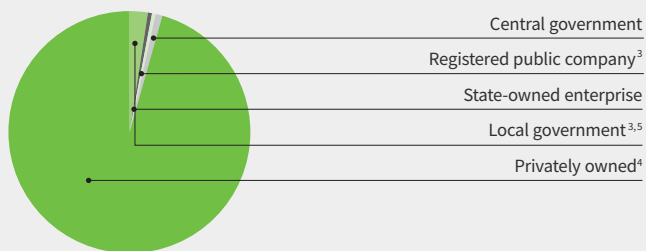
Planted Forest Mix and Ownership

The trees in **90%** of all New Zealand planted forests are *Pinus radiata*, with most of the rest growing in the South Island.

1

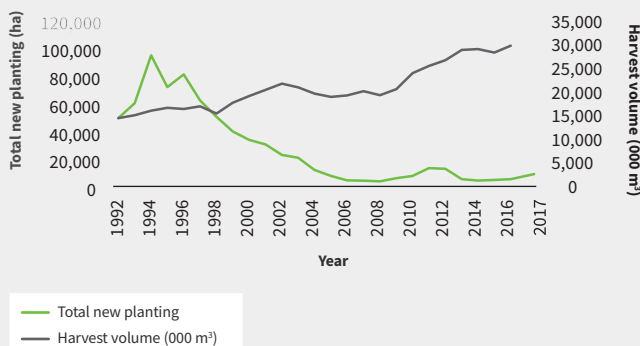
Planted Forest Ownership^{1,2,6}

As at 1 April 2017



Forestry Plantings and Harvest Volumes

Year ended December 1992–2017



Notes

- Ownership is based solely on the ownership of the forest irrespective of the ownership of the land.
- Net stocked planted production forest area.
- Note that significant changes in forest ownership occurred during 2003 resulting in large areas of forest previously owned by public companies now being privately owned.
- "Privately owned" includes all privately owned forests. The legal entities included in this category are private companies, partnerships, individuals and trusts, which include Māori trusts and incorporations.
- "Central Government" forests are predominantly Crown owned forests on Māori leasehold land. These forests are managed by the Ministry for Primary Industries.
- Individual entries may not sum to totals shown due to rounding.

Source **Box 1 & Planted Forest Ownership** NEFD 2017

Source **Forestry Plantings and Harvest Volumes** Statistics NZ & MPI

NZ Plantation Forest Ownership - Underlying Land Status¹

As at 31 December 2017

Firm/Entity	Underlying Land Status (Productive area (ha))				Total
	Freehold	Crown	Māori Inc.	Leasehold Other	
Hancock Natural Resource Group	85,246	9,549	66,682	31,185	192,662
Kaingaroa Timberlands	1,393		182,734		184,127
Rayonier / Matariki Forests	54,707	29,372	15,227	19,185	118,491
Global Forest Partners LP ²	51,935		39,724	708	92,367
Ernslaw One Limited	59,442	41,862	7,705	2,046	111,055
Crown Forestry (MPI) ^{3,4}	1,522		10,605		12,127
Juken New Zealand	9,907	14,593	6,675	1,124	32,299
Pan Pac Forest Products	4,811	12,527	18,045	83	35,466
The Rohatyn Group	17,551		1,423		18,974
Hikurangi Forest Farms	25,570		2,218	296	28,084
Wenita Forest Products Ltd	8,730			19,551	28,281
Roger Dickie NZ	26,576				26,576
Port Blakely	23,986			1,233	25,219
Forest Enterprises	19,890				19,890
City Forests	16,304			981	17,285
Lake Taupo Forest Trust	21,239		1,007	873	23,119
Summit Forests NZ Ltd	1,319	19,255	2,947	1,101	24,622
Ngai Tahu Forestry	27,480				27,480
China Forestry Group Corporation	13,246	6,280	2,108	439	22,073
Tasman Pine Forests	31,200				31,200
Totals	502,054	133,438	357,100	78,805	1,071,397

Notes:

¹ This table identifies who manages New Zealand forests while not owning them. There are two main categories:

1) Timberland Investment Management (commonly referred to as a TIMO)

The forests are owned by retail investors or institutional funds.

2) Property Management

These companies variously plan and manage field operations, map and maintain records.

Total Prod area is as at 31 December 2017

² Includes Nelson Forests Ltd

³ Crown land includes land leased under a Crown Forest License

⁴ Crown land includes unlicensed Crown forest land as well as Crown-owned Freehold land purchased by Timberlands West Coast in the 1990s and transferred to the Crown in January 2009

Source FOA

Commercial Planted Forest Ownership and Management¹

As at 31 December 2017

Firm/Entity	Forest Management	Productive Area (ha)
	(TIMO) ²	Property Management ³
Hancock Forest Management (NZ) Ltd		159,346
Hancock Natural Resource Group	192,662	
Kaingaroa Timberlands Limited	-	184,127
Global Forest Partners LP	11,695	61,502
Juken New Zealand		32,299
Pan Pac Forest Products		35,466
The Rohatyn Group	18,974	
Wenita Forest Products Ltd	-	28,281
Roger Dickie NZ	26,576	
Forest Management NZ Ltd		26,576
Port Blakely		25,219
Forest Enterprises	19,890	-
City Forests		17,285
P F Olsen Ltd	2,533	151,922
Summit Forests (NZ) Ltd		24,622
Tasman Pine Forests		5,000
Totals	272,330	751,645

Notes

¹ This table is designed to identify who manages NZ forests. Within "management" there are 2 main categories:

² Timberland Investment Management (commonly referred to as a TIMO)

These organisations do not own the forest listed.

Greenplan, Roger Dickie and Forest Enterprises are TIMOs, along with GMO RR, Hancock Natural Resource Group, New Forests, GFP etc.

The forests are owned by retail investors or by institutional funds.

Note: TIMO = Timber Investment Management Organisation.

TIMO and Forest Management areas must be read independently.

Some firms perform both functions on some forest areas. If so, enter the area in both columns.

³ Property Management

Planning and managing field operations, mapping and maintaining records.

Some entities carry out both functions within the same organisation, others carry out both for some parts of a forest estate and not others.

Source FOA

Environmental Certification

As at 31 December 2017

Company	Environmental Certification	
	Total Certified Area (ha) ¹	PEFC (ha)
Rayonier NZ	163,205	
The Rohatyn Group	13,347	
PanPac Forest Products Ltd	45,670	
NZ Forest Managers Ltd	56,778	
Wenita Forest Products Ltd	32,179	
Hikurangi Forest Farms Ltd	35,005	
Juken New Zealand Ltd	32,299	
PF Olsen Ltd	53,461	
Timberlands Ltd	184,127	184,127
Port Blakely	34,365	
Southland Plantation Forest Company of New Zealand	14,016	
City Forests Ltd	16,706	
Ernslaw One Limited	143,488	
Hancock Forest Management (NZ) Ltd	188,576	159,346
Ngai Tahu Forestry	26,370	
Craigpine Timber Ltd	20,191	
Summit Forests NZ Ltd	32,420	
Tasman Pine Forests Ltd	36,200	
Wairarapa Estate Ltd	4,202	
Nelson Forests Limited	62,328	
Total Plantation Certified Area (ha)	1,208,583	343,473
Lindsay & Dixon Ltd (Naturally regenerated indigenous)	11,916	
Total	1,220,499	343,473

Notes:

¹ Total Certified Area = Total Forest Area as recorded on FSC certificate.

² Three Crown forestry forests are managed under an FSC licence held by NZ Forest Managers

Source FOA

Planted Forests by Location

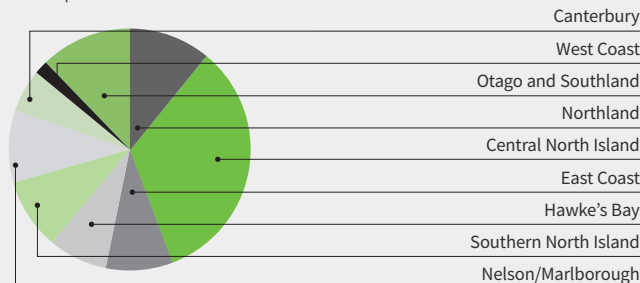
As at 1 April 2017

Area Planted in all Species by Territorial Authority^{1,2}

Region	Estimated Total Forest Area (HA)		
	2015	2016	2017
Northland	188,416	185,939	186,868
Central North Island	569,297	567,781	567,478
East Coast	155,079	156,099	154,149
Hawke's Bay	134,841	133,746	134,391
Southern North Island	164,748	159,977	161,432
Nelson/Marlborough	169,783	166,798	166,230
West Coast	31,205	31,422	31,375
Canterbury	98,223	96,860	95,763
Otago/Southland	206,123	206,126	208,744
Total	1,717,715	1,704,747	1,706,429

Plantation Forests

As at 1 April 2017



Notes

¹ Net stocked planted production forest area.

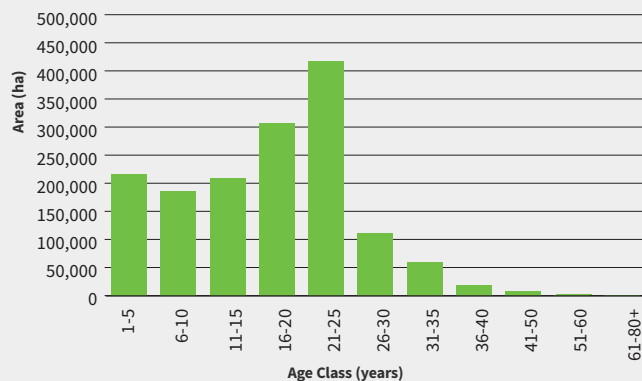
² Individual entries may not add to totals due to rounding.

Source Area Planted in all Species by Territorial Authority & Plantation Forests NEFD 2017

Net Stocked Area of *Pinus radiata*

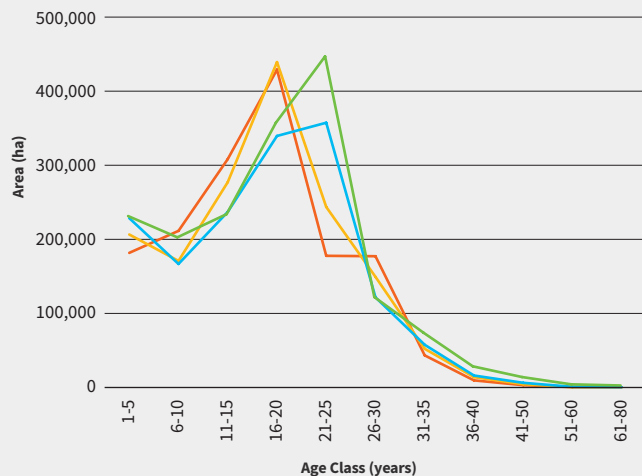
By Age Class as at 1 April 2017

Forest Area 2017 by Annual Age Class



Forest area *Pinus radiata*

Age Class Over Time 2014-2017¹



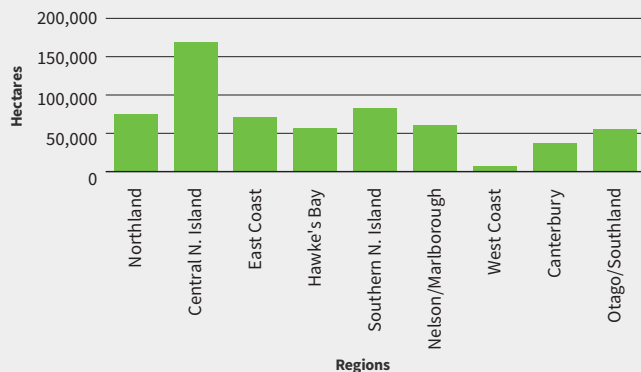
2017 2015
2016 2014

Source Forest Area by Annual Age Class & Age Class Over Time NEFD 2017

Harvestable *Pinus radiata*

Forest Area Planted in *Pinus radiata* by territorial authority

Of Harvestable Age (21+) Per Region (ha), as at 1 April 2017



IF THE CURRENT PACE OF HARVEST CONTINUES, THE AVERAGE AGE OF PLANTATION FORESTS WILL CONTINUE TO DECREASE.

1

The total planted forest standing volume at April 2017 was

519 million cu/m

with an average age of 17.38 years

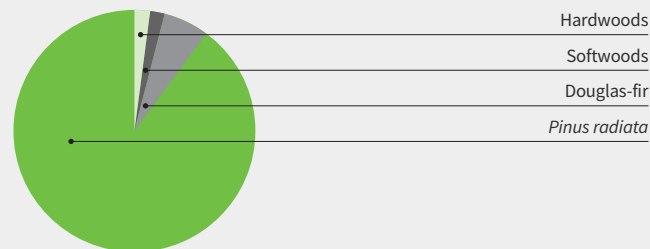
Source Forest Area Planted in Radiata Pine NEFD 2017

Plantation Species (ha)

As at 1 April 2017

Species Distribution

As at 1 April 2017



Minor Plantation Species

Other pines; *P. nigra*, *P. muricata*, *P. ponderosa*

Other softwoods; *Redwoods*, *Larch*, *Cryptomeria*, *Cypress*

Indigenous species; *Kauri*, *Totara*

Other hardwoods; *Poplars*, *Acacia*, *Willows*, *Black Walnut*, *Paulownia*, *Oaks*

Non-durable eucalypts; *E. obliqua*, *E. fastigata*, *E. regnans*, *E. nitens*, *E. saligna*, *E. botryoides*, *E. pilularis*, *E. muelleriana*,

Durable eucalypts; *E. globoidea*, *E. bosistoana*, *E. quadrangulata*.

Approximate Harvest Age Over the Past Five Years

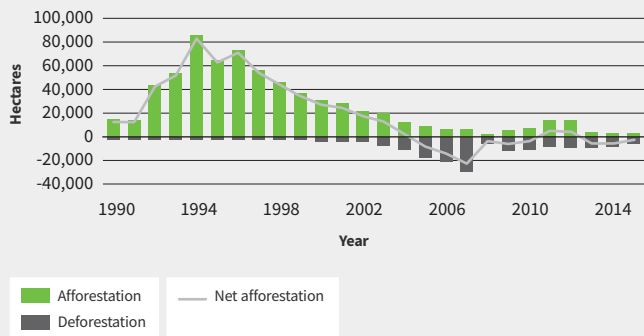
Species	Harvest Age
<i>Pinus radiata</i>	29 years
Douglas-fir	40 years
Cypress	34 years
Eucalypts	21 years

Source Species Distribution NEFD 2017

Source Approximate Harvest Age Over the Past Five Years SOPI June 2017

New Forest Planting and Deforestation

Afforestation and Deforestation in New Zealand, 1990-2015¹



Tree Stock Sales from 2009 to 2017

	Tress Stock Sales in Millions									
	2009	2010	2011	2012	2013	2014	2015	2016 ^p	2017	
<i>Pinus radiata</i>	37.7	46.4	58.9	64.6	48.5	47.2	45.8	49.3	48	
Total	43.2	53.2	67.6	72.5	54.1	50.8	49.5	52.7	51.3	

^pProvisional

Notes

¹ MfE has limited information on deforestation prior to 2000 and on deforestation from pre-1990 forests before 2008. It therefore assumes that deforestation of pre-1990 natural forests occurred at the same annual rate before 2008, and that deforestation for all other forests was zero before 2000.

Source Afforestation and deforestation in New Zealand, 1990-2015 Productivity Commission 2017

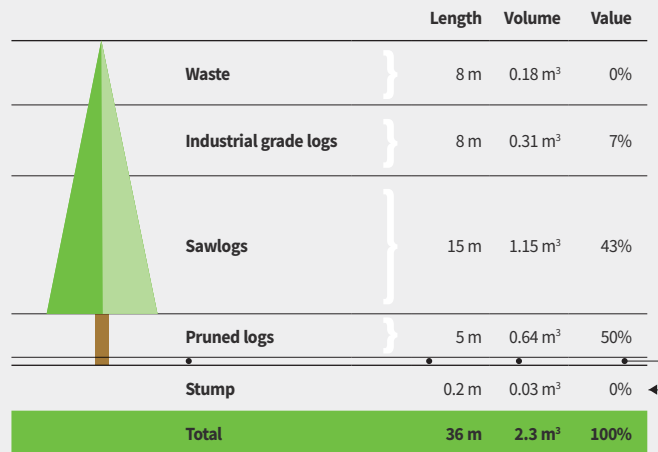
Source Box 1 NEFD 2016

Source Tree Stock Sales from 2009 to 2017 MPI, Tree Stock Sales and Forest Planting in 2017

Typical Log Out-turn

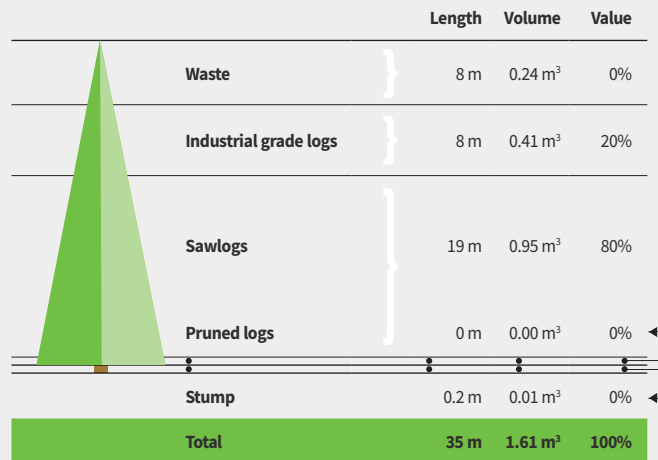
Direct Sawlog Regime

Pruned and thinned. Final Crop Stocking 228 stems per hectare.



Structural Regime

Thinned. Final Crop Stocking 487 stems per hectare.



Notes

¹ Average site (Site Index 29 m, 300 Index 23 m³/ha/yr). Clearfelled at 28 years.

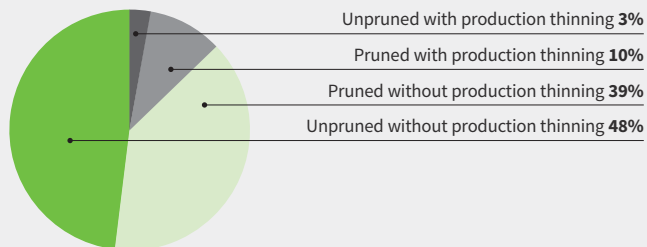
Source Direct Sawlog Regime & Structural Regime Scion

Forest Management Trends

For Year Ended 31 Dec 2017

Pinus radiata by Tending Regime

As at 1 April 2017



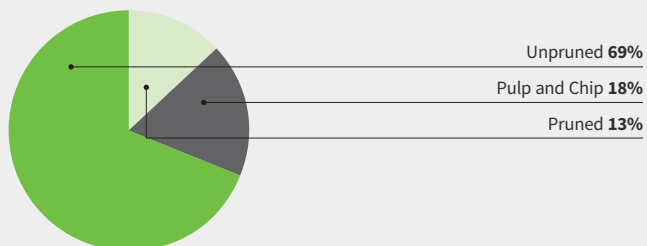
	%	2015 Hectares ¹	%	2016 Hectares ¹	%	2017 Hectares ²
Pruned with production thinning		173,538		158,197		154,427
Pruned without production thinning		637,597		619,747		595,958
Unpruned with production thinning		33,329		39,675		53,844
Unpruned without production thinning		700,016		715,116		731,282

The area under an unpruned management regime continues

to grow, to now about **50%** of the *Pinus radiata* forest estate. The area of production thinned *radiata* forest is also decreasing, now to about 13%.

1

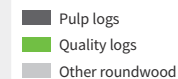
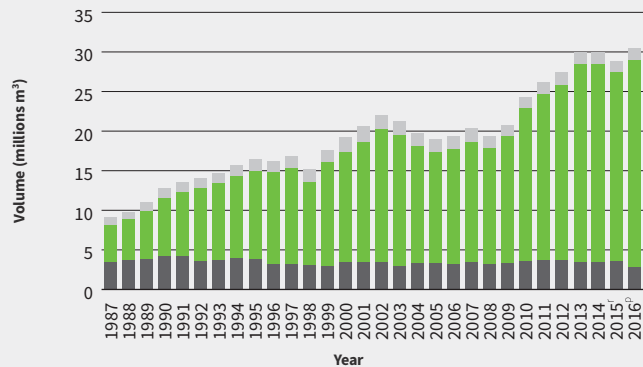
Pinus radiata Harvest Volume by Log Type



Source *Pinus radiata* by Tending Regime & Radiata Pine Harvest Volume by Log Type NEFD 2017

Plantation Forest Harvest

for Year Ended 31 Dec 2016



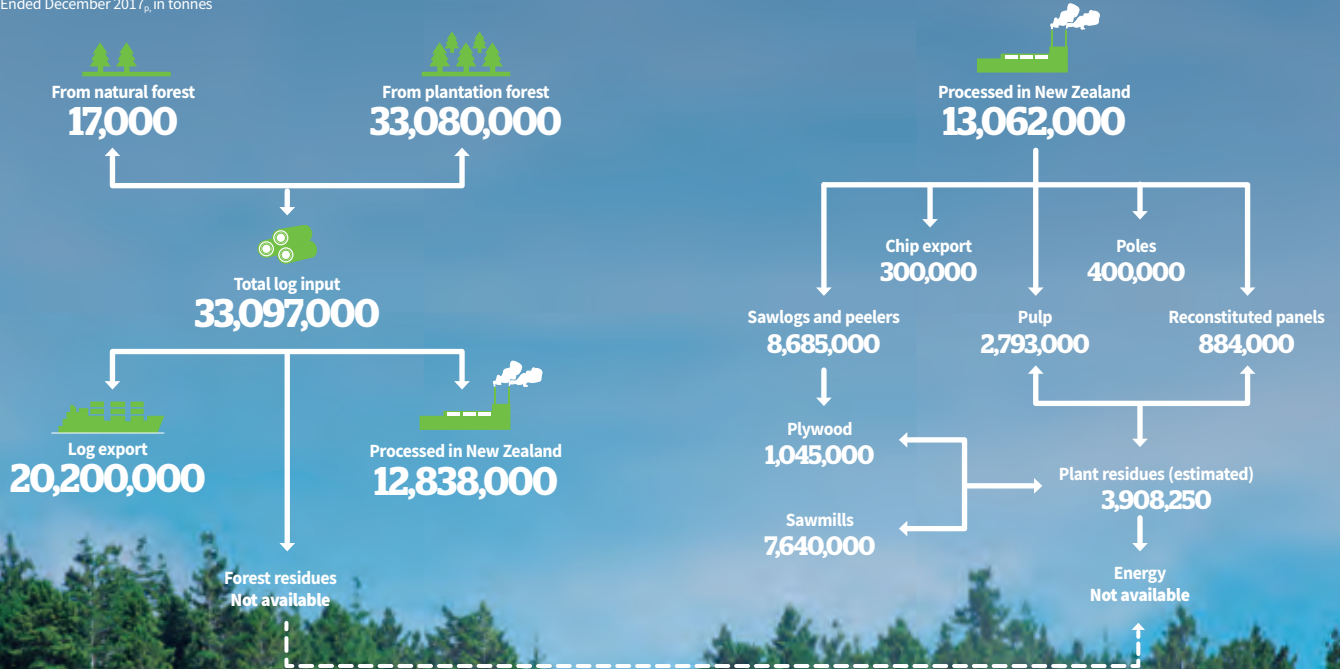
^c Revised ^pProvisional



Source Plantation Forest Harvest MPI

Log Flow in the New Zealand Forestry Industry

Year Ended December 2017, ^p in tonnes



Notes

^p Provisional

Source: Log Flow in the New Zealand Forestry Industry MPI

Reporting a Suspected Pest/Disease

Eucalyptus nitens induced with myrtle rust infection



Photo credit: CSIRO

Don't go down in history as the person who noticed something but didn't tell. Keep our forests free of new pests and diseases.

Myrtle rust arrived in New Zealand from Australia in mid-2017. The rust infects members of the myrtle family, which includes eucalypts, feijoas and guavas as well as native plants such as pōhutakawa, rata and mānuka. MPI has been attempting to control the disease to prevent it becoming established in New Zealand.

If you believe you've found something that shouldn't be here, phone MPI's hotline on **0800 80 99 66**. They will arrange for whatever photos, samples and site visits are necessary. Or, email to **Info@mpi.govt.nz**, with 'Reporting a suspected pest/disease' in the subject line, and make sure to include contact name, phone number and location of the discovery. Photos of the pest and plant damage would also be useful.

SECTION 3

Export and Production



Top Export Destinations*

For Year Ended 31 Dec 2017



1. China (People's Republic of) \$NZ 2,797,287,460

Logs and poles	2,305,291,789
Sawn timber/sleepers	148,609,154
Wood pulp	274,723,894
Paper and paperboard	37,508,693
Panel products	22,537,697
All other	8,616,233

2. Australia \$NZ 731,528,151

Logs and poles	2,114,983
Sawn timber/sleepers	127,690,211
Wood pulp	99,109,066
Paper and paperboard	226,340,253
Panel products	118,019,126
All other	158,254,512

7. Indonesia \$NZ 184,818,288

Logs and poles	184,509
Sawn timber/sleepers	30,438,882
Wood pulp	76,402,717
Paper and paperboard	25,115,860
Panel products	21,072,676
All other	31,603,644

8. Thailand \$NZ 111,549,202

Logs and poles	2,221,315
Sawn timber/sleepers	40,878,829
Wood pulp	30,641,658
Paper and paperboard	32,034,033
Panel products	994,473
All other	4,778,894

3. South Korea \$NZ 489,562,075

Logs and poles	376,203,595
Sawn timber/sleepers	38,465,490
Wood pulp	59,442,934
Paper and paperboard	13,119,465
Panel products	22,537,697
All other	1,165,295

4. Japan \$NZ 433,905,610

Logs and poles	85,773,638
Sawn timber/sleepers	27,907,175
Wood pulp	46,740,106
Paper and paperboard	543,532
Panel products	196,959,794
All other	75,981,365

9. Viet Nam \$NZ 92,538,824

Logs and poles	4,756,162
Sawn timber/sleepers	55,401,162
Wood pulp	997,179
Paper and paperboard	11,033,958
Panel products	18,824,241
All other	1,526,122

10. Taiwan \$NZ 91,282,264

Logs and poles	19,303,464
Sawn timber/sleepers	30,353,081
Wood pulp	16,484,914
Paper and paperboard	10,543,543
Panel products	14,400,674
All other	196,588

5. India \$NZ 308,627,254

Logs and poles	243,901,049
Sawn timber/sleepers	3,242,092
Wood pulp	39,064,477
Paper and paperboard	15,416,678
Panel products	4,398,096
All other	2,604,862

6. United States \$NZ 250,027,085

Logs and poles	
Sawn timber/sleepers	196,128,669
Paper and paperboard	5,680,146
Panel products	32,408,949
All other	15,809,321

11. Philippines \$NZ 81,821,918

Logs and poles	
Sawn timber/sleepers	22,468,582
Wood pulp	5,684,754
Paper and paperboard	24,289,064
Panel products	29,046,745
All other	332,773

12. Other \$NZ 422,234,144

Logs and poles	18,987,385
Sawn timber/sleepers	141,517,296
Wood pulp	103,085,395
Paper and paperboard	73,994,256
Panel products	29,367,471
All other	55,282,341

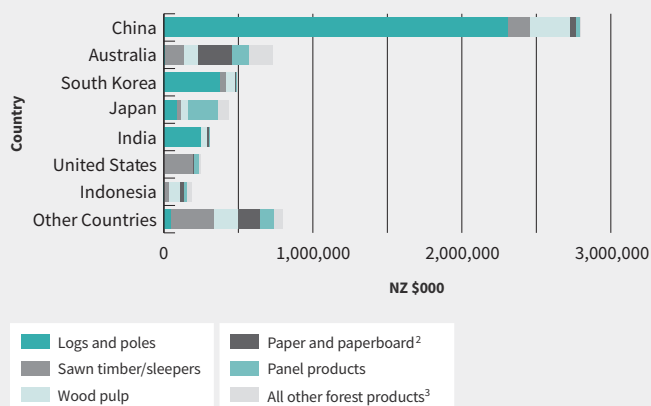
Export Value by Destination and Product¹

for Year Ended 31 Dec 2017

Total Export Value by Main Countries of Destination

Country of Destination	Total Export Value (NZD\$)		
	2015	2016	2017
China	1,826,105,366	2,235,966,273	2,797,287,460
Australia	751,154,031	753,342,800	731,528,151
South Korea	462,899,690	483,457,497	489,562,075
Japan	405,592,037	430,080,934	433,905,610
India	254,727,338	298,240,725	308,627,254
United States	227,288,170	246,631,508	250,027,085
Indonesia	150,240,307	156,299,620	184,818,288
Thailand	76,848,229	79,188,366	111,549,202
Vietnam	74,407,215	83,534,192	92,538,824
Taiwan	99,468,345	89,636,280	91,282,264
Philippines	75,798,283	91,146,969	81,821,918
Malaysia	71,161,124	59,027,768	72,176,596
Netherlands	21,132,824	33,559,569	37,322,458
South Africa	61,089,912	37,662,627	35,987,670
Singapore	11,305,248	41,947,485	29,307,391
Other countries ⁴	234,141,272	251,736,518	247,440,029
Total	4,803,359,391	5,371,459,131	5,995,182,275

Exports of Forestry Products by Main Countries of Destination



Notes

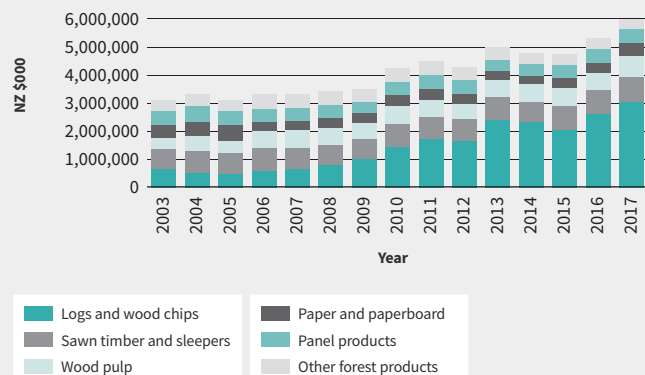
- ¹ Values are NZ\$ f.o.b. and may include items, e.g. some plywood items, for which no quantities are given.
- ² Paper and paperboard includes Newsprint for June 2011 yr.
- ³ All other forestry products include chips, mouldings, manufactures of paper and paperboard, furniture and miscellaneous forestry products.
- ⁴ Other countries are all other countries to which New Zealand has exported forest products during the year.

Source **Export Value by Destination and Product** MPI

Product Export Earners

for Year Ended 31 Dec 2017

Major Export Earners^{1,2}



r Revised

Log exports to China have increased **30%** since 2013. MPI expects the Chinese appetite for imports to continue, on the back of continuing real estate construction, albeit with a declining RMB value reducing return values to New Zealand.

1



2

Notes

- ¹ Paper and paperboard includes Newsprint data, therefore differs from Statistics NZ data
- ² Excludes re-exports. Newsprint data 12 months ending June 2010.

Source **Major Export Earners** Statistics NZ and FOA

Source **Box 1 & 2** SOPI June 2017

Exports of Forest Products

for Year Ended 31 Dec 2017

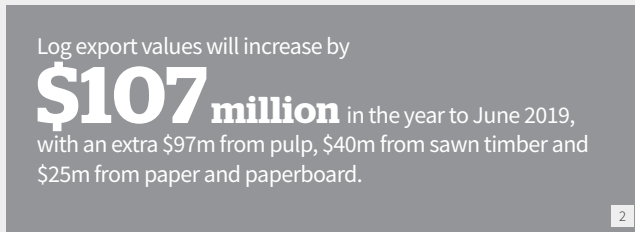
Production and Exports of Selected Forestry Products

145,620	490,143	Veneer (m ³)
54,415	409,908	Plywood ¹ (m ³)
585,569	768,688	Fibreboard (m ³)
325,877	547,253	Other paper & paperboard (tonnes)
948,952	1,458,550	Wood pulp (tonnes)
1,826	4,404	Sawn timber (000m ³)
19,216	33,097	Logs (000m ³)
284,156	Not available	Wood chips (000BDU)

■ Quantity exported²
■ Total production



1



2

Notes

¹ Plywood includes laminated veneer lumber.

² Exports excluded re-exports.

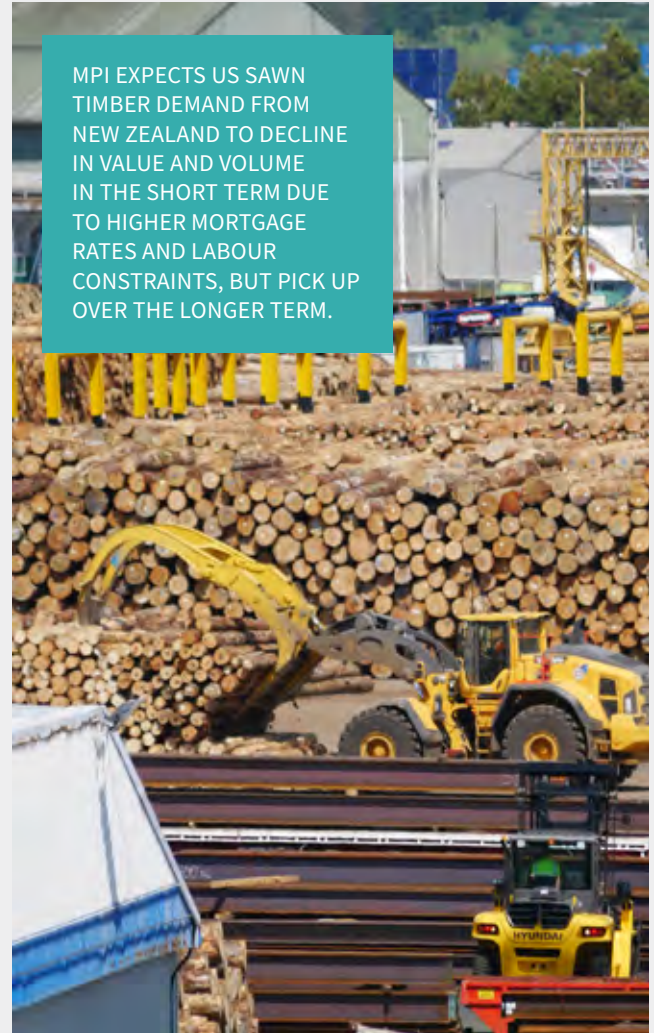
Source **Production and Exports of Selected Forestry Products** MPI, Statistics NZ and FOA
Source **Box 1 & 2** SOPI December 2018

Indonesia has become a major pulp and growing sawn timber market.

Total forest exports there grew

\$27.8 million in 2017 to

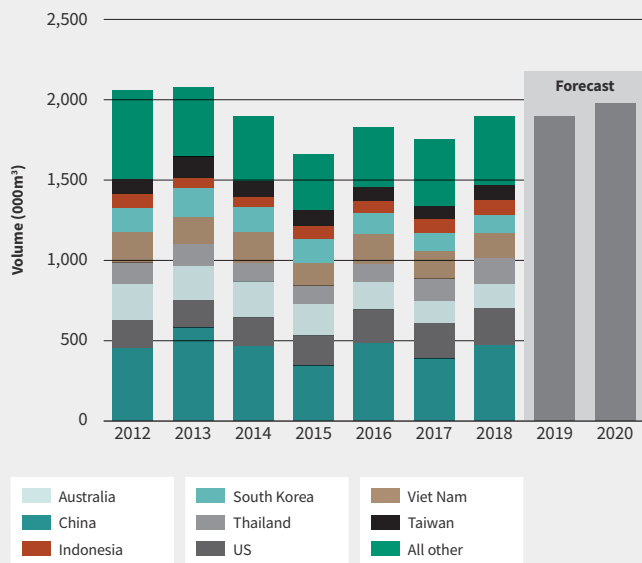
\$185 million in 2018.



MPI EXPECTS US SAWN TIMBER DEMAND FROM NEW ZEALAND TO DECLINE IN VALUE AND VOLUME IN THE SHORT TERM DUE TO HIGHER MORTGAGE RATES AND LABOUR CONSTRAINTS, BUT PICK UP OVER THE LONGER TERM.

Source **Box 1** SOPI June 2018

Sawn Timber Export Volume by Destination 2012-20



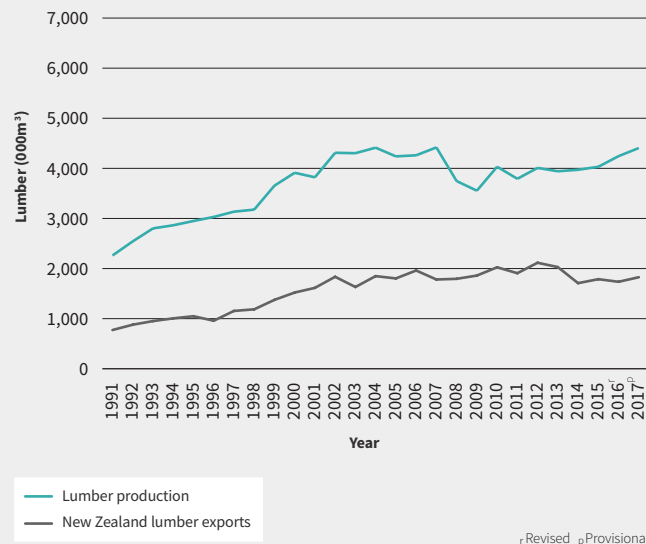
Forestry export revenue, 2016-20 (\$NZ million)

Year to 30 June	Actual			Forecast	
	2016	2017	2018	2019	2020
Logs	2,224	2,687	3,349	3,210	3,310
Sawn timber & sleepers	860	830	891	890	930
Pulp	687	655	833	950	900
Paper & paperboard	518	484	485	500	500
Panels	512	476	500	500	520
Chips	64	59	60	60	60
Other forest products ¹	275	290	281	260	260
Total	5,140	5,482	6,400	6,380	6,480
Y/Y % change	+9.8%	+6.7%	+16.7%	-0.3%	+1.6%

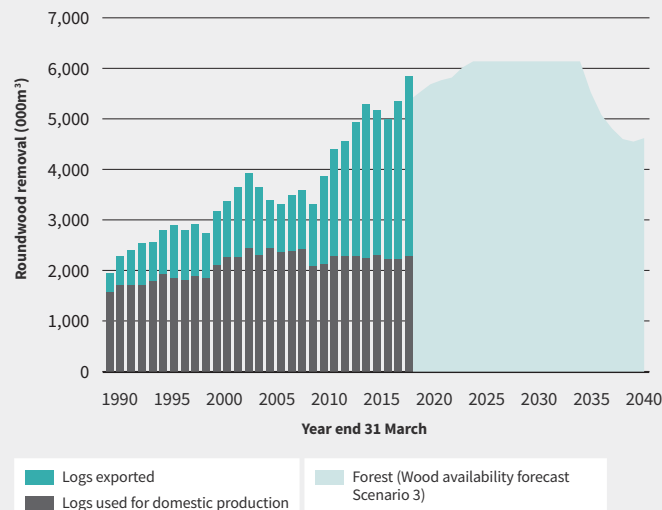
Notes
¹ Other forest products include: structural or moulded wood, furniture and prefabricated buildings
Source SOPI September March 2018

Lumber and Log Production and Exports

Lumber Production and New Zealand Lumber Exports



Volume of logs used in domestic processing versus exported 1990-2040



Source Lumber Production and New Zealand Lumber Exports MPI
Source Volume of logs used in domestic processing versus exported 1990-2040 SOPI March 2018

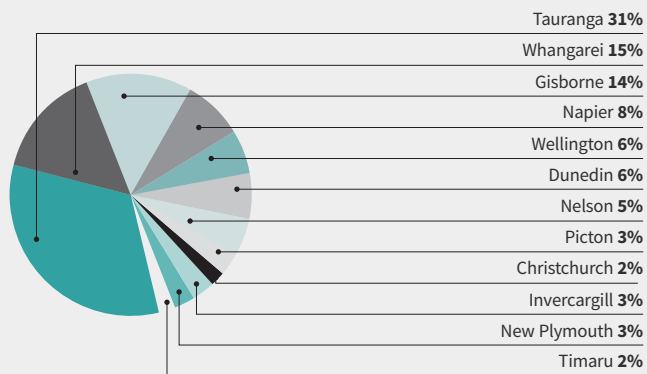
Log Exports by Port

For Year Ended 31 Dec 2017

Log Export Quantity and Export Value by Port¹

Port of Loading	Export Quantity (m ³)	Export value (\$NZ)
Auckland	27,862	5,799,469
Christchurch	439,914	69,428,898
Dunedin	1,065,921	167,752,421
Gisborne	2,670,551	439,318,890
Invercargill	626,945	91,574,625
Napier	1,610,623	257,565,998
New Plymouth	611,534	104,292,081
Nelson	1,013,931	156,920,884
Picton	649,817	91,584,088
Timaru	460,144	71,482,095
Tauranga	5,999,080	968,919,331
Wellington	1,161,023	187,836,436
Whangarei	2,878,710	446,262,673
Total	19,216,054	3,058,737,889

Logs Percentage Export Quantity by Port



Notes

¹ Ports with <1% not included.

Source Log Exports by Port and Sawn Timber Exports by Port MPI

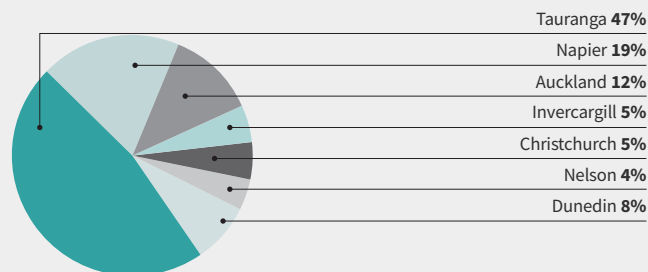
Sawn Timber Export by Port

For Year Ended 31 Dec 2017

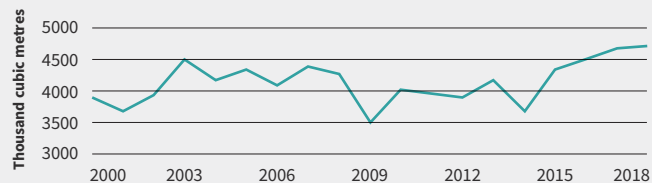
Sawn Timber Export Quantity and Export Value by Port

Port of Loading	Export Quantity (m ³)	Export value (\$NZ)
Auckland	215,910	115,488,273
Christchurch	84,685	38,422,607
Dunedin	151,316	50,900,877
Gisborne	584	127,287
Invercargill	84,154	31,485,609
Napier	343,163	138,453,866
New Plymouth		
Nelson	77,330	33,311,122
Picton	2,032	418,476
Timaru	704	449,818
Tauranga	853,300	449,195,154
Wellington	337	459,462
Whangarei	12,816	4,388,072
Total	1,826,331	863,100,623

Sawn Timber Percentage Export Quantity by Port

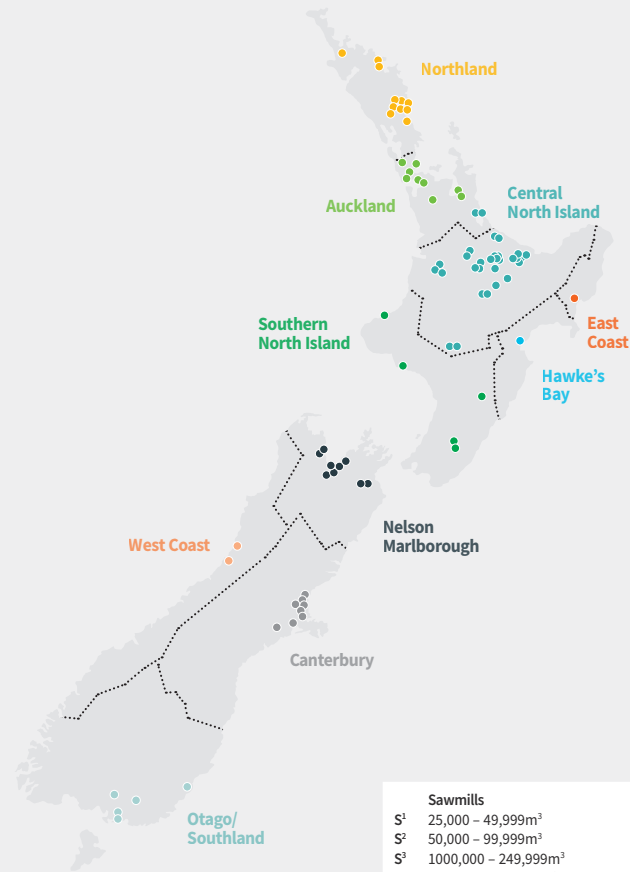


Sawn timber production to June 2000-18



Source Sawn timber production to June 2000-18 SOPI December 2018

Forest Products Industry Map 2018



Sawmills	
S ¹	25,000 – 49,999m ³
S ²	50,000 – 99,999m ³
S ³	100,000 – 249,999m ³
S ⁴	250,000 – 499,999m ³
S ⁵	>500,000m ³

Processing Plants	
F	Fibreboard (MDF & Hardboard)
P	Particleboard (Incl Strandboard)
PL	Plywood
PP	Pulp and Paper
V	Veneer/LVL/CLT
PTP	Paper/Tissue/Paperboard
CEF	Chip Export Facilities ¹
MW	Manufactured Wood Products ²

Notes
¹ >50,000 BDU per annum.
² >20,000m³ production per annum.

Source Forest Products Industry Map Australia & New Zealand Forest Products Industry Map 2018

Northland

Juken New Zealand Ltd Triboard Mill, Kaitaia	F
Juken New Zealand Ltd Northland Mill, Kaitaia	V
Waipapa Pine Limited, Kerikeri	S ¹
Mount Pokaka Timber Products Ltd, Kerikeri	S ¹
Rosvall Sawmill Ltd, Whangarei	S ¹
CHH Woodproducts NZ LVL, Marsden Point	V
CHH Woodproducts NZ Sawmill, Whangarei	S ⁴
North Sawm Lumber Ltd, Ruakaka	MW
Marusumi Whangarei Co Ltd, Marsden Point	CEF
BBS Timbers Ltd, Whangarei	MW
Kiwi Timber Protection Ltd, Whangarei	MW
North Pine Ltd, Waipu	S ¹

Auckland

Herman Pacific Ltd, Silverdale	MW
JSC Timber, Kumeu	MW
Anderson & O'Leary Ltd, Whenuapai	S ¹
Claymark Ltd, Henderson	MW
Timberlab Solutions Ltd, Auckland	MW
Oji Fibre Solutions, Penrose	PTP
Max Birt Sawmills Ltd, Pokeno	S ³
Claymark Ltd, Thames	S ²
Oji Fibre Solutions, Kopu	P

Central North Island

Claymark Ltd, Katikati	S ²
Claymark Ltd, Katikati	MW
Pure Pine Mouldings, Te Puke	MW
Pukepine Sawmills (1998) Ltd, Te Puke	S ²
Kiwi Lumber (Putaruru) Ltd, Putaruru	S ¹
Pacific Pine Industries Ltd, Putaruru	S ¹
CHH Woodproducts NZ Plywood, Kinleith	PL
Alkieman Custom Jointing Ltd, Tokoroa	MW
Oji Fibre Solutions, Kinleith	PP
Claymark Ltd, Rotorua	S ²
Claymark Ltd, Rotorua	MW
Claymark Profiles, Rotorua	MW
McAlpines Rotorua Ltd, Rotorua	S ¹
Hume Pine NZ Ltd, Rotorua	MW
Red Stag Timber, Waipa	S ²
Red Stag Timber, Waipa	MW
CHH Woodproducts NZ Sawmill, Kawerau	S ⁴
Sequal Lumber, Kawerau	S ¹
Asaleo Care, Kawerau	PTP
Oji Fibre Solutions, Kawerau	PP
Norske Skog Tasmin Ltd, Kawerau	PP
Whakatane Mill Ltd, Whakatane	PTP
KLC Ltd, Kaingaroa	MW
Donelley Sawmillers Ltd, Reporoa	S ¹
Laminex NZ, Taupo	P
Tenon Clearwood, Taupo	S ¹
Tenon Clearwood, Taupo	MW
OTC Timber Co Ltd, Otorohanga	MW
Waitete Sawmills Ltd, Te Kuiti	S ¹
R.H. Tregoweth Ltd, Te Kuiti	S ¹
WPI Tangiwai Sawmill, Ohakune	S ¹
WPI Karioi Pulpmill, Ohakune	PP

East Coast

Juken New Zealand Ltd Gisborne Mill, Gisborne	S ¹
Juken New Zealand Ltd Gisborne Mill, Gisborne	V

Hawke's Bay

Pan Pac Forest Products Ltd, Napier	S ¹
Pan Pac Forest Products Ltd, Napier	PP

Southern North Island

Taranakipine, New Plymouth	S ²
Taranakipine, New Plymouth	MW
Waverley Sawmills Ltd, Waverley	S ¹
Kiwi Lumber (Dannevirke) Ltd, Dannevirke	S ¹
Juken New Zealand Ltd, Wairarapa Mill	S ¹
Juken New Zealand Ltd, Wairarapa Mill	V
Juken New Zealand Ltd, Wairarapa Mill	MW
Kiwi Lumber (Masterton) Ltd, Masterton	S ²

Nelson Marlborough

Timberlink New Zealand Ltd, Blenheim	S ²
Timberlink New Zealand Ltd, Blenheim	MW
Nelson Forests Ltd, Kaituna Sawmill, Renwick	S ²
XLam NZ Ltd, Nelson	V
Eurocell Woodproducts, Nelson	S ²
Eurocell Woodproducts, Nelson	MW
Nelson Pine Industries Ltd, Richmond	V
Nelson Pine Industries Ltd, Richmond	F
Southpine (Nelson) Ltd, Nelson	S ²
CHH Woodproducts NZ Sawmill, Nelson	MW
MLC Group, Motueka	MW
Prowood Ltd, Motueka	MW

West Coast

International Panel & Lumber (West Coast) Ltd, Greymouth	PL
Westco Lumber Ltd, Hokitika	S ¹

Canterbury

Daiken NZ Ltd, Rangiora	F
McAlpines Timber Ltd, Rangiora	S ¹
Stoneyhurst Timbers Ltd, Belfast	S ¹
Belfast Timber Processing Ltd, Belfast	MW
McVicar Timber Group Ltd, Christchurch	MW
Southern Pine Products Ltd, Christchurch	S ¹
SRS New Zealand Ltd, Rolleston	S ¹
Niagara, Ashburton	MW

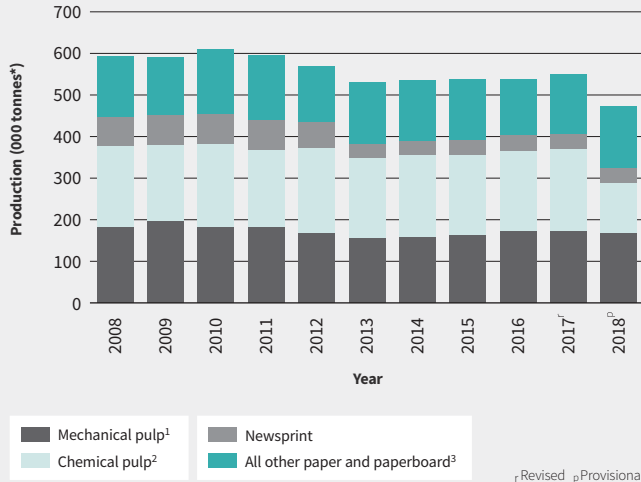
Otago/Southland

Pan Pac Forest Products (Otago) Ltd, Milburn	S ¹
Dongwha New Zealand, Mataura	F
Niagara Sawmilling Co. Ltd, Invercargill	MW
Niagara Sawmilling Co. Ltd, Invercargill	MW
Southwood Export Ltd, Awarua	CEF
Craigpine Timber Ltd, Winton	S ¹

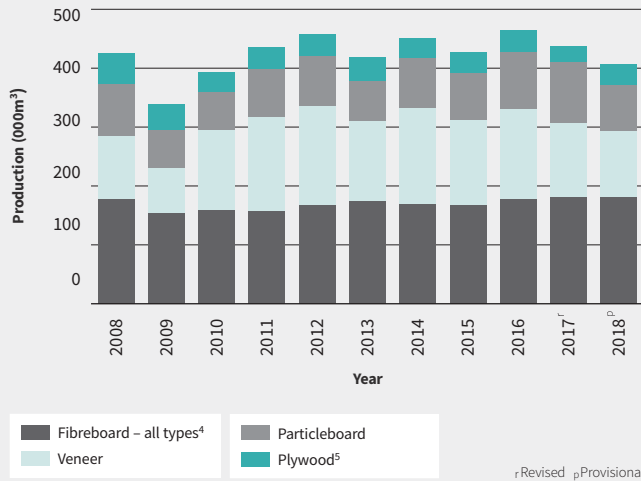
Paper, Pulp and Panel Products Production

for Year Ended 31 Dec 2017

Paper and Pulp Production



Panel Products Production



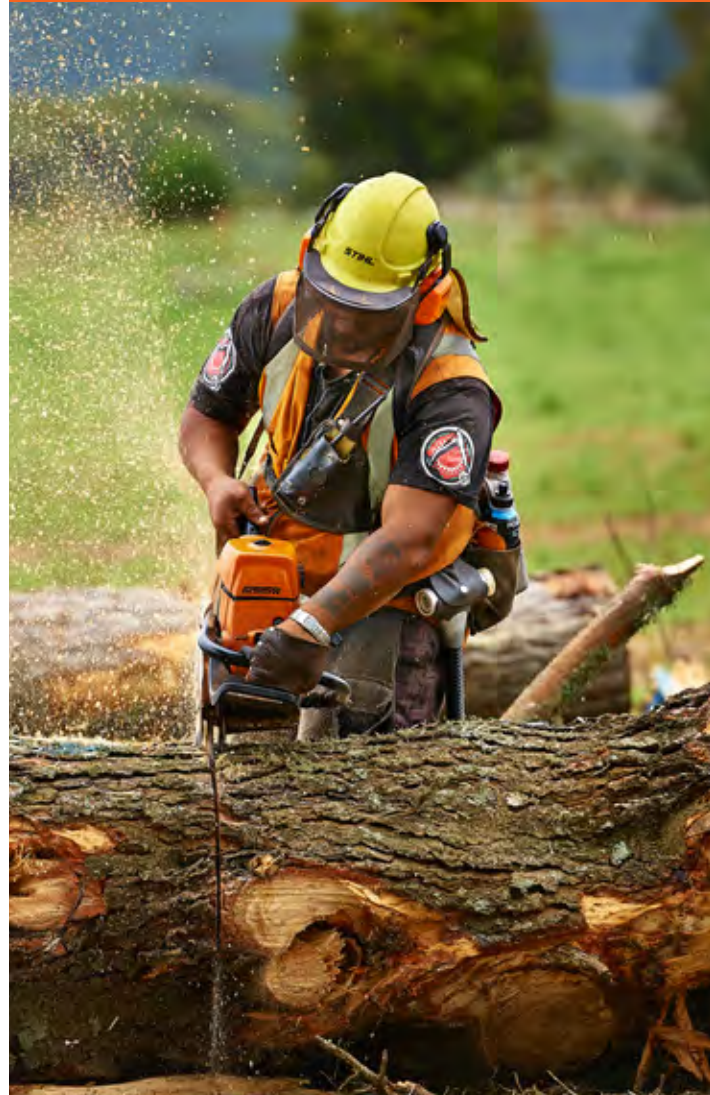
Notes

- ¹ Mechanical Pulp is those export items in HS item grouping 4701.
- ² Chemical Pulp is those export items in HS groupings 4702, 4703, 4704 and 4705.
- ³ All other paper and paperboard includes printing and writing paper, other paper and paperboard.
- ⁴ Fibreboard includes MDF, hardboard & softboard.
- ⁵ Plywood includes laminated veneer lumber.

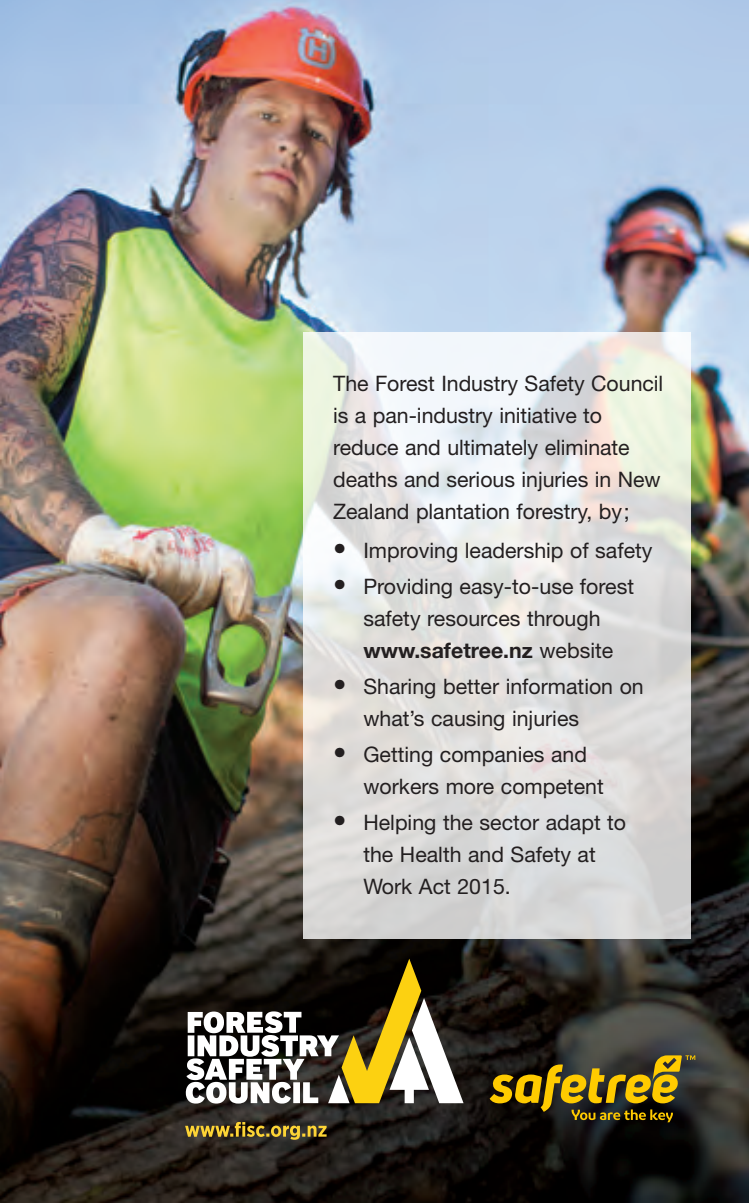
Source Paper, Pulp and Panel Products Production MPI

SECTION 4

Health and Safety and Training



TOGETHER TOWARDS ZERO



The Forest Industry Safety Council is a pan-industry initiative to reduce and ultimately eliminate deaths and serious injuries in New Zealand plantation forestry, by;

- Improving leadership of safety
- Providing easy-to-use forest safety resources through www.safetree.nz website
- Sharing better information on what's causing injuries
- Getting companies and workers more competent
- Helping the sector adapt to the Health and Safety at Work Act 2015.

FOREST
INDUSTRY
SAFETY
COUNCIL

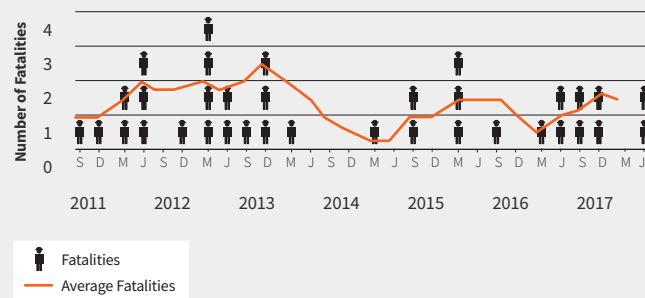


safetree[™]
You are the key

www.fisc.org.nz

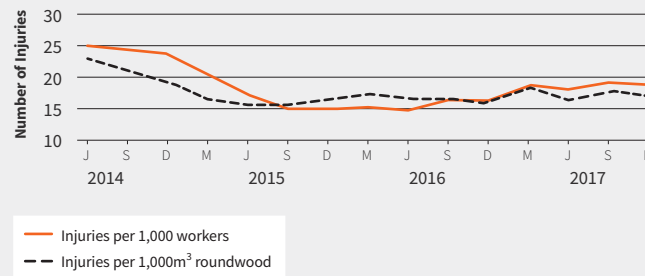
Health and Safety in the Forest Industry

Fatalities¹



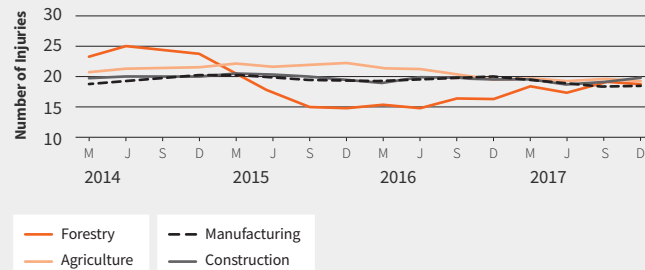
Severe Injuries¹

Rate of injuries to workers resulting in more than a week off work



How Do We Compare?²

Rate of injuries to workers resulting in more than a week off work



Notes

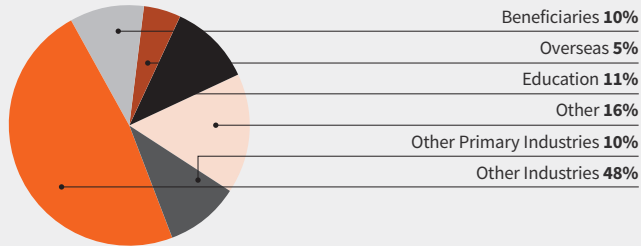
¹ Rolling average last four quarters.

² Rolling average last four quarters per 1,000 workers.

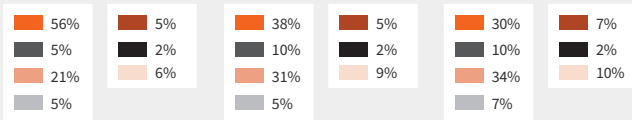
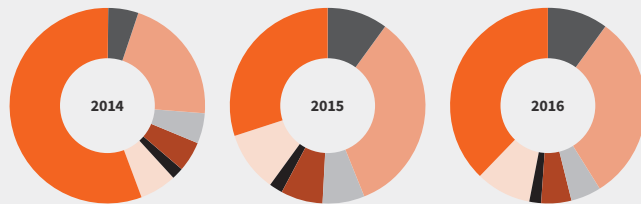
Source Fatalities, Severe Injuries & How do we Compare WorkSafe/MPI/FISC. Injury data is based on ACC claims where someone receives a period of weekly compensation within a quarter. Severe injury data lags by 6 months due to claim processing time.

Forestry New Entrant Snapshot

Where did they come from (2013)?



Where did they go to (2013-2016)?



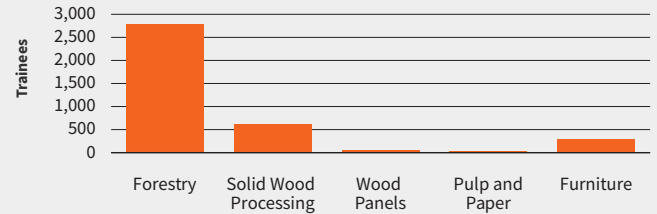
Key

- Stayed in Forestry
- Other Primary Industries
- Other Industries
- Beneficiaries
- Overseas
- Education
- Other

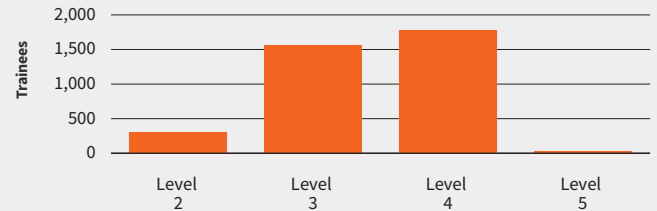
Source Forestry New Entrant Snapshot MPI

Industry Training 2017

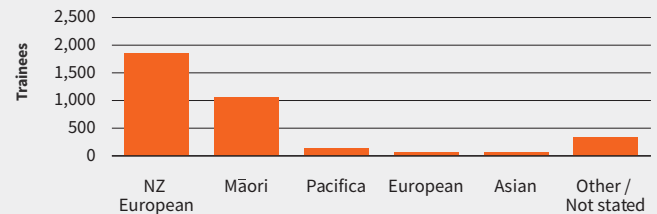
Trainee Count



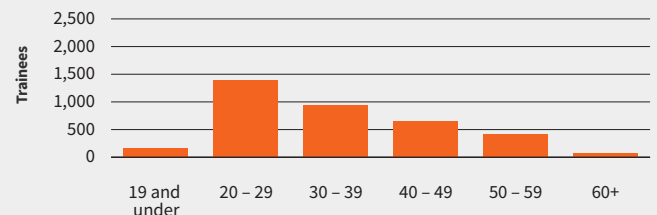
Trainee by Qualification Level



Trainees by Ethnicity



Trainees by Age



Source Industry Training 2017 MPI

SECTION 5

Supplementary Information

New forestry apprenticeships

- » Choose Manual Operations or Mechanised Processing
- » Flexible programmes to suit your business
- » Two years “fees free” for eligible learners
- » Training complete in 2-3 years
- » Designed by industry, for industry.

Talk to us today about your training needs.

0800 526 1800
competenz.org.nz

Competenz 
Grow your people



NZ Wood



Wood is the world's most renewable raw material. For this reason forests and the wood they provide are vital in the fight against climate change. As the effects of global warming impact on our environment, the use of renewable and sustainable building materials has never been so important. The stages of the wood story – planting and renewal, growth, harvesting and use – are part of a renewable cycle that takes and stores carbon dioxide from the atmosphere, making wood a better-than-carbon-neutral building material.

Wood is the only construction material which has absorbed CO₂ from the atmosphere when produced, not emitted more

During its production, one tonne of:

- Concrete – has released 159 kilos of CO₂ into the atmosphere
- Steel – has released 1.24 tonnes of CO₂ into the atmosphere
- Aluminium – has released 9.3 tonnes of CO₂ into the atmosphere

Wood, however, has absorbed a net 1.7 tonnes of CO₂ from the atmosphere, over and above the energy expended in growing, harvesting and processing.

The more timber you use in a house, the more CO₂ you remove from the atmosphere

- It takes around 20 trees to build an average house frame
- A steel house frame has added 4.5 tonnes of CO₂ to the atmosphere
- A wooden house frame has absorbed 9.5 tonnes of CO₂ from the atmosphere
- Choosing timber options for an average house can take around 20 tonnes net of CO₂ out of the atmosphere (saving the equivalent of 150 trips Auckland to Wellington, or 7.1 years of car use)
- Using alternative materials (concrete, steel, brick and aluminium) can add 24 tonnes net CO₂ to the atmosphere (costing the equivalent of 180 trips Auckland to Wellington, or 8.6 years of car use).

Using wood is something we can all do to help the environment. By demanding and using more sustainably produced wood, we can ensure that more trees will be planted and more carbon dioxide will be absorbed from the atmosphere.

The result is a better world for ourselves, our families and future generations. It's simple.

Wood. Our most renewable raw material.
www.nzwood.co.nz

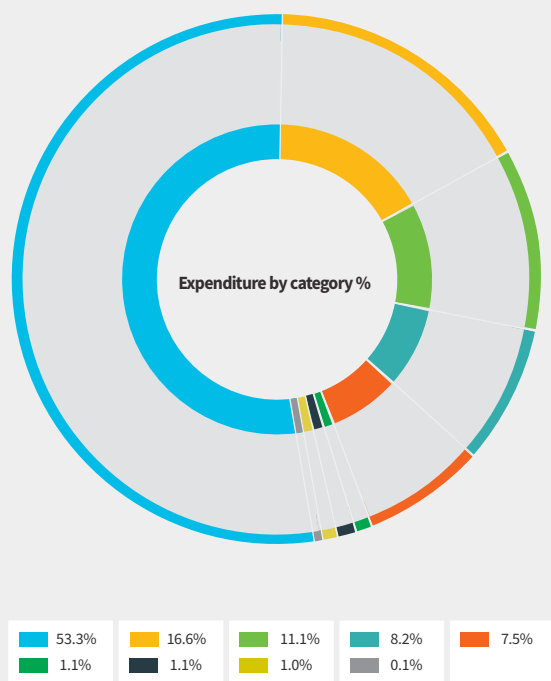
Forest Growers Levy Trust



The Harvested Wood Material Levy came into effect on 1 January 2014 with a rate of 27 cents per tonne. The levy generated in the 12 months to 1 December 2018 was \$9,567,827. The proceeds from the levy are overseen by the Forest Growers Levy Trust which has contracted the Forest Owners and Farm Forestry Associations to manage the annual work programme. The annual work programme consists of research and work which will benefit the industry as a whole. More information, including the 2017 Annual Report, can be found at www.fgl.org.nz.



How the FGL is Invested¹



Notes

¹ The Harvested Wood Material Levy came into effect in January 2014 with a rate of 27c per tonne. The levy runs until late 2019. More information is available at www.fglt.org.nz

Source How the FGL is Invested Forest Growers Levy Trust Annual Report 2017

Research, Science and Technology

The large research programme is focussed on improving the profitability and sustainability of forest growers large and small. It covers research on raising the productivity of Radiata pine through better site and stand management, understanding and responding to needle diseases such as red needle cast (RNC), developing technologies to battle insect and pest incursions in urban areas and finding longer term solutions to the wilding conifer problem in parts of New Zealand. Licence to operate issues were addressed with projects to identify the sources of sedimentation and the effectiveness of riparian margins. The programme also has a focus on other commercial species to give land owners greater confidence to grow these species. Reducing the cost and improving the safety of harvesting on steep land continued during the year along with a big effort to further develop remote sensing technologies such as LIDAR to improve forest management.

Operational Costs (incl. Administration)

Represent levy collection and database maintenance costs, business compliance costs and all direct costs associated with supporting FGLT Secretariat and the planning, management and delivery of the annual Work Programme.

Forest Health and Biosecurity

Forest biosecurity surveillance of high risk sites and administration costs for drafting an Operational Agreement with MPI, and work with other sectors on a Nursery Biosecurity Scheme. Recent initiatives include contributions to an app-based general surveillance tool and our application for forest nurseries to come under the forest growing sector for Government Industry Agreement (GIA).

Health and Safety

This is the joint industry contribution to major health, safety and training issues identified by the Forest Industry Safety Council. Major initiatives include certification for high risk tasks, contractor certification and the Safety Culture programme. Includes publication of the Best Practice Guides for Treefelling and Breaking out, and input to the A/NZ Standard on Oral Fluid testing.

Promotion

NZ Wood/Love our Forests in magazines and on radio, publications, external memberships, sponsorships, career promotion. Hosting site at National Fielddays. Production of Facts & Figures. Assistance in production of Forest Policy. Commission and launch of NZIER Report into Forest Industry Statistics.

Fire

Comprises a contribution to the Fire and Emergency New Zealand national fire prevention campaign, development of a set of Fire Management Guidelines for forest owners and funding assistance for the Scion Rural Fire Hazard programme.

Forest Resources and Environment

Developing policies on forest growing and environment issues, including forest certification, climate change, water allocation and the Resource Management Act. Projects include developing guidance on bats and lizards in plantation forests and drafting a range of environmental sheets.

Transportation

An annual contribution to the pan-industry Log Truck Safety Council, research into the effect of electronic road user charges and the Road Safety in Schools (Share the Roads) programme. The individual projects into GIS mapping, Options for Roading report, and Guidelines for equitable road funding have been combined into a single Rural Roads Programme – a tool for forest owners and councils to determine options for public road requirements at harvest time.

Small and Medium Forest Enterprises

This is a forum for owners and managers of small to medium sized forests. It includes communication activities such as field days, publications, website, workshops and newsletters. A project to make information more accessible for small and medium woodlot owners was also substantially completed in 2017.

NZ Forest Owners Strategic Plan

The Strategic Action Plan provides a pathway to shape a strong forest and wood products sector for the future.

The New Zealand plantation forest and wood products industry is based on wholly renewable resources, producing 100% of its products from plantation forests and recycled waste fibre; is New Zealand's largest biomaterial recycler and has a very low carbon footprint. In the future it will be substantially independent of non-renewable energy inputs apart from transport fuel (and even this could be sourced from New Zealand wood in the long run). The industry already provides greenhouse gas offsets, reducing New Zealand's overall carbon footprint.

Vision for the Plan

The vision target is that in the ten years to 2022 annual export earnings will more than double to \$12 billion from a New Zealand forest and wood products industry that is:

- delivering innovative wood-based solutions from a sustainable resource to meet our customers' needs
- manufacturing a range of high-value, fibre-based products, including new biochemical and biofuel value streams
- recognised as a world-leader in timber-engineered building solutions
- underpinned by forest growing as a valued and profitable land use
- recognised as a key New Zealand growth industry, delivering strong economic and environmental benefits
- connected and collaborative across the value chain, from end-product to seedling
- characterised by industry players that have pride in the wood products industry, with the sector regarded as a preferred career option for our brightest talent

Sector Agreements

Plantation Forestry Rural Fire Control Charter 2017

FOA and FFA signed a charter with Fire and Emergency New Zealand for the integration period as Fire and Emergency moves to become a fully unified, national organisation.

Forest Government Industry Agreement for Biosecurity 2015

The FOA has signed a Government Industry Agreement to protect New Zealand forests from introduced pests, weeds and diseases through sharing of costs and decision making. The Forest Biosecurity Surveillance programme began on 1 July 2016, covering all commercial plantations. PineNet is a forest industry network to respond to a major incursion.

Forest Industry Safety Council 2015

The FOA is participating in FISC as the pan-industry initiative. FISC has an independent cross sector board. FISC's mission is to reduce the rate of serious injury and fatalities in plantation forests, with an ultimate goal of eliminating them.

Log Transport Safety Accord 2008

An agreement between FOA/FFA, the Road Transport Forum New Zealand and the Log Transport Safety Council to reduce the incidence of log truck accidents on roads.

Eliminating Illegal Forest Products 2008

The FOA, WPMA and Pine Manufacturers Association join NGOs in calling on the New Zealand government, importers, processors, retailers, New Zealand forest and plantation managers and processors of forest and plantation products, to strongly oppose the importation and use of illegally harvested and traded forest products in New Zealand.

New Zealand Climate Change Accord 2007

An agreement between FOA/FFA, the Timber Design Society and eight NGOs acknowledging the contribution of indigenous and plantation forests to mitigate climate change, which also provides a renewable, reusable and recyclable resource.

The Accord endorses the principle of polluter pays to cover all greenhouse gases with all sectors taking responsibility and with time bound targets.

New Zealand Forest Accord 1991 and 2007

The Forest Accord is between forest and timber groups and 10 NGOs to agree on; defining areas unsuitable for forestry, maintaining existing natural forest, recognition of commercial forestry as essential, indigenous forest extraction only on a sustainable basis and new forests not disturbing natural indigenous vegetation.

New Zealand's Greenhouse Gas Inventory

The Carbon Cycle

Planting trees begins a cycle that continuously removes, releases and re-absorbs greenhouse gases such as carbon dioxide. As trees grow, they absorb carbon dioxide through the process of photosynthesis.

The carbon dioxide absorbed by the growing forest remains stored within the wood products used throughout the lifetime of the building structure or product.

When a structure or product reaches the end of its lifetime, the carbon dioxide is released back into the atmosphere as the wood decays or is burnt as fuel.

Wood can be recycled to extend its lifetime and slow down the natural release of carbon dioxide back into the atmosphere. Once the carbon dioxide is released, it is available to be re-absorbed by growing trees.

New Zealand's Greenhouse Gas Inventory - Key Points

In 2016, New Zealand's total gross emissions were 78.7 million tonnes of carbon dioxide (Mt CO₂-e). In 1990, gross emissions were 65.8 Mt CO₂-e.

In 2016, 22.8 Mt CO₂-e was removed from the atmosphere by the forestry sector, compared with 29.5 Mt CO₂-e in 1990. Forestry sector removals in 2016 reduced total gross emissions to 56.0Mt CO₂-e net.

Agriculture continued to be the largest contributor to New Zealand's Greenhouse Gas Emissions, with 49.2% of the total at 38.7 Mt CO₂-e, compared with energy at 39.8%.

New Zealand contributes approximately 0.17%, [Verified from Our atmosphere and climate 2017 report] of global emissions, at 16.6 tonnes CO₂-e per person gross.

Total CH₄ and N₂O emissions in 2016 attributable to dairy cattle, beef cattle, sheep and deer¹

	Total emissions (million tonnes CO ₂ -e)	2016 Population (millions)	Emissions per animal (tonnes CO ₂ -3)
Sheep	10.47	27.58	0.38
Deer	0.58	0.83	0.69
Beef	6.43	3.53	1.82
Dairy	18.02	6.62	2.72

Notes

¹ Based on figures from the Agricultural Inventory Model, used in New Zealand's Greenhouse Gas Inventory 1990-2015 report published by MfE

All figures expressed in megatonnes of carbon dioxide equivalent (kt CO₂-e)

* Square metres of new 20 year old plantation required every year, at 20 years of age, to offset biological emissions of each animal.

Forests Removing Carbon

How is carbon removed from the atmosphere by New Zealand's forests?

Forests act as carbon sinks – a type of reservoir that removes and stores more carbon from the atmosphere than it releases. Trees use carbon dioxide (CO₂) as part of their 'breathing' cycle – taking in CO₂ and storing it within roots, trunks and branches – and releasing oxygen.

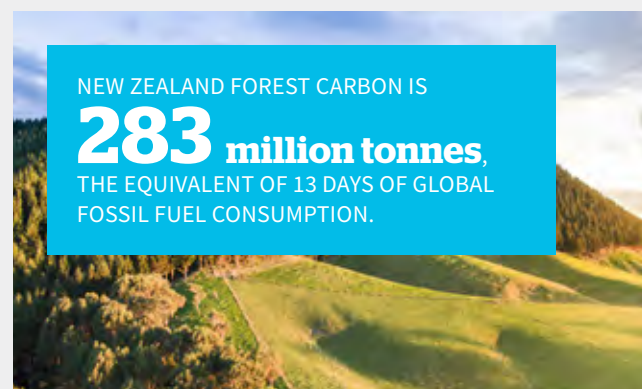
The amount of CO₂ a forest removes depends on the species grown and place in its growing cycle. A young forest will remove smaller amounts of CO₂ until the trees establish and enter a growing phase – this is when forests will remove the most carbon. As a forest ages and its growing process slows, it will revert to absorbing less carbon again.

At harvesting, the forest ceases to be a carbon sink but instead of releasing all the carbon it has stored, the harvested wood retains some of it. All wood products store carbon that will eventually be released, however the rate at which that carbon is released depends on the type of product and the type of treatment the wood has undergone. Studies are still being conducted into these release rates.

The amount of carbon removed by New Zealand's forests is therefore dependent on the coverage of forestland, the age and species of the trees and the rate of harvest. Exotic forest biomass carbon was 283 million tonnes in 2015. This was an increase of 150 million tonnes, or 114 percent, since 1990.

If carbon in the exotic forest soil is included, the total forest biomass carbon volume increased to 451 million tonnes in the same period, an increase of 189 million tonnes, or 72 percent.

A large proportion of the exotic forest estate is nearing maturity, and once harvested, the biomass stocks will temporarily reduce.



Source 1990 to 2015 National Greenhouse Gas Inventory

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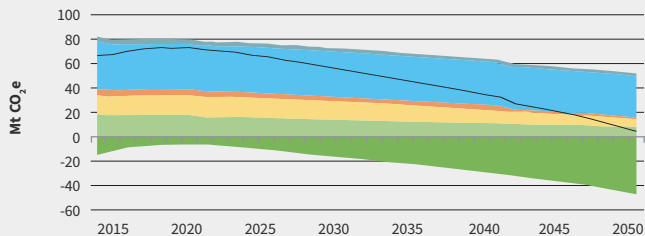
Forestry the solution in Carbon Zero pathways

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

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

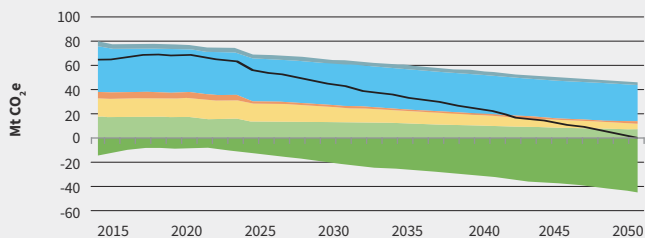
Policy Driven

2.8 m ha new forest (1.9 m ha exotic, 0.9 m ha indigenous)
45 MtCO₂e forest carbon sequestration



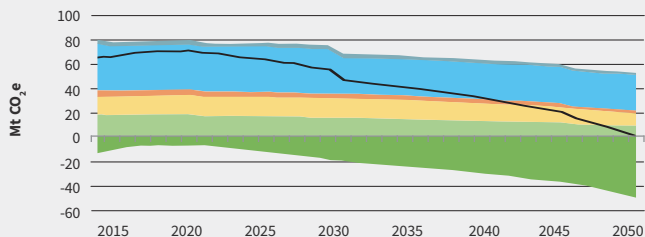
Disruptive Decarbonisation

2.1 m ha of new forest
45 MtCO₂e forest carbon sequestration



Stabilising Decarbonisation

2.3 m ha new forest
50 MtCO₂e forest carbon sequestration



Terms, Names and Sites

Area and volume

- An average *Pinus radiata* tree yields 2.4 m³ of wood at harvest.
- 1 hectare of 28 year-old *Pinus radiata* contains between 650 and 800 m³ of wood.
- 1 hectare grows up to 28 m³ of wood each year.
- A log truck and trailer carries approximately 30 tonnes of logs.
- A log ship contains approximately 30-35,000 tonnes of logs.

Abbreviations

FAO	Food & Agriculture Organization of the United Nations
FFA	New Zealand Farm Forestry Association
FGLT	Forest Growers Levy Trust
FIEA	Forest Industry Engineering Association
FISC	Forest Industry Safety Council
FOA	New Zealand Forest Owners Association
FSC	Forest Stewardship Council
MfE	Ministry for the Environment
MPI	Ministry for Primary Industries
NEFD	National Exotic Forest Description
NZIER	New Zealand Institute of Economic Research
PEFC	Programme for the Endorsement of Forest Certification
SOPI	Situation and Outlook for Primary Industries
Stats NZ	Statistics New Zealand
WPMA	Wood Processors and Manufacturers Association

2016/17 Facts & Figures organisation sites

Competenz	www.competenz.org.nz
FAO	www.fao.org/forestry
FFA	www.nzffa.org.nz
FGLT	www.fglt.org.nz
FIEA	www.fiea.org.nz
FISC	www.safetree.nz
FOA	www.nzfoa.org.nz
FSC	www.nz.fsc.org/en-nz
MfE	www.mfe.govt.nz
MPI	www.mpi.govt.nz
NZIER	www.nzier.org.nz
NZFOA	www.nzfoa.org.nz
NZ Forests Portal	www.nzplantedforests.org
PEFC	www.pefc.org
Scion	www.scionresearch.com
Statistics NZ	www.stats.govt.nz
WPMA	www.wpma.org.nz
WorkSafe NZ	www.business.govt.nz/worksafe

Log Pricing Data

Log Type, Pricing Point and Market	Jun-12 Quarter	Sep-12 Quarter	Dec-12 Quarter	Mar-13 Quarter	Jun-13 Quarter	Sep-13 Quarter	Dec-13 Quarter	Mar-14 Quarter	Jun-14 Quarter	Sep-14 Quarter	Dec-14 Quarter	Mar-15 Quarter	Jun-15 Quarter	Sep-15 Quarter	Dec-15 Quarter	Mar-16 Quarter	Jun-16 Quarter	Sep-16 Quarter	Dec-16 Quarter	Mar-17 Quarter	Jun-17 ¹ Quarter	Sep-17 ¹ Quarter	Dec-17 ¹ Quarter	Mar-18 ^P Quarter
EXPORT (NZ\$ per JAS m ³ f.o.b)																								
Pruned – Japan, Korea	154-163	153-166	144-190	168-192	169-209	177-201	181-206	171-198	158-190	146-187	165-236	186-199	121-199	189-211	121-228	220-230	204-236	184-207	180-225	185-214	152-213	177-217	184-222	176-222
A Grade – Japan	110-122	116-118	103-125	128-138	136-153	143-162	137-169	142-165	104-142	110-140	127-169	134-150	81-133	90-133	81-141	118-166	146-169	138-162	138-162	150-180	145-182	151-180	144-168	147-172
J Grade – Japan	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
K Grade – Korea	104-116	103-110	90-121	112-131	114-147	132-156	127-159	133-159	96-137	101-134	117-163	124-143	99-126	91-125	91-135	99-158	135-162	124-157	135-167	142-174	134-177	142-174	137-158	132-165
Pulp	84-111	91-120	79-102	106-108	108-123	128-131	119-154	125-140	110-122	92-108	112-135	117-121	65-107	73-110	65-118	55-138	120-143	111-134	125-140	126-149	125-153	123-166	117-148	122-150
All grades average per quarter	121	122	119	135	145	154	157	154	132	127	153	147	116	128	123	148	165	152	161	165	166	169	159	166
DOMESTIC (NZ\$ per tonne delivered at mill)																								
P1	127-170	120-136	122-149	135-150	142-158	126-157	132-156	129-155	131-155	132-154	134-154	139-164	135-170	135-174	135-174	140-187	142-195	140-193	142-186	151-189	155-191	157-193	157-195	149-199
P2	110-123	111-126	111-123	120-121	121-133	114-125	121-127	126-126	119-130	125-126	121-130	116-136	116-133	116-133	105-170	129-182	134-188	130-192	102-189	125-142	115-189	120-190	120-190	97-191
S1	95-98	95-102	95-104	97-102	103-110	102-120	102-123	98-112	101-111	103-109	98-108	108-112	100-109	100-108	96-109	102-118	104-123	105-123	105-126	114-127	115-136	116-143	116-152	124-159
S2	88-97	88-96	90-97	95-98	101-107	90-110	90-113	92-118	91-123	101-110	98-109	96-109	85-109	85-105	85-109	90-114	90-118	80-116	93-120	83-124	117-130	116-135	120-144	115-141
L1 and L2	83-92	80-89	77-96	84-100	88-105	78-111	80-113	77-123	78-78	81-87	85-103	97-139	78-95	78-94	78-109	79-130	71-132	74-130	82-138	81-126	83-145	80-130	71-143	89-137
S3 and L3	76-79	77-80	77-86	92-90	83-100	75-106	75-102	86-108	90-115	81-100	86-100	88-100	69-96	76-90	69-96	68-106	82-119	69-107	71-112	71-116	71-120	94-138	83-134	109-136
Run of bush	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Pulp	49-55	47-49	48-53	46-50	46-51	47-54	46-54	44-55	46-55	45-55	49-54	50-55	31-54	31-55	31-55	31-59	44-59	31-61	40-52	40-61	31-56	31-59	30-59	31-60
All grades average per quarter	95	93	95	97	103	101	102	104	102	101	102	103	102	102	102	110	114	111	111	111	126	136	134	134

The photo on page 46 came from Phil Taylor, Port Blakely NZ Ltd.

Notes

¹ Weighted averages have been used from June 2017. Please take care when comparing with previous quarters.

* Limited response – very small volume traded.

** Data not available.

Source Log Pricing Data MPI

Disclaimer

Every effort has been made to ensure that the statistics and information found within this publication are accurate and fair. The Forest Owners Association provides no warranty as to accuracy and shall not be liable to any person for any loss or damage for the use, directly or indirectly, of the information.



FOREST HARVESTING

High demand for forestry workers skilled in mechanised harvesting means there is plenty of opportunity to enter this profession after gaining the right training.

Toi Ohomai Institute of Technology's new programme, the New Zealand Certificate in Forest Harvesting Operations (Level 3) with a strand in Basic Machine Operations, provides a 12-week intensive training programme. You will learn how to safely operate the machinery used in forest harvesting through training on state-of-the-art forest simulators and valuable time in a real machine in a simulated work environment.

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