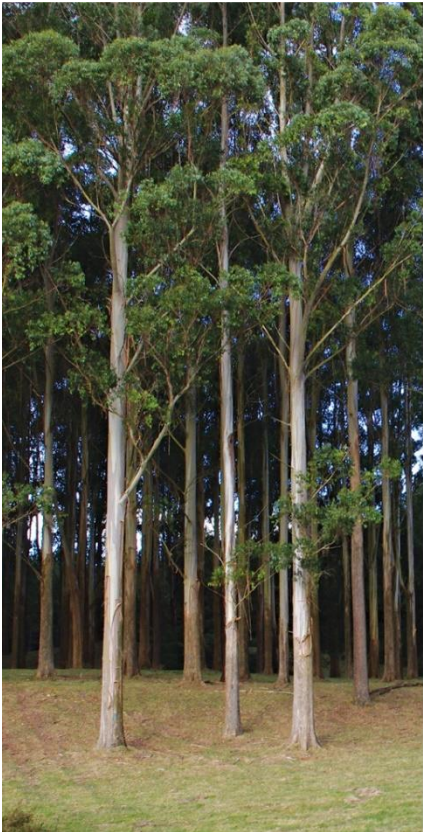


Import Substitution Project Interim report

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EXECUTIVE SUMMARY

In order to supplement New Zealand's native timber supply, exotic species were introduced throughout the late 19th and 20th centuries, to support both domestic structural and specialty purpose applications. Despite attempts to supply the domestic market with New Zealand-grown specialty purpose exotics, with the exception of radiata pine, volumes have been intermittent and instead most of the specialty timbers used in New Zealand are now from imports.

Major concerns from the New Zealand wood sector to the utilisation of imported species are threefold:

- A reliance on old-growth tropical timbers, which may not be sustainably harvested, or which may be more difficult to source in future.
- The increasing volumes of imported timbers entering the domestic market, particularly in the decking, flooring and furniture markets.
- Exported New Zealand -grown radiata being re-imported into New Zealand in the form of higher-value products.

To address these concerns, an understanding of current requirements of timber importers and timber designers (architecture and furniture) that drive the use of imported timber was made to determine:

- What is the current specialty timber resource base within New Zealand?
 - Current species in the ground and being harvested
 - Imported timbers or finished goods available for use in building projects
- What timber species are being imported, and why?
- How are architects and designers selecting timbers for projects?

Results show the key factors driving timber imports are consistent and reliable supplies, short lead times for projects, dedicated sales agents, proven or known performance of the timber for the application, and an ability to provide a range of aesthetics (stains and surface treatments).

In contrast, the barriers to using New Zealand-grown timber supplies at scale include unknown current and future wood supply, unproven or inconsistent wood quality, lack of central marketing or sales support agency, and lack of clarity on how to source (by specifiers) or supply (to end users) the timbers.

To substitute current imported species with New Zealand-grown specialty timbers will require: a) improved mapping of the New Zealand-grown resource to provide future in-ground estimates of timber availability, b) the establishment of a 'dedicated sales desk' advocating timber species and products, arranging New Zealand-grown specialty timber samples for supply chain visibility, and accessibility to local market c) a change in the way information concerning New Zealand-grown specialty timbers is presented to specifiers, and d) modification of a selection of specialty timber species to improve wood properties for use (e.g. densification, thermal modification etc.)

New Zealand-grown specialty timber supplies will need to be 'ramped up' in volume to make inroads into displacing imports, but increased supply should occur in a planned way. This could be through consolidation and co-operative venture to meet required supply for significant projects; or by selecting species with sufficient volumes and investing in modification technologies and grading to improve in-use performance and quality consistency.

INTRODUCTION

New Zealand's building materials, including exterior cladding, decking and furniture items were manufactured locally throughout much of the 20th century. In many cases timber used in these projects was sourced from indigenous tree species. However, from the late 1970s it became apparent that reduced availability of native timbers would require New Zealand-grown wood supply to be supplemented from imported species and New Zealand-grown radiata pine. In addition, from the 1981 NZFS policy "Exotic Special Purpose Species", a range of species were advocated to be grown for specialty purposes to supplement imports (Refer Table 1).

Species	Common name	Expected uses
<i>Acacia melanoxylon</i>	Australian blackwood	Furniture, veneers, turnery
<i>Cupressus lusitanica</i>	lusitanica	Weatherboards, exterior joinery, boat building
<i>C. macrocarpa</i>	macrocarpa	
<i>Eucalyptus delegatensis*</i>	delegatensis	Turnery, veneers
<i>E. fastigata*</i>	fastigata	Furniture, veneers, turnery, handles
<i>E. regnans*</i>	regnans	Furniture, veneers
<i>E. botryoides**</i>	botryoides	Furniture, handles, engineering
<i>E. saligna**</i>	saligna	Furniture, veneers, turnery, handles
<i>Juglans nigra</i>	black walnut	Furniture, veneers, turnery

Table 1: List of prioritised species for special purpose applications from 1986 FRI Bulletin 119

Source: Haslett, 1986

Despite this policy, and efforts to establish a supply of specialty purpose species, New Zealand-grown exotic specialty timbers have not made a major inroad into the specialty timber market. The dwindling supply of indigenous species has instead been largely replaced by import of high-value timbers and wood products (May, 2013).

It is important to note that to supplement native timbers used in house frames, New Zealand's exotic plantation forests specialised on volume production and tree growing efficiency from *Pinus radiata*, and to a smaller extent Douglas-fir. Between 1970 and 2000, these species were processed primarily for domestic structural use, with lower pruned logs being used for appearance grades, and the upper logs used for pulpwood. Excess timbers established an export market mostly to Korea, Japan, Australia and the US.

The current forest rotation has seen this model adjusted as the differential log price between pruned and unpruned logs has declined, and ready export markets for all log grades have become

established in Asia, most notably China. The predominant forest industry focus has therefore been on getting the commodity exotic timber markets established and thriving, with less emphasis for the development of our New Zealand-grown specialty timbers and markets. In conjunction, substitution of wood-based building products for other materials alongside more open trading conditions for secondary and tertiary processed items have led to a demise of the secondary processing and furniture manufacturing industry within New Zealand (FCANZ,2011).

Some end uses will most likely always be met by imported timbers – particularly where locally grown timbers would struggle to meet the required strength or performance grades, and where there is an established and sustainable supply of specialty wood required by the market in very small quantities (e.g. rosewood, ebony), in which case their displacement would make limited economic difference to the NZ timber sector, making the substitution effort not viable.

This project

This Import Substitution project investigates opportunities for displacement of imported timbers for locally grown and manufactured wood products, with a focus on: durable exterior products (e.g. decking and cladding); interior fitout; furniture; and miscellaneous wooden items. This study was instigated due to a rising awareness of the range and market share of imported timbers in bigbox hardware and furniture stores, including anecdotal reports of New Zealand-grown wood being imported back into New Zealand as a finished product after being processed overseas.

This report consolidates information sourced from three research strands, with the following objectives:

- What is the current specialty timber resource base within New Zealand?
 - Current species in the ground and being harvested
 - Imported timbers or finished goods available for use in building projects
- What timber species are being imported, and why?
- How are architects and designers selecting timbers for projects?

METHODS

What is the current specialty timber resource base within New Zealand?

Interviews were held with specialty sawmillers and timber wholesalers to establish current species and volumes entering the local market. In addition, Trademe's timber marketplace was consulted and discussions were held with attendees at the Farm Forestry Association annual conference.

What species are being imported, and why?

Qualitative phone interviews were conducted with nine members of the Timber Importers Association and the Imported Timber Trade Group (ITTG). These established the species mix and rough split of species being imported by each firm, along with rationale for the species mix and timber and trade qualities importers were seeking most from their suppliers. The research team visited Bunnings Tower Junction and noted every item on the shelves and yard that was predominantly timber, recording into a spreadsheet where available the manufacturer, importer, species, dimensions, price and country of origin. Websites of three major furniture bigbox stores were viewed to determine some of the key solid wood species being sold for dining, occasional tables, outdoor furniture and bedroom suites. The country of origin and any timber attributes mentioned in the sales description were also recorded into a spreadsheet.

How are architects and designers selecting timbers for projects?

Phone interviews were held with principals at three architecture studios, and a survey developed with assistance from the Warren and Mahoney Advanced Timber Unit and the Timber Design Centre. The survey was sent to project leads at Ignite and Warren and Mahoney asking for project details of projects within the past 2 years where timber was specified for fitout or aesthetic use (i.e. not internal structural members). This provided details from a total of ten recent projects.

RESULTS

NZ resource base of specialty timbers

What are we growing?

Statistics from the Wood Availability Forecast (Margules Groome, 2021) indicate the majority of “other softwoods” are being grown by small growers. Figures are similar for “other hardwoods” (Fig 1). The figures indicate a sustained yield for other softwoods of 244,000m³/yr and other hardwoods of 192,000m³/yr.

The National Exotic Forest Description (NEFD) does not distinguish well between the wide range of species that are being grown. Most of the alternative plantings to radiata pine are at very small scales, and as the NEFD itself notes the reliability and comprehensiveness of this data is uncertain. While the forecast does allow national-level wood availability for radiata, Douglas fir, cypress and eucalyptus, all regional-level planting levels do not have species-level forecasts, only radiata pine scenarios.

Harvest data at species level

There are some high-level statistical figures available that speak to species-level harvesting within New Zealand. The official data from the MPI website (Table 2) provides harvested areas by species, however minor species are not distinguishable, being grouped as “other”.

Species (ha)	2018	2019	2020	Grand Total
Cypress species	68	39	30	137
Douglas-fir	1,430	1,451	1,007	3,888
Eucalypt	784	1,002	968	2,754
Other hardwoods	18	184	9	211
Other softwoods	578	337	151	1,066
Radiata pine	44,017	38,409	31,088	113,514
Grand Total	46,895	41,422	33,253	121,570

Table 2: Harvest levels of various species grown in New Zealand

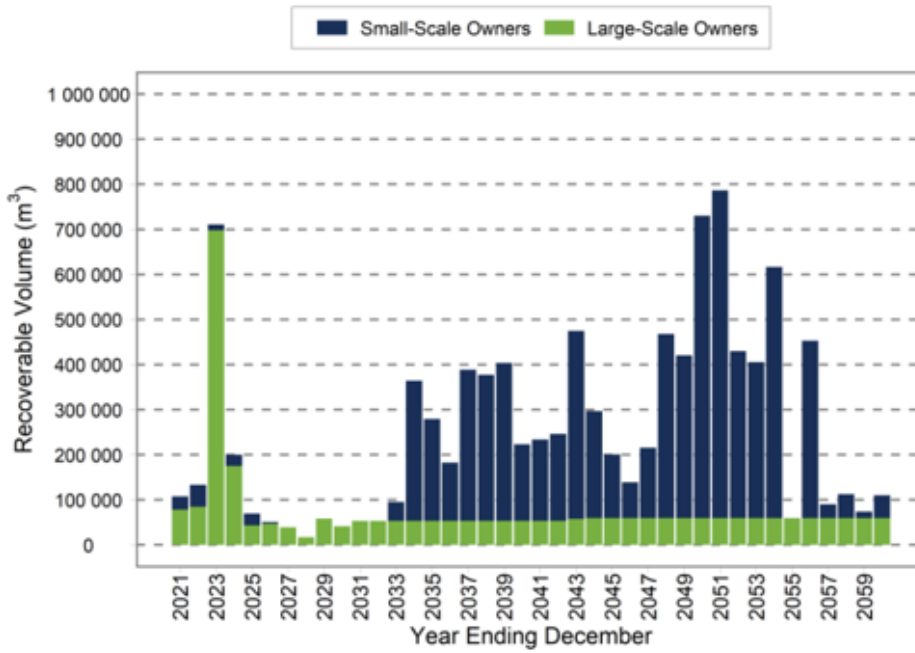
Source: Ministry of Primary Industries website

Based on interviews with specialty sawmillers, timber wholesalers and Trademe’s timber marketplace, locally grown species traded include:

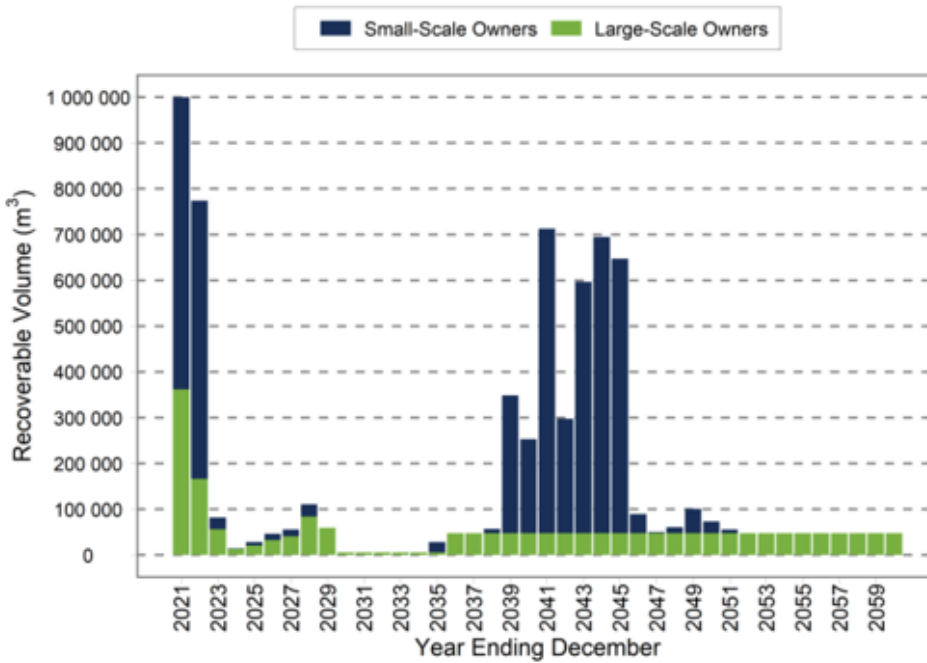
- Cypress (mostly *C macrocarpa* and *C lusitanica*)
- Blackwood (*Acacia melanoxylon*)
- *Eucalyptus fastigata*
- *Eucalyptus saligna*
- Redwood (*Sequoia sempervirens*)
- Poplar (*Populus spp*)

Figure 1: Forecast of timber availability of minor exotic species grown in New Zealand

New Zealand Other Softwoods Wood Availability under Scenario 6B

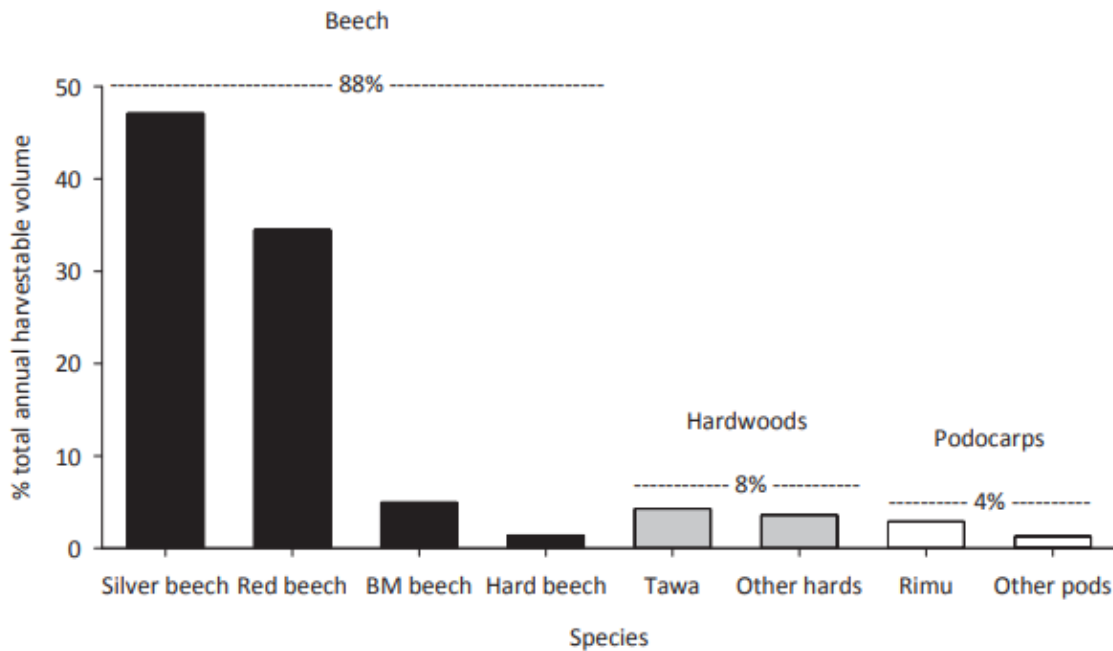


New Zealand Other Hardwoods Availability under Scenario 6D



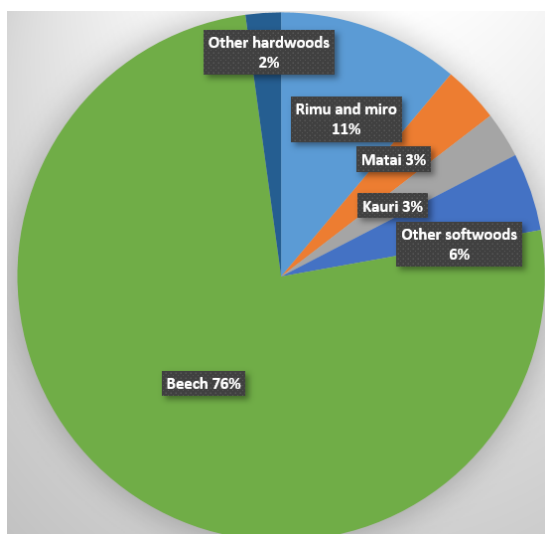
Indigenous harvest volumes are subject to Sustainable Forest Management Permits, with 84,000 ha permitted for harvest, and around 10,000ha per annum harvested. In terms of species harvested from indigenous forest/ indigenous species, the majority is beech (*Nothofagus spp*) with similar species mix being taken over the past two decades (Fig 2 & 3). Limited amounts of rimu (*Dacrydium cupressinum*), and banksia (*Proteaceae*), are also available occasionally. Supplies of recycled native timbers —mainly rimu, matai, miro, kauri —can be sourced from building demolitions.

Figure 2: The mix of harvested indigenous species from MPI Sustainable management plans in 2006
Source: Allen et al, 2013



Summary of annual harvestable timber volumes (m³) of indigenous tree species (BM = Black Mountain) included on approved sustainable management plans registered with the Ministry for Primary Industries, December 2006. Total volume = 80 007 cubic metres (from Richardson et al. 2011).

Figure 3: The mix of harvested indigenous species as estimated by MPI in 2017. Source: 2017 Ministry of Primary Industries



The current market for specialty timbers in NZ

What's coming in and what's it being used for?

Species	Origin	Interior joinery	Furniture	Flooring	Decking	Cladding	Boat building	Misc products
Poplar <i>Populus spp.</i>	China	x						Plywood core
Hoop pine <i>Araucaria cunninghamii</i>	China	x						Veneer
Radiata pine <i>Pinus radiata (D Don.)</i>	New Zealand; Chile; Netherlands	x						Veneer Glulam/CLT Accoya
Russian Birch <i>Betula ermanii</i>	Latvia	x						Veneer
Siberian Larch** <i>Larix Sibirica</i>	Russia	x				x		
Okoume <i>Okoume</i>	Gabon						x	Marine ply
Falcajan/Falcata Sengon Wallabe <i>Eperua falcata</i>	Indonesia The Guianas						x	Marine ply
Victorian Ash / Tasmanian Oak <i>Eucalyptus spp.</i>	Australia	x	x	x				
Slash pine <i>Pinus elliotis</i>	Brazil						x	Marine ply
Western red cedar <i>Thuja plicata</i>	Canada; USA	x				x		

Species	Origin	Interior joinery	Furniture	Flooring	Decking	Cladding	Boat building	Misc products
Alaskan Yellow cedar <i>Chamaecyparis nootkatensis</i>	Canada; USA	x				x	x	
Tulipwood* <i>Liriodendron tulipifera</i>	USA					x		
Scots pine* <i>Pinus Sylvestris</i>	Europe					x		
Kwila /Merbau <i>Intsia spp.</i>	Indonesia; Solomon Is			x	x			Poles;Beams
Vitex <i>Vitex cofassus</i>	Solomon Is			x	x			Poles;Beams
Garapa <i>Apuleia Leiocarpa</i> ; <i>Apuleia Mollaris</i>	Peru;Brazil				x			
Purpleheart <i>Peltogyne spp.</i>	Guyana				x			Bridges and walkways
American white oak <i>Quercus alba</i>	Canada; USA	x		x			x	
Tonka/Cumarra <i>Dipteryx odorata</i>	South America; Peru				x			
European Oak <i>Quercus spp.</i>	Europe; Italy; Germany; Hungary		x	x				
Taun <i>Pometia pinnata</i>	Indonesia				x		x	
Rosewood <i>Pterocarpus indicus</i>	Solomon Is; Indonesia		x					Fine woodworkin g
Tali Rosewood <i>Dalbergia sissoo</i>	India							

Species	Origin	Interior joinery	Furniture	Flooring	Decking	Cladding	Boat building	Misc products
Western Hemlock <i>Tsuga heterophylla</i>	Canada	x						
Azoke/Ekki <i>Lophira alata</i>	Africa							
Ayous* <i>Triplochiton scleroxylon</i>	West Africa							
American white Ash <i>Fraxinus americana</i>	USA		x					
Maple <i>Acer saccharum</i>	USA	x	x					
American Walnut <i>Juglans nigra</i>	USA	x						
American Cherry <i>Prunus serotina</i>	USA	x						
Chestnut <i>Castanea sativa</i>								
Iroko <i>Chlorophora excelsa</i>	West Africa	x			x	x	x	Exterior use Marine piles
European Beech <i>Fagus sylvatica</i>	Eastern Europe	x	x					Tool handles
Teak <i>Tectona Grandis</i>	Burma India Thailand	x	x				x	
Anegre <i>Aningeria spp</i>	Ivory Coast	x						
Balau <i>Shorea spp.</i>								
Greenheart <i>Ocotea rodiaei</i>	The Guianas							Marine bearers Exterior use
Ipe <i>Handroanthus spp.</i>	Brazil			x	x	x		

Species	Origin	Interior joinery	Furniture	Flooring	Decking	Cladding	Boat building	Misc products
Jarrah <i>Eucalyptus marginata</i>	Australia	x	x	x			x	Marine use Fine joinery
Jatoba <i>Hymenaea courbaril</i>	South America; Guianas	x	x	x	x			
Kanda <i>Beilschmiedia congolana</i>					x			
Karri <i>Eucalyptus Diversicolor</i>	Australia	x		x	x	x		Exterior
Salu salu <i>Decussocarpus Vitiensis</i>								
Sapele <i>Entandrophragma cylindricum</i>	West Africa	x	x	x			x	Ply
Wenge <i>Millettia laurentii</i>	Zaire	x	x	x				
Zebrano <i>Brachystegia fleuryana</i>	Gabon	x	x	x				Fine woodworkin g
Pacific rimu /Yaki <i>Dacrydium nidulum</i>	Fiji	x						
Pacific Kauri <i>Agathis borneensis;Agathis Vitiensis</i>	Malaysia						x	
Baltic Spruce* <i>Picea abies</i>	Eastern Europe	x		x				Panel and sarking

*Thermally modified timbers

Table 3: Overview of imported species and their applications

Interviews with architects and project managers at three architecture studios (Ignite; Warren and Mahoney and Chaplin Crooks) established that architects are also mainly sourcing veneered panels rather than solid timbers, with solid timber being used more for joinery features (bullnoses, mouldings, dividers, kickboards) and furniture items. Flooring is largely moving to engineered timber over solid timbers. Flooring is predominantly imported engineered oak or recycled solid native species. Furniture timbers are a mix of species, often American ash, oak or imported hardwoods (American hardwoods or Asian woods such as teak and bamboo). These tend to have a large colour range and several finishes (Fig 4).

Figure 4: Woodrights range of solid Oak and Ash timber finishes for joinery and furniture manufacture Source: Woodrights website



Architects will source flooring, panels and furniture directly from individual suppliers, rather than from timber merchants. However architects work in closely with shopfitters and joiners, who source from lumber yards and timber merchants, particularly for joinery timbers (including timbers for windows, interior doors and stairs). In the case of furniture, Ignite furniture tend to get most furniture for their commercial interiors, as well as high-end residential fitout through Harrows in Ashburton. A large proportion of Harrows furniture is American ash. Ignite also have a good working relationship with Jacobsens flooring, and the sales reps for both Harrows and Jacobsens call in fortnightly to the three Ignite regional offices.

How much is coming in?

There are no known figures available at species level of the total imports coming into New Zealand, however, most importers were willing to share the split of their species mix with us (Fig 5 & 6).

Actual volumes sold of the timbers weren't shared as this is commercially sensitive. Figure 5 shows not all the importers are concentrating on the same species, though almost all importers will stock Kwila, Garapa, Purpleheart, and Vitex; while most would stock Western red cedar and Oak (either American white oak or European oak) and various hardwoods. It appears BBS Timbers specialises in a very wide range of interior timbers; while Keyland are targeting the boat building and decking sector rather than interior markets.

Figure 5: Timber imports – species product mix for each of the larger timber importers

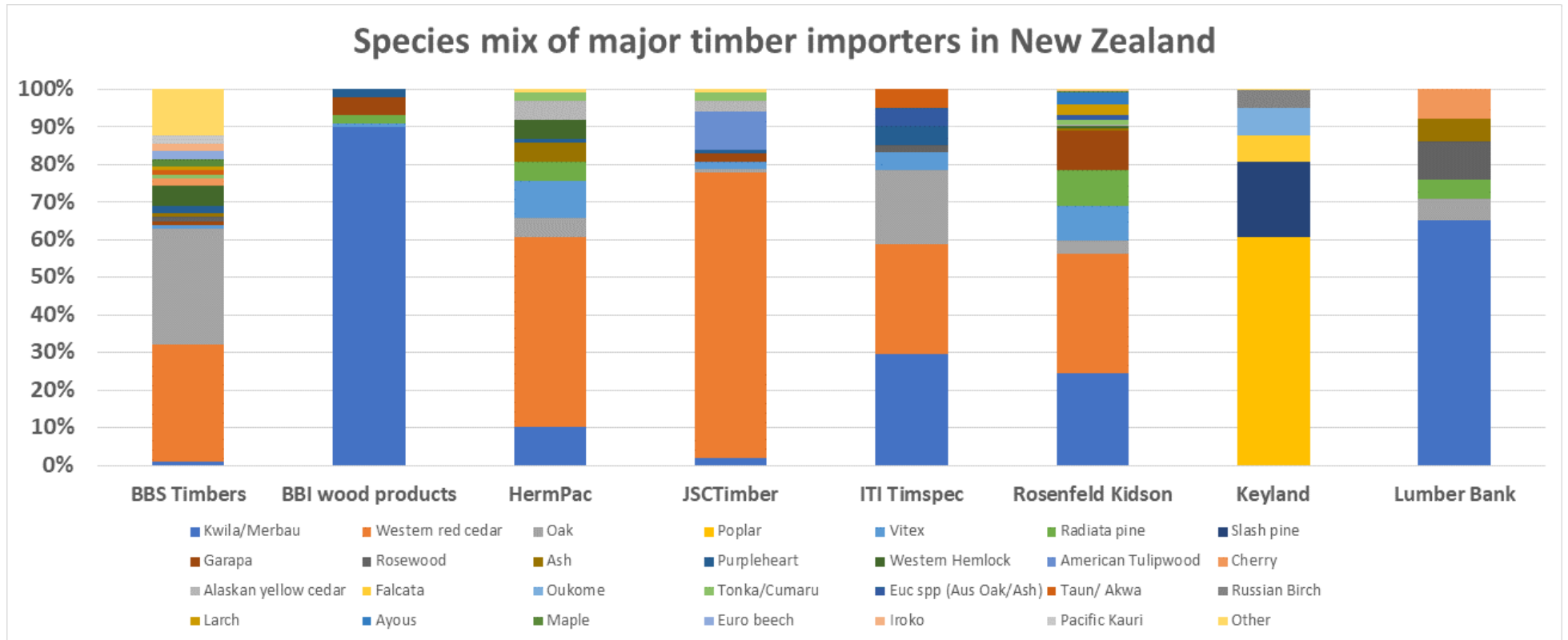
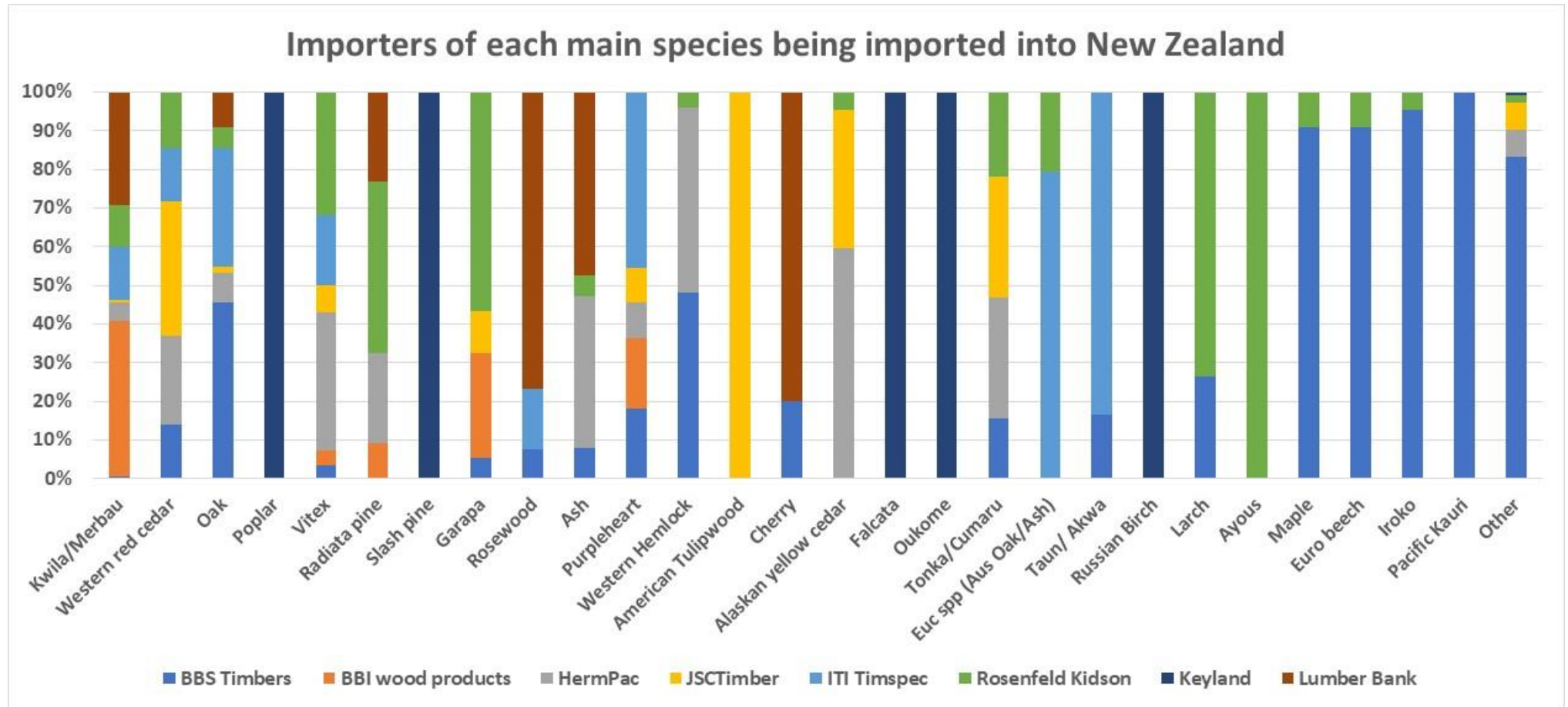
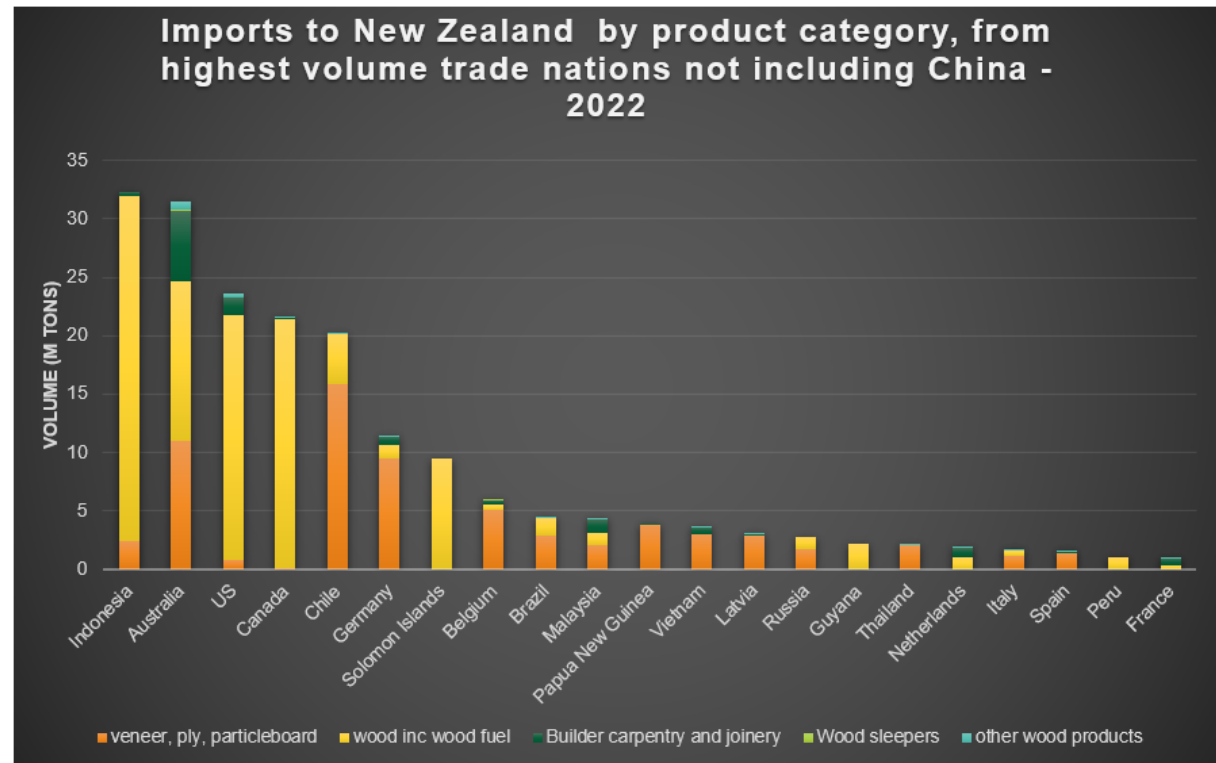
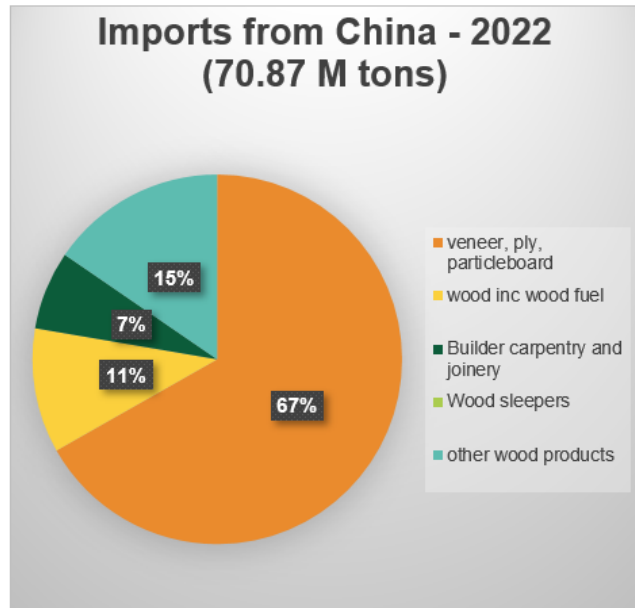


Figure 6: Timber imports by range of suppliers per species



Official figures from the Global Trade Atlas indicate some 101,000 ton of wooden materials entering New Zealand in 2022, of which 71,000 ton came from China (Fig 7)

Figure 7: Imported timbers coming into New Zealand by origin and product category – from the Global Trade Atlas



What are the traits that lead to use?

Importers

Importers are very clear why they are importing a particular species. Factors such as consistency in appearance and grade, good durability or fit for purpose for all of NZ's climatic variances, cost and constant availability were mentioned a lot. Invariably importers are bringing in the bulk of timbers which are 'tried and true' species. These are species that have been introduced a long time ago and are popular in the New Zealand market (such as kwila and vitex decking; Western red cedar cladding) or species that are known to perform to the specific purpose internationally (such as American ash for furniture, oak flooring, boatbuilding timbers such as okoume).

Their main customers are the 'big 5' big box merchant stores – Placemakers, ITM, Bunnings, Mitre 10 and Carters, who dictate much of what is sourced into New Zealand in terms of veneered panels and sawn timber, especially for exterior use. Two of those we interviewed stated they also selected and imported North American timbers due to being raised in North America. One importer mentioned that sometimes they will do research on new species to import if they see a need or gap in the market.

In recent years, some newer options have been emerging, such as thermally modified hardwood timbers; Accoya¹; and substitute species from international supply routes to achieve sustainability and certification requirements. For example, plantation hardwoods, rosewood from Papua New Guinea, and other tropical woods of Australian and Pacific origin substituting for South American and African hardwoods supply.

Supplier selection for species were based on personal relationships, largely on trust. The most important factor in selecting where to get the timber from (international suppliers) were the sustainability credentials (i.e. having certification²) and having consistent high-grade materials. The important customer qualities importers seek from a supplier are flexible supply arrangements, reliability, consistent wood quality and loyalty of the supplier.

Certification

When importing tropical hardwoods importers are very conscious of making sure that these timbers are certified. All tropical woods New Zealand importers source need 3rd party certification, and importers are all ITTG group members. One importer talked of the need for responsible harvesting and making sure no child labour was involved in harvesting. Most importers also belong to FSC and PEFC and seek 3rd party auditing in the certification process. Thus, when relevant, certification requirements are considered a very important requirement of the international tropical timber importer member group (ITTG).

Interestingly, most customers do not ask about certification as this is an expected quality of the timber they are purchasing from the importer. As stated by an employee at Hermpac "most customers expect the boxes to be ticked on certification, and do not request or insist on this specifically – it is a given".

Grade

Importers usually request photos of the logs or timber prior to purchase. They specify to grade, and seek consistency in grade and availability. This requirement is market driven, as importer's customers expect consistent quality. For example, kwila is almost always consistent in quality, which is a feature that led to its market popularity.

Wood attributes

The main attributes mostly mentioned by many were the specific appearance and 'feel' of the different timbers (i.e. their visual characteristics), in addition, natural durability and weatherability and the capacity to be used in a range of exterior applications are key characteristics for exterior-

¹ Accoya – Acetylated timber manufactured in the Netherlands from New Zealand-grown radiata pine.

² From PEFC. FSC or other certification schemes

use products. Interestingly, there is a current trend to expose wood grains even for exterior timbers, so the ability to take a clear coating is currently required. Therefore, even for exterior timbers, being visually pleasing, and dimensionally stable is desirable.

Other notable attributes sought by importers include consistent grain, colour, dryness/evidence of seasoning, and no defects (pinholes, splinters or checking). In terms of furniture and interior grades: gluability, no formaldehyde emissions from glues used (plywood etc.) and proven performance in use (i.e. is a timber known and well used for such applications). For decking and flooring: impact resistance (hardness) and strength properties of the timbers are considered more important qualities than weight or colour.

Architects and designers

The species selection is strongly guided by ensuring the timber options match the overall project aesthetic. Appearance is in turn influenced by current fashion trends, followed closely by past experience with the timber and supplier. Most project leads do not have a specific species in mind for projects, more a general feeling that timber is part of the aesthetic. They will then look towards colour pattern and grain that would suit the aesthetic of choice.

The architect relationship with key suppliers is integral to certain species being selected for a project. It was made clear that price is not a major factor, except in terms of price 'bracket', and that usually an architect will consider timber generically for a project, and then look at species options, in consultation with the project manager and shopfitter or builder on the job. Occasionally in retail or commercial projects, a client will specify a specific piece of furniture, and the whole aesthetic look will then centre around this central feature item.

Our survey on the consideration given to various wood attributes revealed the following ranking from most to least consideration:

1. Supply availability
2. Sustainability
3. Project cost
4. Dimensional stability
5. Fire
6. Price
7. The colour or tone
8. Environmental certification (FSC)
9. Finish (stain and coating options)
10. Imported versus local product
11. Available sizes
12. Carbon offsetting
13. Presence or absence of knot
14. Impact resistance
15. Fine or coarse grain
16. Uniform grain direction
17. Flexure/ ability to wrap or curve
18. Moisture resistance
19. Weight
20. Easy to machine
21. Importation requirement

From the table above it appears the preference for local over imported timbers is fairly low, but of greater importance than many of the performance attributes provided by wood property traits such as grain, grain direction and impact resistance etc. ~~~~~

Some species-specific reasons that customers seek timbers:

- Western Red Cedar – stability, durability and appearance
 - Kwila – machining performance, durable decking
 - Thermally modified tulipwood and Scots pine – cheaper option that gives superior stability and durability for price.
 - Alaskan yellow cedar – superior screwholding and nail holding capabilities.
 - Salu Salu – seen as a substitute for heart rimu
- ~~~~~

What is the specification process for an architect for species selection?

Most architectural offices will stock a materials library. This contains samples left by sales representatives, and gathered when working on recent past projects. There is also brochures and books in the library featuring award winning projects to get ideas from. Architects use the library more for conceptual ideas on potential species and potential suppliers. Architects will specify timber, and then consultation between the project manager, architect and shopfitter or builder will determine what species would be used, with additional advice coming from suppliers. At times there is just a brief on colour sought and what it will be used for, size or thickness, and then a timber yard or stockist will make the species recommendation, send samples or a sales rep will visit to finalise the selection.

Architects increasingly will consult the internet and Pinterest™, along with magazines for ideas and conceptual aesthetics they are seeking to create, rather than brochures or books. If they find something of interest, particularly a past award winning design or writeup, it often will state the species used or the supplier. Junior staff in a design studio rely on senior architects and principals, and their knowledge of how various timbers have performed in past projects, to help select species and supplier. This experiential knowledge, along with that of the builder and shopfitter is highly influential on species choice, second only to current trends and availability of timbers.

For public buildings, there is greater chance that New Zealand-grown timbers would be used. The reasons for this are: the need to match existing heritage elements; the ability to better ‘tell a story’ about the timber displayed in a public space; and to satisfy mana whenua/iwi requirements (usually this means the use of native species). In addition, timbers are often used both structurally and aesthetically in large open spaces, and increasingly mass timber elements and structural members such as plywood, LVL and laminated beams are included and clear coated. Where timber is used in these buildings, often radiata pine is selected for the laminated structural members and then interior elements will also be pine. Public buildings are being designed in timber mostly for sustainability credentials, with New Zealand pine selected for carbon storage/embodied energy attributes. Some architects follow Living Building Challenge (LBC) regenerative design frameworks, seeking biophilic, low-carbon materials that are New Zealand made – for wood this equates most readily to pine and is driving up the use of mass-timber radiata in architectural projects as a whole.

Do they prefer New Zealand-grown timbers? In what circumstances would they seek these out?

For most projects, the source of the timbers is irrelevant. The most important aspect for system selection after the aesthetic in many projects is lead time and availability. Imported timbers are easier to supply on both these aspects i.e. reliable lead times and readily available, or easy to find an alternative substitute from the same supplier/supply chain partners upstream should there be a shortage.

For architects, the most important consideration is that the timber is of grade, arrives on site when needed, and that the builders know how to fit it without ‘mucking about’ with experimentation on site.

The majority of timber importers shy away from supplying locally grown native timbers that aren’t recycled due to the following factors:

1. Availability – sporadic and unreliable supply of available timbers. “Hard to get hold of”
2. Variable durability – native timbers are not consistent in grade or performance across the country, so you don’t really know what you are supplying. In contrast, grade specification to imported suppliers is met consistently. Inconsistent durability also means our native species often can only be used for interior use.
3. Certification – NZ woods lack certification, though they are legal and come from SFM forests. Only a few larger suppliers of native timbers are FSC certified. This is usually native beech.
4. One importer felt there was a demand for native species aesthetically but he “didn’t want to go there” due to sensitivity in dealing with iwi, particularly concerning the Wai262 Claim (Waitangi Tribunal, 2011).

Specifiers are interested in using New Zealand-grown exotic woods more, *but only if the supply and lead times are reliable*. Some expressed interest in thermally treated woods, but want these from ‘old growth’ trees, not young plantations. There is already competition in this regard from thermally modified hardwood imports, sold to provide a cheaper alternative to tropical hardwoods.

Many of the Warren and Mahoney architects have had good experiences with radiata pine used aesthetically/exposed, and would like to use this more.

Interestingly, most architects did not know who to contact or how to obtain information about the availability of New Zealand-grown exotic timbers that might be on offer. Where a known supplier was mentioned, it was largely through already established supply chain importers and timber merchants where New Zealand-grown exotic timbers were being offered alongside imported sawn timber and veneers.

Certain public projects, such as the Christchurch Cathedral repair, are specifying native timbers. It was interesting to note that although the original sarking is totara, the specification has broadened out to any locally available native podocarp species, in order to secure sufficient supply of the right quality. The species in this case was less important than the colour and grain matching, while retaining a New Zealand native supply.

CONCLUSIONS

Key learnings and pathway forward

1. Macroeconomic drivers

Besides fashion trends and the current aesthetic, four major drivers are currently impacting the specialty timber market:

- Russia Ukraine war – the conflict has halted imports of Siberian Larch, and diminished birch ply supply. Note, most commentators expect that current alternative sources used today to overcome war-driven supply chain issues will be reverted back to Russian supplies once the war ends.
- Increase in plantation hardwoods, and emphasis on certification – importers are sourcing and finding alternative supply that are certified, due to a primary emphasis from specifiers on selecting timbers with proven sustainability and certification. This differs somewhat from 2013 (May, 2013) where it was felt imports were a way for New Zealand customers to “transfer their environmental footprint offshore”, and inadvertently give support to illegal logging. Certified supplies of plantation teak and rosewood have come onstream, along with alternative species being sold in place of ‘true’ rosewood and other endangered species.
- Thermally modified softwoods and hardwoods –growing in popularity and availability globally, and available in New Zealand.
- Climate change – the impacts of fire, insect outbreak and storm events on natural forests will increase, and place greater pressure on the ability to obtain reliable suppliers of high-quality specialty woods in future.

2. Need for a NZ timber ‘sales front’

Specifiers can readily find a sales agency supplying imported timbers, and many building supply companies selling flooring, cladding, decking systems etc. have sales representatives that call in person to architectural firms every 2-3 weeks, giving presentations on the new product range, delivering samples and checking on current project requirements. In contrast, there is no obvious or advocated sales agency for New Zealand-grown specialty timbers, and certainly no sales reps or advocacy beyond timber design seminars or farm forestry demonstration days. These events also focus more on mass timber and structural elements, and the establishment and harvesting phase of timber supply than end use species and product options. In essence, the complexity and multitude of supply chain routes to deliver imported timbers into New Zealand is hidden from specifier view, and dealt with by the timber importers, while New Zealand specifiers still need to wade through the complexity to establish a supply route for New Zealand-grown timbers (Fig 8 & 9). It doesn’t matter where in chain you get it from a specifier perspective, so long as it arrives on time and in grade – and importers take care of the supply chain ‘mess’ to ensure delivery.

Figure 8: Furniture supply chain – the chain from forest to furniture production is navigated overseas with imports, so NZ specifiers only need to interact with the latter part of the chain Source: Appelhanz et al. (2016)

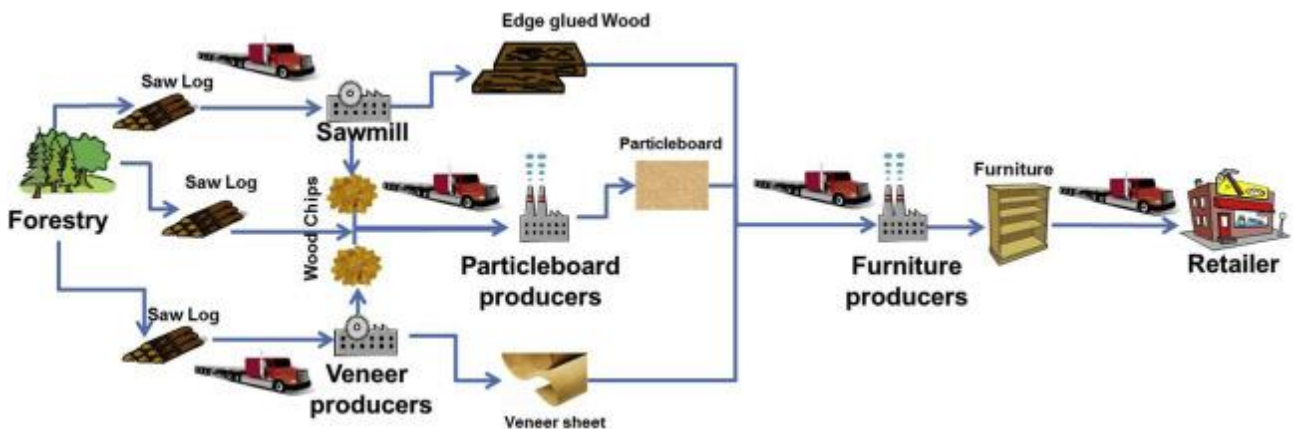
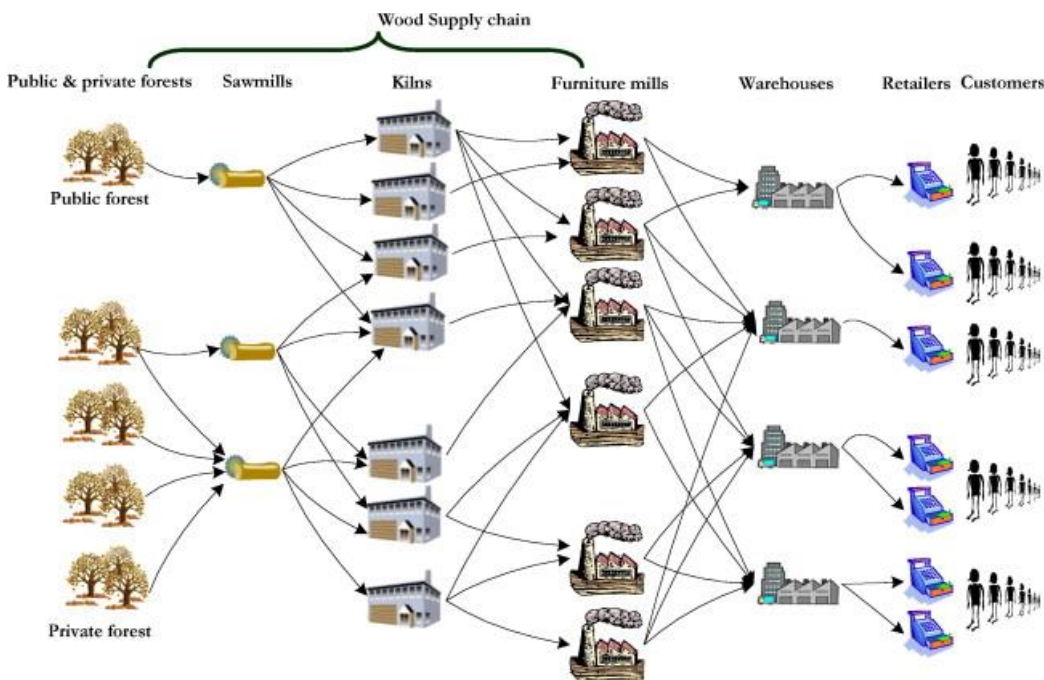


Figure 9: Furniture supply chain – the complexity and pathway to source domestic timbers for projects is not obvious to our specialty wood customers. New Zealand growers lack a clear route path through to customers they can easily navigate. Source: Ouhimmou et al. (2008)



It's important to note that rather than simplify the complexity, the sector should instead help form supply chain pathways through this, and create a dedicated assistance point for specifiers to go to. In this regard, we could look to the American Hardwood Association; or Australian Timber Wholesalers. There are a few importers and timber merchants that supply New Zealand timbers into the marketplace, but are not so prominent nationally, more localised in sales.

3. Information needs for specification

In order to specify timbers, or at least to begin to select these as options, architects require quite different information than the usual technical specs on the timber attributes that have traditionally been provided from the forest industry. The main information to include in any sales documentation or promotion includes:

- Availability (is it always available or in limited stock)
- Lead times from ordering

- Price range
- Where to get it from/ who stocks this / contact information for a sales rep (someone that can visit them with samples or send them samples and field enquiries)
- Are samples available?
- Range of finishes – colour, stains, coatings etc. that can be supplied
- Compatibility with coatings and timber treatments
- Dimensions and grades available
- H Class and use specifications (durability, moisture zones and moisture protection needed, time onsite to season, installation requirements.)

4. Need for better in-ground estimates

In order to achieve the above (2) and (3) would require fairly good oversight of what is available (harvested and in-ground), what is in stock and what is coming on stream. This is not essential if we focus on a few key species for supplying into one or two product applications, but needs to be much improved for a long-term sustainable timber supply into specialty applications coming from New Zealand-grown species. In addition, insight on quality and grade of available timbers will also require some improvement.

5. Possible approaches (to be teased out in workshops)

There are three main approaches that we could take to raise the amount of New Zealand-grown wood used in domestic architectural fitout and design projects:

- Grow enough of a range of species, and the market will sort it out.

This could work if there was not already a clear and workable supply of imported timbers that can be selected from – why would the market turn to New Zealand-grown timbers just because they are available? In contrast to imports, New Zealand-grown timbers are as yet largely unproven in the market, and timber supply chains are not clear to specifiers. Without an incentive or clear reason to specify New Zealand-grown over imports, most specifiers will not respond to simply increasing the supply. Furthermore, the species listed in Table one of Haslett (1986) were grown and many are available in small quantity within New Zealand, but are not yet filling any market to a great extent.

- Grow the overall demand for wood vs other materials (rising tide), particularly as a structural material, and there will be a subsequent demand for New Zealand-grown specialty timbers.

There is some precedent here in that where massive structural timber elements have been used in a project, the fitout also will incorporate exposed timbers, often clear plywood, OSB, or LVL (mostly made from New Zealand-grown radiata). However, in other project examples where wood is specified over other materials, the selected specialty species has clearly not been New Zealand-grown timbers but imports. There is a current architectural trend towards using more exposed wood, yet we have significant quantities of imported wood filling this need, rather than home-grown product.

- Specific targeting of ‘low hanging fruit’

This seems the more sensible and specific route, and could take a few paths:

- Pick a few species that can cover multitude of bases that are ‘ripe’ for substitution. Focus effort on these.
- Transition through imported/plantation, then switch to NZ plantation once volume resource is there
- Use lower grade material and chemical improvement – ramp up Abodo³ or Accoya or undertake thermal treatment of local exotic timbers that are poorer quality (Eucalypti, poplar, larch, acacia, redwood etc.) to substitute for imports.
- Promote on the supply risk ‘buffer’ as a supplement to potential future imported species shortages

³ Thermally treated radiata pine product

It is also transparent that supplies will need to be 'ramped up' in volume, but in a planned way. In scaling up the volumes of sawn timbers available, the demand could easily outstrip supply and lead to market failure, in a similar manner to for example XLAM⁴ or Accoya, should marketing increase demand for the specialty timbers above that which is reasonably available. It is also important to avoid uneven and fragmented supplies, which would create unreliable availability for customers, and could create a bullwhip effect in the supply chain.

⁴ XLAM - A Cross laminated timber venture with 20,000m³ capacity that began in New Zealand before closing and moving to Australia.

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