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Fashion &Textiles
NEW ZEALAND



Future of Fibre Aotearoa

Reimagining the value of New Zealand fibre

Turning our natural strengths into solutions for a changing world



Future of Fibre Aotearoa

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Future of Fibre Aotearoa

About Future of Fibre Aotearoa

Future of Fibre Aotearoa is an industry-led initiative committed to unlocking value across Aotearoa New Zealand's fibre ecosystem, from raw material production to finished product and back again.

It aims to reposition fibre as a flagship of Aotearoa New Zealand's high-value economy. As a cross-sector enabler, Future of Fibre Aotearoa connects the fibre sector, delivering sector research, foundational insights and pilot projects focused on innovation, design, circularity and locally embedded systems.

Led by Fashion & Textiles New Zealand, the initiative explores the 'fibre' side of Aotearoa New Zealand's dominant 'food and fibre sector' by taking a pan-sector approach. We acknowledge significant work and support provided by established industry bodies and organisations based around individual fibre industries, the intrinsic connections with iwi/hapū and the whenua, overlapping production systems and co-product revenue streams.

From initial ecosystem mapping to understanding shifts in global market demand, we explore where our strengths and signals intersect.

The result is this report: *Future of Fibre Aotearoa: Reimagining the value of New Zealand fibre - Turning our natural strengths into solutions for a changing world*, a comprehensive analysis of current state and potential.

We look forward to taking this work forward with industry, moving insight to action, together.

30 September 2026

A fibre future to value

Fibre has always mattered to us at Fashion & Textiles New Zealand. It connects what we grow and produce with what we design, make and sell, linking our primary industries with science, manufacturing, innovation and the creative economy. Future of Fibre Aotearoa grew from our Threads of Tomorrow work and a simple belief that, if we wanted to strengthen New Zealand's wider fashion and textile system, we first needed to better understand the fibres, materials and value chains that underpin it.

Looking across the fibre ecosystem as a whole has reinforced that belief. We have encountered extraordinary depth: established industries and emerging fibres; specialist indigenous knowledge built over generations alongside new science, design and entrepreneurship. Just as importantly, we have seen a genuine willingness to connect and share knowledge across traditional boundaries. One of the most encouraging outcomes has been hearing from people who say this work has made them feel seen, and more optimistic about the sector's future.

None of this work would have been possible without AGMARDT, whose support through The Common Ground enabled us to take a genuinely cross-sector approach. I am deeply grateful to our Governance Group and Steering Committee, and to the growers, processors, manufacturers, researchers, designers, brands, innovators and industry organisations who so generously shared their expertise. I am especially grateful to Kelly McClean from CommonKind, who helped shape and lead the project alongside Fashion & Textiles New Zealand.

What we've found is that producing an exceptional fibre is only the beginning. Value comes from understanding what markets need, transforming fibre into relevant products and materials, and building the pathways that connect them to buyers.

So this is our ask of industry: start from demand, not just supply. Prove your material. And connect, because we achieve more together than we do in isolation.

We have much to be optimistic about: strong raw materials, science and technical knowledge, design capability, ingenuity, distinctive provenance and the ability to build trusted commercial relationships. But these strengths will not create greater value on their own. We need to invest deliberately, protect and renew capability, and connect innovation more closely to real market opportunities.

To industry, government, researchers, funders and investors alike: this report provides a shared basis for the choices ahead. Our opportunity, together, is to turn more of what Aotearoa grows and knows into value the world wants.

Jacinta FitzGerald
Chief Executive
Fashion & Textiles New Zealand

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NEW ZEALAND



A fibre future to value

What if we could re-create Aotearoa New Zealand's foundational prosperity that came from the sheep's back? What if we could take not just wool but other fibres the country can grow well, and transform them into high demand raw materials, components, or finished products? What would that do for our primary and manufacturing sectors, and for our wider economy and society? Could we do it, and how do we make that happen?

The work underlying this report not only investigates these last two questions, but is unique in that it has involved assessing a range of fibre types and collaborating with every part of their value chains from producer to user.

The intended outcome of this work isn't the production of the report itself – it's the creation of more value for New Zealand Inc. The report provides a stepping stone for that.

I'm excited by the opportunities identified by the work to date. Importantly, I'm also encouraged by the collaborative way that those who would need to contribute to making the most of those opportunities have worked on the project to date.

Let's see what we can make happen.

Jane Montgomery
Chair, Governance Group
Future of Fibre Aotearoa

Future of Fibre Aotearoa

A chance encounter at the 2025 E Tipu Summit sparked the beginning of AGMARDT's two-year collaborative partnership with Future of Fibre Aotearoa (FOFA) under The Common Ground initiative.

What drew us to this work was its systems perspective. Rather than looking at individual fibres in isolation, FOFA brought together diverse perspectives from across the ecosystem and explored opportunities through a market-led rather than production-led lens. While this is only the start, the approach has felt fresh, energising and full of potential.

Throughout the journey so far, we have been impressed by Jacinta and the wider FOFA team. Their willingness to listen and seek out diverse perspectives, challenge assumptions, test ideas and adapt as new insights emerged has strengthened both the process and the outcome. We also extend our thanks to those who generously shared their expertise, experiences and ambitions for the future. It's been a collective effort.

So what next? This report isn't an endpoint, it's an invitation.

What becomes possible when we align around shared opportunities and have the courage to experiment?

The real opportunity now is to turn this rich insight into action. AGMARDT is excited to support the next phase of the journey. Will you join us?

Lee-Ann Marsh
Chief Executive
AGMARDT

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Executive summary

Aotearoa New Zealand has strong fibre foundations, from the materials we produce to the knowledge, capability and creativity that transform them. But the conditions that determine where and how fibre creates value are changing, creating new pressures and possibilities for our fibre sector.

Aotearoa New Zealand produces a substantial and diverse range of fibres. Established fibres such as wool, skins and hides sit alongside emerging and re-emerging fibres including hemp, harakeke, alpaca, mohair and cashmere, as well as experimental bio-based materials and recovered fibre streams. Across measured domestic fibre production, around **171,530 tonnes and $926.5 million in farm-gate value** is produced annually, with wool the largest individual stream.

Production alone however does not determine how much value Aotearoa New Zealand captures. Fibre creates value through processing, materials science, design, manufacturing, specification, assurance, intellectual property, branding and market development. In many cases, our fibre enters global value chains relatively early, while downstream value, market insight and customer relationships are developed elsewhere.

Future of Fibre Aotearoa takes a whole-of-system view, looking across fibre types and value chains to understand what we produce, where value is created and constrained, how global demand is changing, and where Aotearoa New Zealand could build greater advantage. It moves beyond "what else could we make from our fibre?" to consider where global demand is moving, where New Zealand fibre attributes genuinely matter, and what capabilities are needed to turn those strengths into commercial value.

A strong foundation, but a system with gaps

Aotearoa New Zealand retains high-quality natural fibre production, specialist science and technical knowledge, pockets of processing and manufacturing capability, design and innovation expertise, assurance systems and examples of direct, relationship-based value chains creating premium value.

At the same time, fragmentation, gaps in pilot and scale-up infrastructure, specialist skills loss, weak commercialisation pathways, limited market intelligence and constrained access to investment limit our ability to turn those strengths into sustained higher-value outcomes.

Rather than a shortage of fibre ideas, the central challenge is a system capability one: Aotearoa New Zealand needs to better connect and strengthen its ability to turn fibre attributes, research and innovation into products and materials that buyers can find, evaluate, specify, purchase and trust.

The alternative to investment is not simply the status quo. Continued erosion of production, skills and capability risks weakening our ability to respond to future opportunities, while more downstream value is created elsewhere.

The way materials are selected is changing

Materials are being judged against a broader set of expectations in global markets. Buyers and regulators increasingly require credible evidence of provenance, environmental performance, safety and traceability. Technical and specification-led markets require standards-aligned products supplied consistently. Digital and AI tools are changing how materials are discovered, compared and specified, increasing the importance of accurate, structured and accessible evidence. Interest in natural and bio-based materials is also growing as concerns about fossil-derived inputs, toxicity, microplastics and whole-life environmental impacts increase, but natural fibres must still compete on performance, cost and fitness for purpose.

Premium value is increasingly created through function, quality, design, provenance, longevity and meaning. Healthier indoor environments, circular and regenerative systems, climate resilience and trusted supply relationships are also becoming more important.

These shifts do not point to a simple move from synthetic to natural materials, but to a more selective market in which materials must demonstrate why they are right for a particular application. Natural origin alone is not enough.

This is why Future of Fibre Aotearoa starts with demand: Aotearoa New Zealand's opportunity lies where changing market needs intersect with fibre attributes and capabilities we can credibly prove, strengthen and translate into buyer value.

A vision for fibre

A thriving and connected fibre sector that creates enduring value in the way we grow, design, make and regenerate.

Key insights

1. **The opportunity is not more fibre. It is more value from the fibre Aotearoa New Zealand already produces.**
   New Zealand produces around $926.5 million of fibre at farm gate each year, but much of the value created through transformation, product development, specification, brands and customer relationships sits further downstream. The opportunity is to capture more value from what we already produce, rather than simply to produce more.
2. **Global markets are changing how materials are selected and valued.**
   Natural origin alone is not enough. Buyers, specifiers and regulators increasingly require proof of performance, provenance, environmental claims and compliance, while demand is shifting toward healthier, lower-impact, circular and more resilient material systems. This creates openings for natural fibres where they solve a defined problem and can demonstrate why they are the right material for the job.
3. **Our biggest fibre challenge is turning strengths into something markets can buy.**
   Aotearoa New Zealand has strong fibre, science, innovation, design and examples of premium value creation, but these strengths are fragmented and significant gaps remain between them and something a buyer can find, evaluate, specify, purchase and trust. Future investment should start with validated demand and build more connected pathways and capabilities to convert opportunity into commercial outcomes.

From demand signals to opportunity

Aotearoa New Zealand is most likely to create greater value where our material strengths align with genuine market demand and can be supported by the capabilities to differentiate and deliver.

Direction and value shaped by markets

Aotearoa New Zealand does not need to compete across every fibre, application or market. Greater value is more likely where our material strengths meet a genuine market need, can be credibly demonstrated and can be delivered in a form the market can use.

Opportunities identified through this work include strong wool in interiors and the built environment, premium fine-fibre applications, and bio-based materials and ingredients from fibre and biological side-streams. **These are areas for further market validation rather than an exhaustive investment list.**

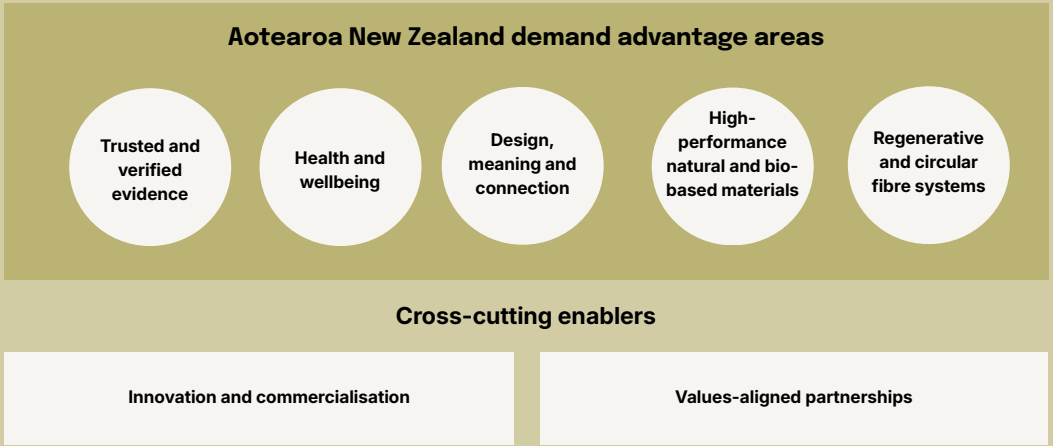
Across these and other opportunities, **five sources of demand advantage could help Aotearoa New Zealand capture greater value:** trusted and verified evidence; health and wellbeing; design, meaning and connection; high-performance natural and bio-based materials; and regenerative and circular fibre systems. These are supported by two cross-cutting system enablers: innovation and commercialisation; and values-aligned partnerships.

Let demand guide investment

Future investment should begin with validated market demand, not production or technology in isolation. Market intelligence and engagement with buyers and specifiers should guide where science and R&D, infrastructure, evidence and testing, commercialisation support and investment are concentrated. The priority is to build and connect the capabilities needed to turn validated opportunities into commercial outcomes.

Capturing more value does not require every stage of every value chain to be onshore. In some cases, domestic processing or manufacturing will be strategically important; in others, greater value may come from retaining science, IP, design, specification knowledge, brand ownership, provenance or customer relationships while working with specialist international partners. The key question is where capability and control need to sit for **meaningful value to be retained in Aotearoa New Zealand**.

VISUAL 1. AREAS OF POTENTIAL DEMAND ADVANTAGE



Turning strengths into greater value

Aotearoa New Zealand's fibre opportunity is not primarily about finding more uses for what we produce. We already have significant fibre production, established capability and examples of premium value creation.

The opportunity is to increase the return from these strengths by shifting from production-led thinking to market-led value creation: understanding where global demand is moving, identifying where our fibre can solve a real problem or deliver distinctive value, and building the evidence, innovation capability, market relationships and value chains needed to translate that advantage into commercial outcomes.

No single intervention will unlock greater value from New Zealand fibre. The recommended priorities on the following page identify the areas where coordinated action can strengthen the system and improve pathways from fibre to market.

What comes next

Future of Fibre Aotearoa will support the next phase by convening partners, connecting existing activity, testing selected priority initiatives and helping establish clear pathways for implementation.

From insight to action

Three priority areas for strengthening Aotearoa New Zealand's fibre system have emerged. Together, they bridge potential demand advantage and the capabilities required to turn this into sustained value.

Priorities for strengthening Aotearoa New Zealand's fibre system

TABLE 1. FUTURE OF FIBRE AOTEAROA RECOMMENDED ACTIONS, LEADERSHIP & OUTCOMES

Priority Area		Actions	Initial Focus	Leads	Contributing partners	3–5 year outcome	Priority & timeline
Turn market demand into direction	1	Market intelligence and buyer connection	Market intelligence identifies priority applications and markets, and collective pathways allow access to market opportunities	Industry, with Government	Industry + fibre organisations + NZTE/MPI + market partners	Priority fibre opportunities are informed by regular buyer and specifier insight, with clearer routes to target markets and faster feedback into product development and investment decisions.	Do now 3-6 months
	2	Investment and implementation pathways	Ownership, leadership, funding and delivery pathways are clear, connected and easier to navigate.	Industry, with Funders	Funding agencies + Investors + government + industry + fibre organisations + research organisations	Businesses can identify and connect with the right capability, funding and partners more easily, enabling validated opportunities to progress from pilot to sustained commercial delivery.	Build next 12-24 months
Build trust, evidence and coordination	3	Evidence and digital systems	Existing LCA, assurance, traceability and product evidence points are connected and aligned with market and specification requirements	Industry, with Government	Industry + fibre organisations + science/research + government	Priority fibre products have connected, accessible evidence that meets market and specification requirements and supports market access, comparison and differentiation.	Do now 6-12 months
	4	Shared assurance and standards pathways	Assess existing and potential assurance pathways against international requirements and distinctive New Zealand attributes.	Industry, with Government	Fibre organisations + industry + government + standard-setting/assurance partners	Priority fibre products can use recognised assurance pathways that meet international requirements while evidencing distinctive New Zealand attributes where these matter to buyers.	Do now 6-12 months
	5	Value chain partnerships and value retention	Value-chain partnership models built around shared market opportunities, with clear roles, aligned incentives and mechanisms for sharing risk and value.	Fibre organisations, with industry	Industry + fibre organisations + market partners	More market-led value chains operate through long-term commercial partnerships, with clear ownership of IP, specifications, customer relationships and mechanisms for retaining value in New Zealand.	Explore 12-24 months
Grow the capability to deliver	6	Infrastructure mapping	Existing infrastructure & specialist capability strengths, vulnerabilities and gaps are identified; investment needs are clarified	Industry, with research organisations	Industry + fibre organisations + government + research organisations	Priority processing, prototyping, testing and scale-up capability is visible, connected, easier to access and aligned with validated market opportunities, with critical gaps clearly identified.	Do now 6-18 months
	7	Skills, education and leadership	Critical skills across production, processing, design, technical, digital and commercial capability are connected more clearly to market outcomes.	Industry	Industry + education + skills boards + fibre organisations	Critical technical, production, design, digital and commercial skill gaps are reduced in priority areas, improving the sector's ability to move opportunities from concept to market.	Build next 12-24 months
	8	Innovation to market pathways	Connected innovation pathways support validated market opportunities	Industry, with funders	Industry + research organisations + design + innovation agencies + investors	More market-validated fibre innovations progress from R&D and prototype through testing, investment and scale-up to commercial adoption.	Do now 3-12 months

SECTION 1

Fibre in a changing world

Why this, why now

Aotearoa New Zealand's identity and prosperity have long been shaped by what we grow and how we transform it.

We have a history of figuring out how to work with what we have and finding ways to make something of it. This practical relationship with the natural world sits alongside kaitiakitanga, the obligation to act in direct care of the land, seas, waters and wetlands that sustain us.

Our food and fibre sector is core to our export economy and regional communities, supported by value chains that extend from primary production, through to processing and markets here and offshore.

Fibre is woven through our national identity, economy and everyday life, from what we wear, and what surrounds us in homes, workplaces and public spaces, to the materials used in buildings, transport, health, industry and design.

Yet the value created from it is not always captured here. Too often, New Zealand fibre enters global value chains as a raw or under-recognised input, with product development, transformation, brand value and customer relationships built elsewhere.

In this report, Aotearoa New Zealand's fibre system is understood as a system where fibre flows through production, processing, use and recovery pathways, supported by knowledge, technologies, and markets which enable value to be created at each stage.

Aotearoa New Zealand's fibre and textile industry has a rich history of producing and transforming natural materials.

Our country's fibre story is built upon hundreds of years of Māori knowledge, skill and practice transposed and repurposed from Te Moana nui a Kiwa to indigenous plants of this place.

Mātauranga Māori was developed to provide deep knowledge of how natural materials were grown, harvested, prepared and transformed, and their use deepened connections to place, people, culture and purpose. Raranga and whatu weaving techniques have been carried and advanced across generations.

Today, established fibre streams such as wool sit alongside re-emerging and emerging fibres including harakeke and hemp, niche animal fibres, recovered fibre from textiles, and experimental bio-based materials derived from biological resources. Wool, skins and hides already contribute at least $900 million to our economy, yet fibre remains an underdeveloped part of our wider bioeconomy.

While significant manufacturing capability has moved offshore, remaining expertise is being complemented by new capabilities in materials science, product development, design and a range of technologies, with a new generation bringing fresh approaches, and processing technologies opening possibilities for new materials and applications, from Māori-led harakeke value chains to wool-derived pigments and powders.

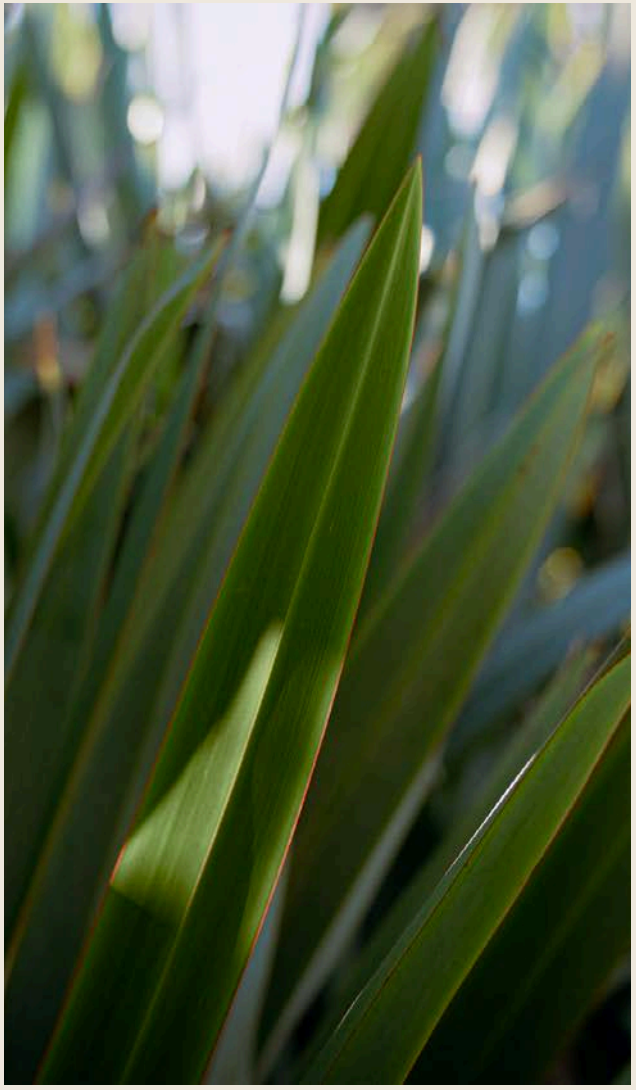
This gives us a strong foundation to build on. We can carry forward what is valuable, learn from what has changed, and connect knowledge across generations with new technologies, materials, markets and ways of making.

Future of Fibre Aotearoa is one of the first attempts to look across our fibre system as a whole, understanding fibre types, value chains, market signals and system capability to start a shared conversation about the future, and how we might capture more value for New Zealand fibre.

What is fibre?

Future of Fibre Aotearoa defines 'fibre' as:

Any raw, minimally processed material, whether grown, cultivated, bio-engineered, regenerated or recycled that can be transformed through spinning, weaving, knitting, felting, moulding, additive/digital manufacturing techniques or other forming processes into textile or composite products.



Why fibre value is different to food

Food and fibre have long been approached together within Aotearoa New Zealand's primary sector. They share important foundations: whenua, rēpō (wetlands), farmers and growers, biological resources, logistics, infrastructure and knowledge.

But beyond early stages of production, they follow very different value pathways.

While food is typically fast moving and perishable, fibre products are predominantly enduring, moving through multiple stages of processing, design, manufacturing and market development before reaching their end use, creating potential to drive innovation and open new markets in textiles, composites and other materials while embodying Aotearoa New Zealand's unique identity.

Wool can become yarn, then apparel, interiors or technical textiles. Hemp can become fabric, composites or building materials. Bio-based materials can become components in medical, industrial, construction and technical applications.

Fibre therefore sits across a much broader part of the economy than primary production. It connects agriculture with manufacturing, design, retail, technology, and the built environment, creating opportunities to retain and build more value in Aotearoa while developing new markets and applications.

Understanding these different pathways is important to understanding the Aotearoa New Zealand fibre system: where value is currently created, where it is lost, and where there may be opportunities to capture more value.

This means fibre cannot be developed through a production lens alone.

Value is created across a connected system of capabilities, spanning materials science, fashion, textile and industrial design, processing, specification, assurance, brand, IP, circularity, and end markets.



Global forces reshaping material demand



Geopolitical and trade instability

Long-standing assumptions about open globalisation are shifting as countries respond to tariffs, conflict, customs disruption and supply-chain shocks. Governments and businesses are placing greater emphasis on resilience by focussing on security of supply, regional relationships and trusted partners. In some cases this is accelerating localism, what can be produced or secured within borders, and regionalism, where geographically closer and/or values-aligned trade relationships are strengthened. Reliability, continuity, trust and evidence are increasingly prioritised in supply decisions.



Climate, land and resource pressures

Climate volatility, water stress, biodiversity loss, land-use competition and resource scarcity are changing what can be grown, produced and transported around the world. Focus is shifting beyond emissions reduction towards adapting to a changing climate, improving environmental conditions, and more circular use of resources. This means materials are increasingly assessed not only by what they are made from, but by how they are grown, processed, used and recovered: production systems that have a positive impact on nature are being certified, and more than 100 countries have developed circular economy strategies, roadmaps or policies, signalling a move away from linear “take-make-waste” systems and towards keeping resources in use for longer.



Fragmented trust and the rise of AI

Trust is becoming more fragmented as people navigate an increasingly complex mix of messaging from institutions, media, experts, brands, and online sources. AI is changing how people find and make sense of information, and in turn what they trust. It is raising new questions about where the information comes from and how reliable it is. At the same time, growing scrutiny of environmental, ethical and product claims is creating demand for information that is credible, transparent and verifiable. This makes structured, searchable and trustworthy information increasingly important: products, materials and claims that cannot be readily found, understood, compared or verified through digital systems may be overlooked.

Global markets are being reshaped by forces much larger than the fibre and textiles we produce in Aotearoa New Zealand.

These are not short-term trends the sector can control but structural conditions that are changing what consumers value, how countries trade and businesses manage risk, how buyers make decisions, and which materials are selected.

The significance of these forces is not that any one of them determines the future of fibre.

Together, they are changing the conditions in which materials are produced, traded, selected and valued.

What do we mean by ‘market’?

The customers, buyers, specifiers, procurement channels, geographic location, and end-use sectors that create demand for fibre, materials, products and related services. This includes the requirements, price points, standards and commercial conditions that determine how goods are bought and sold.

Markets are a dynamic mechanism that ultimately connect our fibre to end-use applications.

Risk of inaction: value moves offshore

Aotearoa New Zealand produces high-quality natural fibres, but much of the value created from them is captured further along global value chains.

Our research identifies a fragmented, under-invested fibre system with gaps between raw material production and market. Aotearoa New Zealand fibre may end up in high-value products, while the margin, market insight and decision-making power sit elsewhere.

The risk is not simply lost margin.

When value and commercial capability are concentrated offshore, the incentive and confidence to invest here can weaken, creating a cycle in which specialist skills decline and local capability declines, businesses become more dependent on capability elsewhere, and promising innovations struggle to reach the market. Over time, this can erode both the viability of fibre production and the knowledge and capability needed to create new value from it.

Opportunity therefore depends on more than having the raw material.

The system must be able to transform fibre, demonstrate its value and connect it to markets in ways that support investment and allow meaningful value to flow back through the chain.

That does not mean every stage needs to happen onshore. Specialist processing, testing, scaled manufacturing or distribution may be better delivered through international partnerships.

The strategic question is where Aotearoa New Zealand needs to retain capability, knowledge, relationships or control so that those partnerships create value here rather than simply transferring it offshore.



Why understanding global demand change creates a window

The way materials are assessed, selected and valued is changing. Buyers, specifiers, regulators, brands and consumers are placing greater emphasis on performance, credible proof, traceability, resilience and environmental outcomes.

This creates an opportunity for Aotearoa New Zealand, but not on natural origin alone. Nor will fibre value be unlocked by pushing more supply into the market and hoping demand follows. Value will come from understanding where demand is moving and where our fibre attributes and capabilities can credibly meet real customer needs.

A market-led approach means using that insight to guide where to focus, what to prove, what capability to build and who to partner with. It helps align innovation and investment with areas where New Zealand has a genuine demand advantage.

This report starts from a simple proposition: our fibre opportunity is realised when we connect what we produce with the capability, evidence, partnerships and markets needed to create and retain greater value.

Our fibre future is not defined by what we produce, **but by how we transform fibre into high-value products, materials and systems that meet real market needs.**



Textile and tradition

Te Kūiti-based Māori textiles specialist, weaver and conservator Dr Rangituatahi Te Kanawa (Ngāti Maniapoto), 70, comes from a line of distinguished weavers. Her own love for harakeke and traditional Māori weaving has found expression in her muka project, where she is researching how to process muka to make it spinnable, in order to produce a textile suitable for use in clothing.

Dr Rangituatahi Te Kanawa, known as Rangi, is one of twelve children who were all brought up on a farm in Oparure, a small valley just outside Te Kūiti. There were vegetable gardens, chooks, a horse, and sheep. Without realising it, Rangi’s upbringing was the beginning of her lifelong passion for natural fibres.

Harakeke was the other constant. As a young girl, Rangi and her sister, Ata, would often stay with their grandmother, Dame Rangimārie Hetet, who worked harakeke in a small shed at the back of her home, making whāriki, kete and kākahu. “The shed was as much a meeting place as a workroom. They would all get together, Nana and the other aunties and grand aunts,” Rangi says. “I’d say there was a fairly good amount of decent gossip about the community and whatnot, alongside the weaving, and they absolutely loved it.”

As a child, however, Rangi was oblivious to the depths of her grandmother’s skill, as well as that of her mother, Diggeress Rangituatahi Te Kanawa. “We just thought every Māori family did this,” Rangi says. “But eventually we came to realise not only was it quite rare, but that Mum and Nana were actually among a small handful of people keeping the practice of traditional Māori weaving alive.

Rangi’s own path to harakeke wasn’t straightforward. She was a solo mother at twenty and got a job working on the telephone exchange at the Te Kūiti Post Office for several years, before trying her hand as a shearing rousey. “I was no good at it, I got the sack actually,” she laughs. “That was when I went home and took up weaving. It was Nana who said that I actually had a good hand at it, and I found that I did enjoy it a lot.”



"These textiles are the result of nearly twenty years of research - comparing our muka to the industrial muka and linen fibres and evaluating processes to find the best means of producing a high- quality textile made of muka."

– Dr Rangituatahi Te Kanawa, Muka Textiles





Previous - Rangi at her home near Te Kūiti.
Far left - interiors fabric samples woven from muka and yarn.
Top - extracted muka fibres
Left - Rangi with traditional muka textiles.

Photographer: Maija Stephens (Rongimaiwahune, Ngāti kahungunu ki Heretaunga, Ngāti Rangi)

Within months of returning home, an unexpected opportunity changed the course of her life: the Department of Internal Affairs was looking for a weaver willing to train in the conservation of Māori textiles. Nana's advice to Rangi was simple: go and find out. "It was fantastic. I fell in love with it straight away," Rangi says when she describes the three-week course that quickly evolved into a three-year Bachelor of Science in the conservation of cultural materials and doctoral research.

Running alongside Rangi's career in textiles conservation is her decades-long pursuit of an apparel-quality textile made from muka, work that has established her reputation in the fibre sector. It began with a chance discovery in 1993, when a colleague at Te Papa handed her a photocopy of a letter dated from 1847, describing a bale of hand-extracted muka sent to a linen mill in Dundee, Scotland, and made into shirts for cavalry soldiers. The idea stayed with her, and by the mid-2000s Rangi was working with engineers to design a muka extraction machine. Early attempts led to a fibre that broke the pins on processing equipment, and Rangi resigned herself to the fact that only muka extracted by hand with a mussel shell, just as her mother and grandmother had taught her, would produce a fibre soft enough to be spun and woven - a method not practical to be repeated at scale.

A breakthrough came quite by accident, when Rangi was working on Kahu Ora: Living Cloaks, one of the largest cloak exhibitions ever staged at Te Papa, and a visitor happened to ask if anyone had ever developed muka into textiles. "Of course, all my colleagues knew that I'd been grappling with this for some time, and pointed him my way," Rangi says. "He turned my concept into a model, a wooden prototype, and in 2017 I was able to rebuild it using steel, and I can now extract muka to the same standard as by hand."

This breakthrough has carried Rangi's work to international partners, including Linificio, a long-fibre linen specialist north of Milan, last year. The first sample taken there processed beautifully to begin with, before stalling when the fibre proved too strong to be drawn out into a roving, the aligned, manipulable form needed for spinning. "Muka has got a mind of its own," Rangi laughs. Since then, trial and error has allowed Rangi to soften the fibre using water as the only additive, and she recently presented an upholstery-quality textile at the national Fieldays with Te Whiri Whitau research cluster colleagues from College of Creative Arts, Massey University in Wellington. She also showcased this at the Fashion and Textiles New Zealands' Threads of Tomorrow Summit.

An extract by Anna Brankin (Kai Tahu, Kāti Māmoe) for Shepherdess Magazine

SECTION 2

A vision for fibre



A future for fibre in Aotearoa

This future feels prosperous, resilient and place-based. People can build rewarding careers across fibre value chains in Aotearoa New Zealand, from growing and processing to forward-focussed innovation, science, design, manufacturing, technology and trade.

Practical skills, craft and knowledge are valued, renewed and passed between generations. Rural, regional and urban communities are better connected through fibre value chains that create opportunity, strengthen local capability and return more value to the people and places that produce our materials.

The natural systems that underpin fibre production are healthier too. Land is managed to build soil health, increase biodiversity and strengthen resilience; water and air are protected; waste is designed out; materials stay in use for longer; and fibre production contributes to restoring the environments it depends on.

The sector is well connected locally, and internationally. Businesses are confident to invest, innovate and collaborate. Aotearoa New Zealand turns more of its fibre, knowledge and creativity into higher-value products, materials and intellectual property that respond to changing market needs. Innovation amplifies differentiation, supports efficiencies and delivers smarter, more relevant solutions.

Success is shared more widely across the system, creating stronger businesses, thriving communities, healthier landscapes and a fibre sector future generations want to be part of.

SECTION 3

Aotearoa New Zealand's fibre system

Current state insights

Aotearoa New Zealand's fibre system is complex and layered. It includes established, emerging and experimental fibre streams operating at different stages of maturity, with distinct supply chains, capabilities, pressures and future potential.

The sector is in a period of transition, shaped by generational change, price volatility, new technologies and regulation, shifting consumer expectations and market demand, and new leadership challenging how things have been done in the past.

Despite decades of contraction and under-investment, Aotearoa New Zealand retains pockets of specialised processing capability and technical expertise. Some international brands are restructuring their supply chains and placing greater value on direct relationships with those who produce the raw fibre, including wool growers. New funding models are also emerging, creating different pathways for sector development.

Initial mapping identified at least 500 individual New Zealand entities that are part of our fibre value chain beyond the farm gate. These entities are involved with transforming our fibre into products here and overseas. Fibre-related economic activity has also been identified across more than 50 Australian and New Zealand Standard Industrial Classification (ANZSIC) codes, spanning farming, manufacturing, waste services, wholesale and retail.

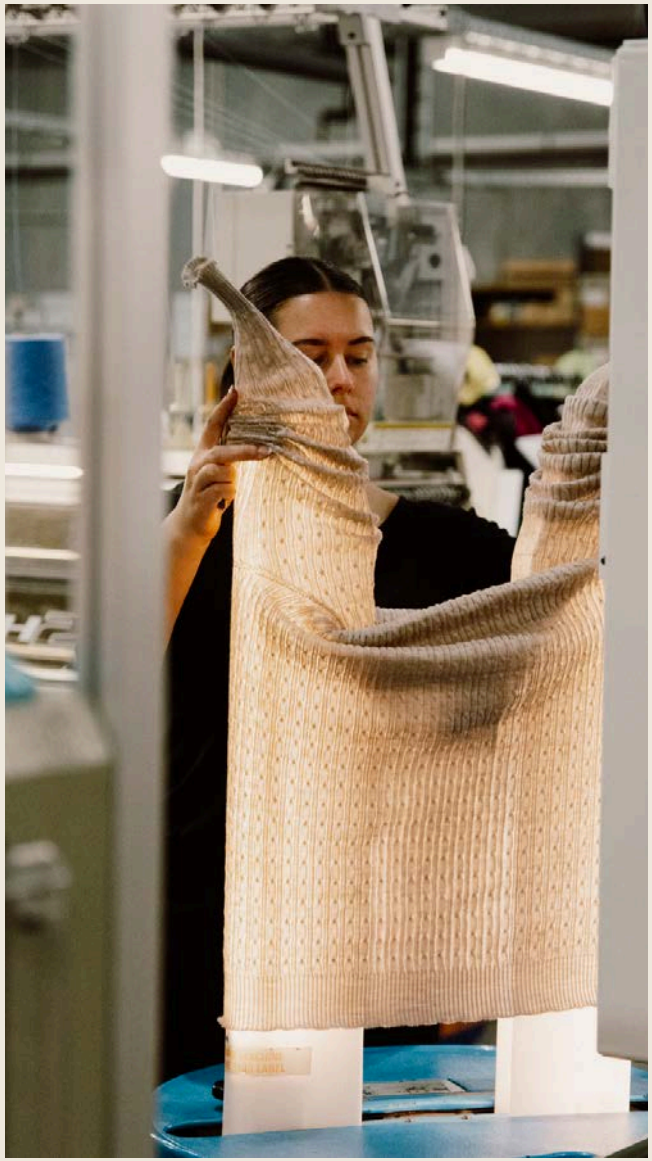
New Zealand fibre goes into a wide range of end uses including apparel, interiors, the built environment and technical applications. We also found many different models operating from raw material to market including local and offshore processing, often in combination (NZ Fibre System, Appendix 2).

Across fibre streams, there are points of convergence, including blended materials and composites, overlapping production systems, shared technical knowledge and increasingly aligned expectations around traceability, sustainability, and regulatory compliance.

Wool is by far the most established in terms of scale and on-shore capability. Other animal protein fibres, including mohair, cashmere and alpaca, operate at a much smaller scale. Hemp sits between experimental and emerging, while harakeke is re-emerging.

At the experimental edge of the ecosystem is bio-based material innovation using new or exploratory fibre sources, as well as side-streams and underutilised biological waste resources from food and forestry systems. Some of these resources already exist at significant scale and may have strong potential for conversion, but are still considered experimental due to processing gaps, investment needs and uncertain commercial pathways.

We acknowledge conventional paper, pulp and packaging as important parts of the wider fibre and forestry system. These have been excluded from the focus of this work, which has concentrated on opportunities to create and capture higher value through durable fibre products and materials. This boundary could be expanded in future work.



Current state volume and value

Our fibre stream value and volumes

TABLE 2. NZ FIBRE SUPPLY & FARM GATE VALUE (2025)

	Fibre	Volume (t)	Value (NZD)	Notes
Established	Wool	114,600	$540m	
	Skins and hides	54,050	$372m	Some double counting of revenue
Emerging	Mohair	31	$0.4m	
	Alpaca	33	$0.5m	
	Cashmere	1	$0.1m	
	Hemp	540	$1m	
	Harakeke	175	1.5m	Low confidence; limited data
Experimental	Bio-based materials	-	-	Limited data
	Recovered textiles	Currently recovered ~2,100	$11m	Mechanical recycling/downcycling sector exists. In theory 220,000t+ but small % recovered.
	TOTAL (ESTIMATE)	**171,530t**	**$926.5m**	

Source: Coriolis 2026 - based on 2025 data, or as available

Domestic manufacturing scale in Aotearoa New Zealand

TABLE 3. NZ DOMESTIC TEXTILE AND APPAREL MANUFACTURING (2025)

	# of enterprises	# of activities	# of employees	Estimated sector revenue (NZD)	Notes
Textiles	804	797	5,111	$1420m	Range estimated $1400-1500
Apparel & Footwear	513	561	2,295	$430m	Range estimated $400-450m
TOTAL	**1,317**	**1,353**	**7,410**	**$1.85b**	Range estimated $1.8-1.95b

Source: Coriolis 2026 - based on 2025 data, or as available



Not your standard yarn

Growing up as part of the fourth generation on her family’s Marlborough farm, Emma Ensor, 46, fell in love with wool. Emma now oversees three brands as part of her family’s business – Standard Issue, Royal Merino and McDonald New Zealand Knitwear. While they all have different target markets, under Emma’s guidance the brands share a common goal – to make beautiful, long-lasting garments right here in Aotearoa using natural fibres.

Where does your love for wool and natural fibres come from? From an early age on our family farm in Marlborough, I just lived and breathed it. Whether it was helping out in the shearing shed or at lambing time, I grew up around sheep and fibre. And because we lived on the farm, and my gran spun the wool, we would have woollen jumpers. One time my mum had been away and she brought me back a little navy jumper that had lots of little sheep on it – it was my favourite, favourite jumper. I can still visualise it. I probably took for granted what I knew about wool and life on the farm. And then, as you do, I went off to university and then quickly escaped to Australia for seventeen years and didn’t think twice about the farm.

What brought you back to Aotearoa? As a family, we had always looked at diversification so that as the family grew everyone could be part of the business if they wanted to. Part of that diversification in the 1990s was vineyards – we have alluvial riverbed flats, which were perfect for that. Then, when I was in Australia, the farm business was thinking of diversification again and looked at all sorts of businesses we could acquire, but McDonald Textiles, obviously having the link with fibre, just felt like a really strong connection. McDonald Textiles was established in the early 1980s and was owned by the one family before we purchased it. It’s been really nice as a young person growing up on the farm to know the production side – and now as an adult to understand the manufacturing side and be able to bridge the two together.



“We’re producing a quality garment that we truly believe in, and it hasn’t left the country. All that value just sits in it when you feel it, when you see it, when you wear it.”

- Emma Ensor, McDonald Textiles





Previous - Emma at McDonald Textiles mill in Auckland; far left - close up of merino possum knitwear; Top - Emma and sample garments, Left - a garment produced using whole garment knitting technology.

Photographer: Vivian Gehrmann

And you’ve continued to build your fashion portfolio? The family purchased McDonald Textiles in 2017 – it is the parent company. Under this we have three brands: McDonald New Zealand Knitwear, Standard Issue and Royal Merino. The Standard Issue opportunity came up in 2019. Since then we have gone on to acquire Royal Merino as well.

Are there economies of scale having three fibre-based brands? Absolutely. We’ve gone about it in a quite unique way where we’ve invested in knitting machines and technology. We have our consumer-facing brands and we’re looking at where the consumer demand and need might be, and then looking back to see how we can fit that resource correctly – and that will continue to evolve. So maybe there’ll be a line of a different micron that comes through and we’ll see a different space for it that’s right for what consumers are wanting.

Can you give us an example of evolving with the market? This new Standard Issue collection of cable sweaters we’ve just launched using our own Corriedale wool has actually taken from 2019, when we acquired Standard Issue, to now. We’ve been looking at the wool clips each season to see what’s right, and this one was just perfect for the consumer proposition we wanted to put forward. So that became a woollen-spun garment because we’ve got a very solid woollen spinning plant in New Zealand.

What does that mean for you to have end-to-end control? It’s important to us that all the garments at the end are of a certain quality. We want to produce world-class garments that we can fully guarantee we’re producing at that level. We can play with different knit structures to get the best out of the yarn. We have this ability because we’re not relying on a third party to process any of that.

How important is brand and storytelling to you? Finding that connection, speaking the language of your community and understanding what they need and delivering on that – it’s absolutely critical. I mean, you can produce garments offshore, but it’s the importance of truly positioning our brands, having world-class talent sitting here in New Zealand making these garments, and our ability to fully own every part of that garment manufacture. So we are delivering to you something that is truly special. We’ve got the DNA of what consumers are saying they want. In terms of natural fibres made locally, there are definitely people wanting that – there is a growing trend towards slowing down and buying pieces that are going to last versus a hundred pieces that are just for now.

An extract by Felicity Connell for Shepherdess Magazine

Our fibre streams at a glance

TABLE 4. AOTEAROA NEW ZEALAND FIBRE STREAMS SUMMARY

	Wool	Skins & hides	Mohair, alpaca & cashmere
Maturity	Established	Established	Emerging
Current state	Large national-scale fibre stream ~114,600t produced in 2025. Volumes are falling, but wool remains nationally significant. Strong, mid and fine micron types vary in value. Fine wool prices continue at high levels, while coarse wool prices are increasing from historic lows.	Significant meat co-product stream ~54,000t, with value mostly captured offshore after early processing. Includes possum, which is very small in comparison, with estimated volumes between 50-100t (indicative only).	Niche premium fibre streams low tonnes, high-value niche potential. Mohair about 20-30 tonnes, cashmere about 1.6 tonnes, and alpaca about 33 tonnes.
Outlook	Anchor natural fibre stream with near-term potential in performance-led strong-wool applications and premium integrity-led fine wool.	Established animal co-product stream where value depends on retaining or reconnecting downstream premium value.	Small premium animal-fibre cluster suited to provenance-led luxury, yarn and finished-product niches.
Key applications	Apparel, carpets, rugs, upholstery, insulation and acoustic non-wovens, bio-based ingredients e.g. pigments and powders. Depends on micron type.	Leather goods, footwear, upholstery, sheepskin products; collagen & other side-stream uses.	Premium yarns, knitwear, woven textiles, interiors, luxury NZ-made products, and blends with wool.
Key markets	$540m farm gate value. China and India are the largest volume markets; Australia and Italy pay higher average prices. NZ is important for carpets, interiors and emerging built-environment uses.	Worth ~$372m. Main export markets include China and Italy. Higher-value opportunities are linked to premium brand and luxury supply chains, often offshore.	NZ-based production and small-batch manufacturing, with potential in premium domestic and export niches.
Challenges	Falling wool volumes, repeatable quality and supply, much of the value added offshore, limited local manufacturing, and loss of specialist skills. Fragmented industry representation despite size.	Secondary to primary product (meat). Most finishing happens offshore, local environmental requirements are strict, synthetics are competing, and quality can vary.	Low and scattered supply, reliance on a few skilled processors, and need for clearer pricing and consistent fibre quality.

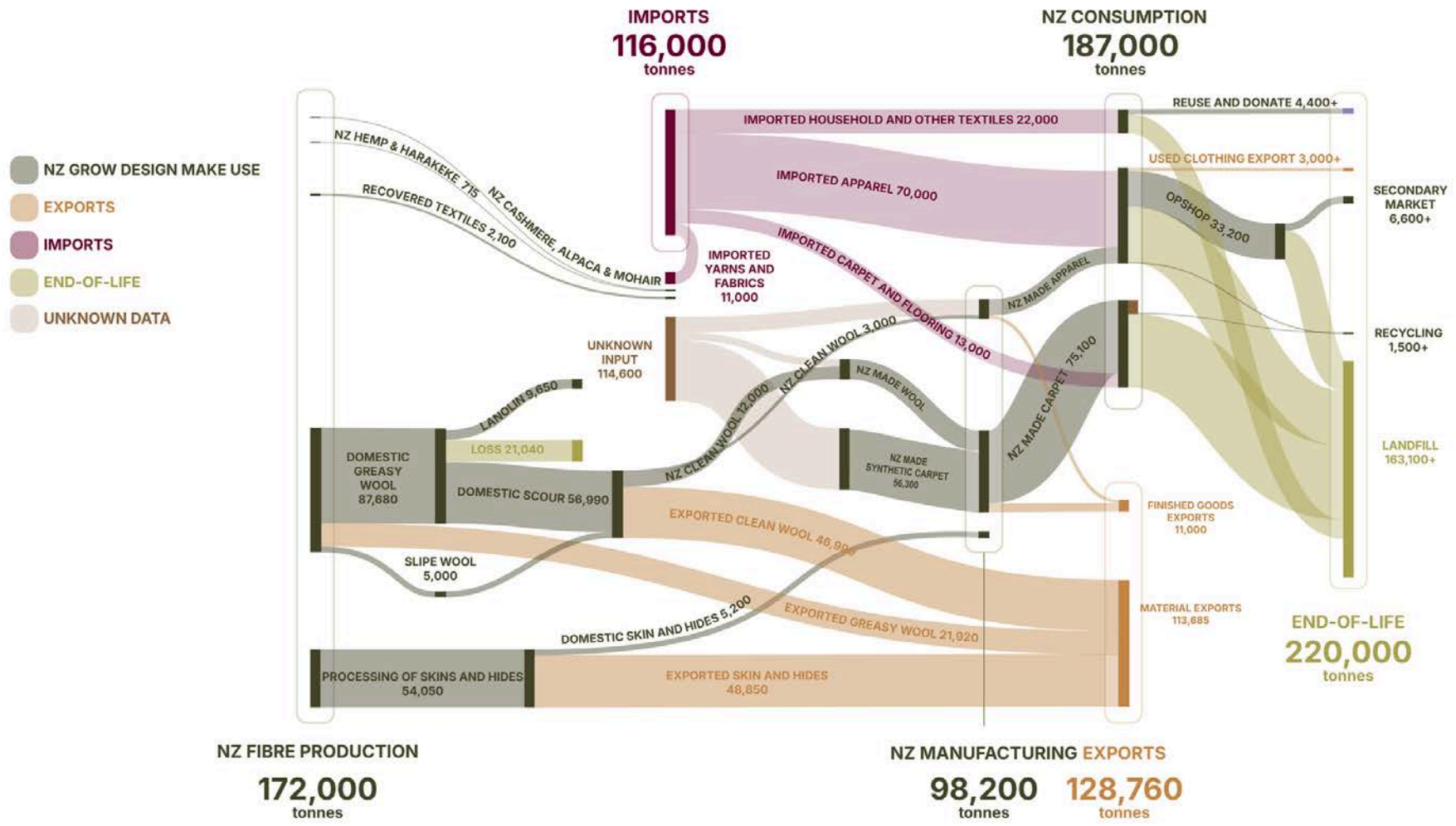
Our fibre streams at a glance

TABLE 4. AOTEAROA NEW ZEALAND FIBRE STREAMS SUMMARY (CONTINUED)

	Hemp	Harakeke	Bio-based materials	Recovered fibres
Maturity	Experimental to emerging	Re-emerging	Experimental	Emerging
Current state	Small but growing crop-based stream ~180ha / ~1,800t biomass, with scale dependent on processing and offtake, volume highly variable year-on-year.	Very small volumes estimate 10-20t processed muka; strong cultural and strategic distinctiveness.	Large latent feedstock opportunity especially forestry residues (represent around 4 million tonnes of possible biomass input), but mostly pre-commercial today.	Textile waste is a large, under-utilised resource stream estimated at ~220,000 t/yr, with only a small fraction recycled.
Outlook	Early-stage whole-plant opportunity with potential across fibre, hurd and other co-products. Further R&D, processing capability and market development are needed to prove viable pathways.	Distinctive taonga and performance fibre pathway where Māori-led governance, processing reliability and IP protection are central. Processing, performance and commercial pathways still need to be proven.	Cross-cutting innovation platform for turning biological side-streams into higher-value material inputs, supported by industrial symbiosis and regional value chains.	Circular feedstock opportunity where sorting, decommissioning and repeatable offtake determine value creation.
Key applications	Hurd, bast fibre and seed and other co-products. Hempcrete, insulation, interior textiles, and flooring.	Rangara and whatu weaving. Potential pathways include technical materials, composites, interiors and apparel, but depend on further processing and product development.	Potential for technical materials made from forestry, food, marine or fibre side-streams, including both novel products and drop-in substitutes for existing materials.	Resale, reuse and repair currently limited for lifespan extension. Yarn, insulation, acoustic products, underlay, felts, panels incorporating recycled inputs.
Key markets	Primarily Aotearoa New Zealand-based at this stage, with potential pathways in construction and other material applications still being developed and tested.	In development. NZ market currently, across non-woven textiles. EU market for composites (automotive, marine, sports equipment). The apparel market is developing. Alignment with 'long fibre' processing capability essential.	In development. NZ has research and feedstock strengths, but many markets and scale-up partners scale-up partners, manufacturers and end markets are global.	Mostly a domestic NZ challenge and opportunity. Some innovation pathways are internationally connected, including links into Europe for cellulose recycling development. Virgin and fossil derived resource substitution.
Challenges	Small processing base, uneven demand, compliance costs, and building products need testing and approval.	Harvesting is labour-intensive, Processing is developing, but very few scalable and consistent processing machines exist. There is also no NZ-based capability for further processing of harakeke fibre into yarns and textiles.	Difficult to move from laboratory trials to commercial scale. Feedstocks can be inconsistent, testing and certification are costly, market demand remains uncertain, and commercialisation often depends on access to validation partners and routes to market.	Textiles are hard to sort, many are blended materials, recycling capacity is small, and reliable offtake are still developing. NZ does not have regulated product stewardship. NZ volumes relatively small and dispersed, making international investment challenging.

Indicative material flow estimates

VISUAL 2. INDICATIVE MATERIAL FLOWS FOR AOTEAROA NEW ZEALAND FIBRE AND TEXTILES VOLUMES (2025)



Future of Fibre Aotearoa

Source: Adapted from Coriolis 2026 - based on 2025 data, or as available

Our strengths and constraints

Industry engagement highlights a sector with strong advantages including world-renowned natural raw materials, innovation and design capability, and an authentic, trusted provenance story. We also heard New Zealand has gaps in the infrastructure needed to turn these strengths into value.

Despite producing globally recognised natural fibres, New Zealand's fibre ecosystem faces structural barriers that limit its ability to create and retain more value locally.

While there have been important recent developments across wool, hemp and harakeke to strengthen coordination, this research identified six cross-cutting constraints spanning the full value chain, from fibre production and processing through to product development and global market access.

Together these constraints highlight that future competitiveness will depend not only on fibre production, but on strengthening the system that enables fibre to be transformed, scaled, and sold.

To realise greater value, our research points to a shift from a commodity-led model toward a more transformation-led system. This will require targeted investment, stronger commercialisation pathways, skills and capability development, and greater alignment across the sector.

Critically, this includes building stronger connections to overseas markets, customers, and commercial partners so that products are developed in response to real market problems and customer needs, with clearer product-market fit.

There is also an opportunity to make better use of what already exists. With different fibres at varying stages of maturity, learnings from established fibre groups such as wool can be applied to emerging and experimental fibres, particularly in areas such as innovation, product development, market development, and commercial models.



What we do well

- High-quality natural fibre production with an authentic provenance and transparency story.
- Pockets of applied innovation and design-led product development capability.
- Relationship-based value chains with direct grower–maker–brand/specifier links that improve quality feedback loops, traceability, storytelling, and margin.
- Values-led and IP-driven business models, including place-based and culturally grounded fibre systems, particularly relevant for tikanga/mātauranga-informed pathways.
- Emerging opportunities to replace synthetics where regulation and customer demand increasingly favour natural alternatives.

Structural barriers

1. Fragmentation across the sector
Fragmentation across fibres, regions and stages of the value chain limit coordination, knowledge sharing and collective strategy, slowing progress and weakening scale.

2. Limited processing & manufacturing capability
Gaps in processing and manufacturing infrastructure, particularly at pilot and mid-scale, constraining the ability to prototype, test, and scale products toward commercial production. There is also risk to existing infrastructure and capability if the system is not strengthened.

3. Weak pathways from innovation to market
Too few innovations make it from development to market. Gaps across the innovation pathway including prototyping, testing, validation, investment, and market connection, make it difficult to commercialise and scale.

4. Skills loss & capability gaps
Skills loss and succession risk are growing in specialised fibre, textile and manufacturing roles, including tacit technical knowledge held by a small number of experienced people. Formal training pathways are limited, making it difficult to build new capability and pass existing knowledge on.

5. Demand creation & market access
Many parts of the system have limited connection to customers and markets, and limited understanding of changing global demand. Businesses can lack the resources and relationships to understand what markets require, connect into the right value chains, validate opportunities and build sustained market presence. Better market understanding is key to targeted innovation and investment.

6. Investment and capital
Access to investment and capital remains difficult, particularly through the long pathway from R&D and early-stage development to commercial scale. Uncertainty around markets, infrastructure and commercial models can make emerging fibre opportunities difficult to finance.

Value creation



Value is created and captured at different points across the fibre system, from how fibre is grown and produced through to processing, product development, design, branding and market relationships.

How much of that value Aotearoa New Zealand retains depends on the capabilities, relationships and commercial models that connect fibre to market demand.

Key insights:

- Transformation into materials, products and other higher-value applications can create opportunities to capture more value.
- Brands can play an important role in translating fibre attributes into demand, premiums, and global market recognition.
- Closer relationships across value chains can improve market insight, quality, traceability and the ability to capture value.
- Aotearoa New Zealand has strengths that could support premium, design-led differentiation.
- Sustainability and provenance creates value when they are aligned with market demand.
- Different fibre streams require distinct strategies to realise their full value.

Our research highlights an opportunity for Aotearoa New Zealand to capture more value from its fibre through design-led products, performance benefits, and market positions, supported by the right processing, design, and product development capability.

This does not mean always competing at global commodity scale or doing everything here.

It requires a deliberate balance: building capability and scale where they strengthen our advantage, while leveraging global supply chains for specialist expertise, market access, reach and efficiency.



> “What has probably kept me interested is that, when compared to other forms of agronomy, I’m involved right through from growing to product development, so you have to really try and understand everything.”
>
> *– Travis Ryan-Salter, Rubisco*

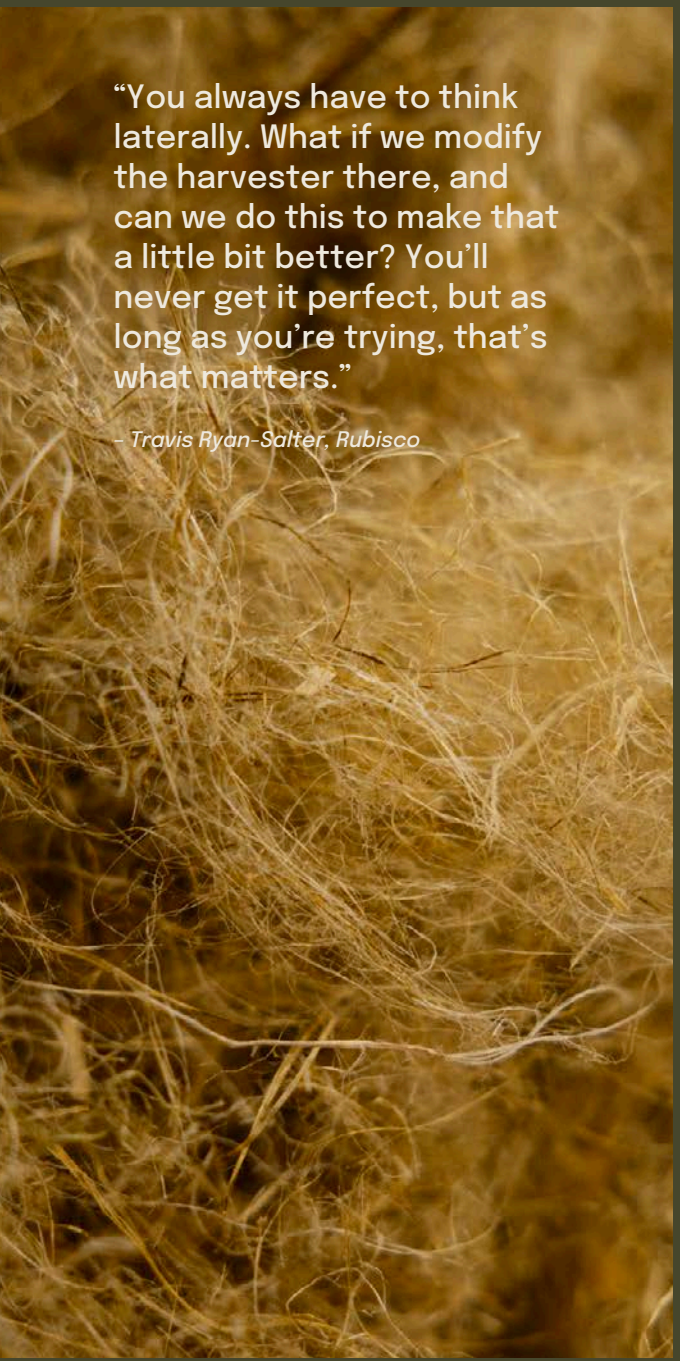
Field to fibre

Travis Ryan-Salter, 36, guides hemp from seed through to finished product for Rubisco, an Ashburton-based company that manufactures innovative, natural, high-quality yarns in Aotearoa and distributes them globally. Here, Travis explains how he combines his agronomy and engineering expertise to unlock new opportunities for natural fibres, including hemp.

What’s your current role? I look after technical development at Rubisco. I work right from choosing the seed for our crops through to harvesting, through to processing, and then eventually into product development. With hemp, every production step is quite important to understand because it affects the next. You can’t just grow a hemp crop and apply it to every product you want. You have got to be quite specific in how you grow it. For example, the desired fibre characteristics are quite different between a T-shirt textile and a geotextile cloth. So it’s very technical, and as a company we’ve had to learn so much.

What was the career path that led you to where you are now? I grew up in Auckland and spent a lot of time in the Hawke’s Bay – my cousins had a farm there and that’s what got me interested in agriculture. I’ve always enjoyed engineering, mechanics and tinkering with engines. I moved to Christchurch in 2008 when I went to university. My degree was in ag science and then I did a PhD in agronomy and high-country development, which is basically field-based plant science. Then I decided that I’d go more down the engineering route, so I worked in GPS, automation and agricultural equipment for a while. That’s actually how I came into Carrfields, which is the parent company of Rubisco.

What does a typical day look like? I’m usually up at six and in the ute by 6.30am. If it’s the growing season, I’ll check the crops once or twice a week, depending on conditions. Then it’s into technical emails, over to the processing plant in Ashburton to see how processing is going, planning the next modification, organising the crop handling, or working with specialists and running trials to improve new products.



"You always have to think laterally. What if we modify the harvester there, and can we do this to make that a little bit better? You'll never get it perfect, but as long as you're trying, that's what matters."

– Travis Ryan-Salter, Rubisco





Previous - Travis with harvested hemp
Far left - hemp fibre
Top - Travis at Rubisco with processed hemp
Left - Rubisco's Ashburton site.

Photographer: Kelly Shakespeare

What are some of hemp's special properties? It's the sheer flexibility. If you change the sowing density, the watering regime, or the planting date, it all has such an effect on the specifications. It's immensely strong and the speed it can grow at is phenomenal. You're going from a seed to around three metres tall in eighty-five days.

Rubisco is exploring combining wool with hemp – why is that? Rubisco is actually one of the last independent spinning mills in the country – we get the scoured wool in and then do the spinning to produce yarn, including for high-end products like carpets. If you can combine wool with hemp, hemp offers a lot of the things the wool can't do, so you get a really good combination. Hemp can yield a lot of fibre per hectare compared to what an existing flock of sheep would do, and as a bonus it's a carbon-absorbing crop. But the main reason from a fibre point of view is that it's incredibly strong, and you can produce fibres of different lengths depending on what you want.

What sort of products is Rubisco developing out of hemp? Our hemp fibres are being used for geotextiles such as roadside stabilisation mats. Another focus area is building products. That's also about making use of as much of the hemp plant as possible. There is fibre around the outside of the plant, and the hurd on the inner core. When you grow hemp, around sixty-five per cent of your yield is going to be hurd, so you've got to make sure you can turn the hurd into something useful. We've also made a twill fabric used in biocomposite panels. We co-developed this panel with Gurit, who are world experts in combining that sort of material with recycled PET and green epoxies, and we've had some interest from the motorsport industry. We've also got a close relationship with the largest hemp company in America.

What's the appeal of working on a relatively new commercial crop? I'm grateful to be working on this project with the backing that we have. Hemp is a new industry really, and building these new industries is difficult, time-consuming and very expensive. You've got to have people who understand bringing capital into a company, who understand the building industry, who know how to grow hemp and then how to process it. It's certainly not for the faint-hearted. To allocate that much capital and effort into something that's quite risky and largely unknown takes a big leap of faith from the company. That's pretty unique and pretty cool because it's very easy to keep doing what you did, but it's very hard to do something new. And I think, ultimately, it'll be for the better of New Zealand agriculture.

An extract by Felicity Connell for Shepherdess Magazine

SECTION 4

What global demand is signalling

Macro trends at a glance

Global markets are changing what they buy, how they buy, and what they expect.

Consumers, brands, manufacturers, governments and specifiers all shape demand, and their priorities are shifting quickly.

These demand signals capture what is changing outside the New Zealand fibre system, what is driving that change, and why these trends matter for Aotearoa New Zealand fibre.

Eight macro trends emerged from our research:

1. Proof, compliance and digital trust
2. Performance-led natural material transition
3. Wellbeing and healthy environments
4. Circular, regenerative & climate resilient systems
5. Premium value through performance, design, meaning
6. Resilient and relational value chains
7. Specification-led demand and delivery
8. Digital and AI acceleration

TABLE 5. DEMAND SIGNAL MACRO TRENDS OVERVIEW

Demand signal trends	Signal strength	Horizon
Proof, compliance and digital trust Market access increasingly depends on credible, accessible and comparable evidence and identifiable standards that can be trusted by regulators, buyers, specifiers and digital systems.	Established	0-2 years
Performance-led natural material transition Interest in natural and bio-based materials is growing, but adoption depends on their ability to compete on price, performance, consistency and fitness for purpose.	Accelerating	0-5 years
Wellbeing and healthy environments Demand is growing for materials that support comfort, health and indoor environmental quality through attributes such as thermal, acoustic and moisture management, low-toxicity and sensory wellbeing.	Accelerating	0-10 years
Circular, regenerative & climate resilient systems Sustainability expectations are expanding from reducing harm to managing whole-life impacts, restoring natural systems and responding to climate and resource pressures.	Accelerating	0-10 years
Premium value through performance, design, meaning Premium markets are increasingly rewarding products that combine performance and quality with design, provenance, craft, longevity and emotional relevance.	Accelerating	0-5 years
Resilient and relational value chains Resilient supply increasingly depends on long-term, aligned relationships that improve transparency, responsiveness, supply security and value creation.	Established	0-10 years
Specification-led demand and delivery Technical and institutional specification-led markets require consistent, tested, and verified standards-aligned solutions where performance can be supplied reliably at the required quality and scale.	Established	0-10 years
Digital and AI acceleration Digital tools, AI and automation are reshaping how products are developed, made, discovered and selected, increasing the importance of accurate, structured and trustworthy data.	Accelerating	0-2 years

Proof, compliance and digital trust

Market access and consumer confidence increasingly depend on verified, comparable evidence of traceability, provenance, sustainability and safety claims.

Key signals

- Regulatory compliance and certification are becoming prerequisites for market access; some 26 pieces of incoming EU legislation will impact Aotearoa New Zealand fibre and product exporters.
- Sustainability claims increasingly require credible evidence, use of accepted methodologies and provision of supporting data.
- Traceability and transparency are increasingly expected, with younger consumers seeking information that allows them to judge claims for themselves.
- Consumers are scrutinising claims more closely; 88% of Edelman's surveyed consumers say brand trust is critical to purchasing decisions.

Signal strength
Established

Horizon
0-2 years for core requirements; deepening through 2027-2029.

Why this matters for fibre

Buyers and regulators no longer simply ask "do you care?" but "can you prove it?" The basis of trust is shifting from broad claims to evidence. Proof is becoming the price of market entry, not a premium. Verified standards, assurance systems, traceability, digital product information and increasingly AI-readable evidence are becoming part of how products are assessed and selected. New Zealand fibre cannot rely on broad claims of being "natural", "regenerative" or "sustainable". The sector needs credible evidence systems, internationally accepted definitions and verified information that can travel with fibre into market.

This raises an important strategic question for Aotearoa New Zealand: are existing global standards sufficient to recognise the full value of local production systems, or is there a role for a complementary New Zealand assurance layer that captures attributes not fully visible in current schemes?

The ability to substantiate claims is becoming part of the product's value proposition. Value is moving toward supply chains that can demonstrate origin, production conditions, animal welfare, environmental impact, performance and, increasingly, end-of-life pathways. Requirements vary by market: apparel buyers may prioritise origin, fibre composition and modern slavery risk; built-environment specifiers require fire, acoustic, durability and emissions evidence; circular products need information on repairability, reuse and recycling.

Aotearoa New Zealand already has foundations to build from, including established integrity programmes such as ZQ, ZQ+, Responsible Wool Standard (RWS) and NZ Farm Assurance Programme (NZFAP). We also have a largely deforestation-free production base, growing farm-level traceability and internationally recognised scientific testing, including isotopic methods that can verify origin through finished products.

However, not all forms of proof carry equal market value. Many markets favour internationally recognised, third-party schemes, while fragmented domestic credentials can add cost without delivering a return.

Certification creates value where it is aligned with market requirements, independently verified and connected to a clear route to market. Fibres that cannot provide recognised proof risk remaining interchangeable commodities, regardless of their underlying quality.

A changing regulatory landscape

At least 26 pieces of EU legislation will touch NZ fibre exporters: the Deforestation Regulation; Ecodesign rules phasing in Digital Product Passports for textiles between 2027 and 2029; a ban on generic environmental claims from September 2026; and the Green Claims Directive, set to require every environmental claim to be substantiated with scientific data and approved before use. The EU's Product Environmental Footprint (PEF) methodology is separately reshaping how fibres are compared and assessed for sourcing decisions.

The US is moving on parallel tracks: forced-labour tracing under the UFLPA, FTC rules requiring fibre-content and origin labelling and environmental claims to be truthful and substantiated, and California's textile producer-responsibility law.

Enforcement is sharpening: the UK's Advertising Standards Authority has banned Nike, Superdry and Lacoste advertising over unqualified claims, and regulators are deploying AI to identify potential breaches.

Performance-led natural material transition

Interest in natural and bio-based materials is growing, but adoption depends on their ability to compete with fossil-based synthetics on price, performance, scale, consistency and fitness for purpose.

Key signals

- Natural and bio-based materials are gaining relevance as alternatives to fossil-based synthetics, with brands and consumers actively shifting, sometimes influenced by regulation.
- No single fibre will dominate; materials will increasingly be selected for the specific combination of performance, cost, availability, environmental impact and application they can deliver.
- Natural fibres must compete not only with synthetics, but also with other natural and bio-based materials. Advantage will depend on where fibre can offer a stronger combination of performance, price, consistency, provenance and fitness for purpose.
- Cost and affordability remain major constraints; consumers want sustainable options that are practical and accessible.

Signal strength
Accelerating

Horizon
0-5 years for regulatory-driven shifts; a structural tailwind beyond that.

Why this matters for fibre

This shift reaches well beyond apparel into buildings, interiors and technical applications. Three forces are converging. Regulation is increasing pressure on materials associated with persistent chemicals, deforestation and fossil-based inputs, while the EU Bioeconomy Strategy is seeking to scale bio-based alternatives. Consumers are moving in the same direction: search interest in natural fibres has risen markedly over the past five years, US awareness of microplastics has increased from 17% to 41% since 2017, and 59% of US consumers now say they would seek out microplastic-free fibres.

Brands are also adjusting their material strategies. Patagonia now uses synthetics only where natural materials cannot deliver the required performance, while many other brands are taking a more gradual approach through blended or mixed-material portfolios. However, 80% still lack sustainable sourcing targets. The shift is particularly visible in the built environment, where biological materials are gaining attention across structural, envelope, fit-out and landscape applications.

This is reshaping fibre markets rather than replacing synthetics wholesale. Polyester still accounts for 59% of a 132-million-tonne global fibre market and continues to gain share. The opportunity for natural fibres is therefore not primarily a substitution story, but a reallocation toward applications where their attributes create higher value.

Wool, hemp, flax, cellulosics and other fibres each bring different strengths, limitations, price points and processing requirements. Materials are likely to be selected according to the attributes that matter most for a particular application, rather than on natural origin alone.

This may shift value toward fibres that can demonstrate both performance and provenance, while creating greater pressure on synthetic-dependent materials where microplastic, per- and polyfluoroalkyl substances (PFAS) or other environmental liabilities are harder to manage.

For Aotearoa New Zealand, some of the greatest potential sits beyond apparel, including interiors, acoustics, insulation and geotextiles. Wool Impact projects domestic wool manufacturing to double by 2028, reflecting growing interest in these applications.

Capturing this opportunity will depend on demonstrating where New Zealand fibres genuinely outperform alternatives, the markets in which that performance matters, and the scale at which they can realistically compete. Improvements in Life Cycle Assessment (LCA) methodology and the treatment of biogenic carbon may also strengthen wool's position relative to oil-based synthetics.

Wellbeing and healthy environments

"Good for the planet" is being joined, and in some cases overtaken, by "good for my body". Buyers are placing greater value on materials and products that support comfort, health and indoor environmental quality.

Key signals

- Health, comfort and material safety are becoming stronger purchase drivers.
- The built environment is emerging as a major market for natural fibres and biological materials with human wellbeing becoming a stronger design driver.
- Technical performance is opening applications beyond traditional apparel.
- Ageing, wellness-focused and values-driven consumers are seeking products that support health, wellbeing and quality of life.

Signal strength
Accelerating

Horizon
0-3 years for interiors and the built environment, where adoption is already underway;
3-10 years for mainstream apparel.

Why this matters for fibre

Consumers are placing greater emphasis on health, quality and what products contain. Half now actively avoid artificial ingredients, with similar scrutiny spreading from food into apparel and interiors. Across Asia-Pacific, Europe and the US, "healthiest for my family" and "quality" now outrank "good for the planet", while an estimated 500 million consumers have the spending power to participate in the wellness economy.

The built environment is reinforcing this shift: WELL certification has passed 250 million square feet and is increasingly paired with LEED, while designers are giving greater weight to human wellbeing in material selection. The opportunity also extends beyond passive comfort, with wearable and sensor-enabled textiles beginning to support active health monitoring, although these remain concentrated in higher-value niche markets.

For fibre, the opportunity varies by application but aligns well with natural fibre qualities such as comfort, breathability, thermal insulation, acoustic absorption, moisture regulation, fire performance and the potential for low-toxicity material systems. Research into natural materials and biophilic environments also points to potential wellbeing benefits.

Health and wellbeing propositions need evidence. Claims about comfort, indoor environments or impacts on the body should be supported by the same credible testing and verification expected of other technical performance claims. Perceptions around wool and allergy can also influence material choice, reinforcing the importance of clear evidence and communication around fibre properties and health claims.

Some barriers remain, including perceptions that wool is itchy or difficult to care for. Even so, health, comfort and wellbeing remain relatively underdeveloped parts of the natural fibre value proposition.

For Aotearoa New Zealand, this creates opportunities across several fibre categories: strong wool in healthy interiors and acoustic applications, fine wool in next-to-skin and performance apparel, and emerging applications beyond textiles. Companies such as Lanaco and WoolAid already demonstrate how wool can be positioned around health and functional performance, rather than fibre provenance alone.

Circular, regenerative and climate-resilient systems

Sustainability expectations are expanding from reducing harm to managing whole-of-life impacts, restoring natural systems and responding to climate pressure.

Key signals

- Regenerative, nature-positive and place-based production can create differentiation and is gaining attention from global consumers.
- Circularity is influencing material choice, durability, repair and end-of-life.
- In the built environment, circularity is becoming a design, compliance and business model requirement rather than an end-of-life activity.
- Climate pressures are increasing demand for low-carbon and climate-adaptive materials.

Signal strength
Accelerating

Horizon
0-10 years. Progress depends on coordinated advances across manufacturing, product design, recovery systems, consumer behaviour and regulation, although industry innovation is likely to move faster than policy.

Why this matters for fibre

Regenerative fibre systems are emerging as a premium signal of value in global markets, while buyers are placing greater emphasis on materials and products that reduce waste, support circularity, demonstrate nature-positive outcomes, and respond to climate risk.

Regulators and markets are widening the sustainability lens from reducing harm to considering whole-life impacts. Extended Producer Responsibility schemes, Ecodesign requirements, Digital Product Passports and built-environment standards are increasing expectations around durability, repair, reuse, material recovery, and environmental performance. Consumers are moving in a similar direction, particularly Gen Z with growing interest in longevity, lower consumption, and repair.

At the same time, regenerative production is gaining attention as consumers increasingly seek products with stronger environmental outcomes and brands look beyond reducing impacts toward positive outcomes for soil, biodiversity, and water. Definitions and evidence, however, remain inconsistent.

For fibre, this shifts value away from end-of-life waste management alone and toward systems designed to keep materials in use at their highest value for longer. Resource scarcity, climate pressure and competition for land are likely to strengthen this shift by increasing the value of durability, efficient material use, adaptability, and credible regenerative outcomes.

Fibres and products that can combine technical performance with repairability, reuse, recyclability or safe biological cycling will be better placed to respond. But circular or regenerative claims will increasingly need measurable evidence, including environmental, social, and intergenerational outcomes.

For Aotearoa New Zealand, natural fibres have attributes that can support this transition, including durability, repairability, biodegradability and the potential for biological nutrient cycling when products and systems are designed accordingly.

New Zealand also has manufacturers, designers, and brands already trialling circular approaches, and its relatively small scale may make new models easier to trial. However, limited product stewardship, collection, reuse and end-of-life systems currently constrain how much circular value can be captured domestically.

Regenerative agriculture

Regenerative agriculture is place-based and context-specific, which means it does not have a single “one-size-fits-all’ definition. This can make accurately communicating claims challenging.

The Textile Exchange definition of regenerative agriculture includes the core concept that agriculture works in alignment with natural systems, and focuses on promoting beneficial outcomes for ecological health, social and economic equity, and animal welfare, a holistic approach that builds more resilient systems.

It is inclusive of both cropping and grazing systems, recognising the interconnected role of crops, livestock, and land management in achieving regenerative outcomes.

Premium value through performance, design, meaning

Premium and luxury customers are redefining value around meaning, craft and substance rather than volume, rewarding quality, design, provenance, longevity and emotional relevance.

Key signals

- Design, brand and storytelling are increasingly central to creating value, with premium buyers purchasing on values as well as performance.
- Premium markets reward quality, craftsmanship, provenance and distinctive experiences.
- Performance, price and end use, not fibre type alone, determine market success; luxury consumers prioritise fewer, more meaningful purchases.

Signal strength
Accelerating

Horizon
0-5 years for the luxury and premium tier, where spend growth and wealth transfer are already underway ($15-20tn by 2029, luxury market to ~$700bn by 2030).

Why this matters for fibre

However, story alone is not enough; premium value depends on genuine buyer connection and a willingness to pay. Affluent customers are making fewer, more considered purchases as price fatigue and spending on experiences reshape consumption. At the premium end of the market, craftsmanship and quality are baseline expectations; emotional connection, identity and values increasingly shape desirability in a luxury market projected to reach around $700 billion by 2030.

At the same time, as AI-generated imagery becomes widespread, designers are leaning into process, imperfection and materiality to reinforce and craft authenticity, making the process itself a more visible part of the value proposition.

The customer base is also shifting: Gen Z luxury spending is growing twice as fast as previous generations, alongside an expected $15–20 trillion intergenerational wealth transfer by 2029.

Premium brands are responding by protecting the substance behind their story, including investing directly in manufacturing and supply chains to safeguard craft and differentiation. Prada's investment in Rino Mastrotto is one example. WGSN's "Restorers" similarly reflects growing demand for provenance, longevity and brands that can demonstrate the value behind their claims.

This plays to qualities natural fibres can offer particularly well: durability, craftsmanship, provenance and a story grounded in a real place and production system. Fibres that combine these attributes with performance and verified sustainability are well placed to meet premium market expectations.

Capturing that value, however, depends on deliberate relationships rather than commodity channels. Brands investing directly in growers and manufacturers can protect craft, supply and differentiation. Storytelling matters, but it cannot sustain a premium without product quality and performance behind it.

For Aotearoa New Zealand, Chanel's investment in Lammermoor Station and luxury brands seeking New Zealand cashmere show how place-based stories can be matched with genuine product substance.

New Zealand has the opportunity to build on this through provenance, regenerative production, craft and design, including distinctive values and perspectives grounded in Te Ao Māori.

Resilient and relational value chains

Resilient supply increasingly depends on long-term, aligned relationships that improve transparency, responsiveness, supply security and value creation, rather than short-term commodity transactions.

Key signals

- Supply-chain volatility is increasing demand for diversified and more connected sourcing.
- Markets are placing greater value on partnerships and long-term relationships rather than purely transactional sourcing.
- Growth in new markets requires greater geographic and trade diversification.

Signal strength
Established

Horizon
0–10 years. Already evident across luxury, performance apparel and advanced manufacturing, with broader adoption expected as resilience and transparency become core procurement requirements.

Why this matters for fibre

Buyers are seeking supply chains that are reliable, transparent, ethical and responsive, with growing scrutiny of forced labour, modern slavery, human rights and environmental performance.

Geopolitical uncertainty, climate risk, trade disruption and regulatory scrutiny are changing how businesses think about supply. Brands and buyers are looking beyond lowest-cost sourcing toward relationships that can provide reliable, transparent and responsive fibre supply over time. Premium brands are investing more directly in growers, manufacturers and strategic suppliers to protect craft, capability and supply security, while stronger due-diligence requirements are increasing scrutiny of forced labour, modern slavery, human rights, and environmental performance.

Prada's investment in Rino Mastrotto to strengthen its control over an important stage of the leather production process, and Patagonia's partnership with Zentera to secure trusted supply illustrate how closer relationships can support supply chain surety, provenance, innovation, and long-term performance.

For fibre, this favours connected value chains over fragmented commodity supply. Long-term relationships create stronger feedback between growers, processors, manufacturers, designers, and buyers, allowing material characteristics, product development, and market requirements to evolve together. They can also provide greater certainty for investment and innovation, while helping supply chains respond to disruption, changing regulation, and new market opportunities.

As circular and regenerative expectations expand, collaboration increasingly extends beyond the point of sale into production practices, traceability, repair, recovery, and end-of-life. Relationships themselves therefore become part of how value and resilience are created.

For Aotearoa New Zealand, relatively small and connected networks create an opportunity to build direct, values-aligned relationships across fibre value chains and with international market partners.

This could support greater transparency, supply certainty, faster innovation, and stronger premium positioning. But small scale also increases exposure to market concentration and disruption, making geographic and trade diversification important alongside deeper relationships.

Capturing the opportunity will depend on clear commercial alignment, shared expectations and enduring partnerships rather than reliance on transactional commodity channels.

Specification-led demand and delivery

Technical and institutional specification-led markets require consistent, tested, and verified standards-aligned solutions where performance can be supplied reliably at the required quality and scale.

Key signals

- Manufacturing capacity, technical skills and processing capability are strategic assets.
- Material decisions are increasingly made by specifiers, procurement teams, partnerships and digital intelligence, guided by standards and consistent, tested solutions.
- Supply chain partners require consistent inputs making strong partnerships important in connecting producers with manufacturers, brands and end markets.

Signal strength
Established

Horizon
0–10 years. Specification-led procurement is already embedded across commercial construction and technical manufacturing and will strengthen further as digital procurement, AI-assisted specification and performance-based standards become mainstream.

Why this matters for fibre

Architects, engineers, designers and procurement teams increasingly determine which materials enter technical and institutional markets through specification rather than consumer preference.

The built environment is one of the clearest examples: frameworks such as WELL and LEED are embedding health, environmental and performance criteria into mainstream design and procurement, making verified technical performance and quality evidence increasingly important to material selection.

At the same time, digital and AI-enabled specification tools are making it easier to compare products using structured technical information rather than brand or marketing claims.

For fibre, market access increasingly depends on being specification-ready. Material selection is shaped by verified performance across areas such as consistent quality, fire safety, acoustics, durability, emissions, and indoor air quality, alongside reliable supply and commercial certainty.

Products that cannot provide recognised certifications, Environmental Product Declarations, technical documentation and accessible product data may be excluded before procurement decisions are made.

Value therefore moves toward tested, repeatable solutions that specifiers and procurement teams can select with confidence, rather than commodity fibre sold primarily on inherent attributes that may or may not live up to their claims.

For Aotearoa New Zealand, strong wool and other natural fibres have characteristics relevant to these markets, including quality, thermal performance, acoustic absorption and moisture management. But those attributes only create market value when they are supported by consistent inputs, recognised testing, technical documentation, and the capability to supply consistently to specification.

The opportunity is to make New Zealand fibre easier to specify and procure with confidence, positioning it as a credible technical material rather than simply a sustainable alternative.

Digital and AI acceleration reshaping discoverability

Digital tools, AI and automation are reshaping how products are developed, made, discovered and selected, increasing the importance of accurate, structured and trustworthy data.

Key signals

- AI is becoming an important discovery tool for online purchasing, drawing on brand websites and other primary source digital information.
- Digital tools, AI and automation are increasingly used across design, product development and manufacturing.
- Buyers, specifiers and procurers are increasingly discovering, comparing and evaluating materials through AI-enabled search and structured data.
- 53% of Gen Z shop with AI and 74% use it as their primary product-research tool.

Signal strength
Accelerating

Horizon
Now for AI-mediated discovery and comparison
2–3 years for full agentic commerce and procurement (AI completing transactions, not just informing them).

Why this matters for fibre

How people discover, compare and select products is changing rapidly. AI-enabled search and digital tools are becoming part of the purchasing journey, reducing reliance on brand websites as the primary source of information.

Consumers are increasingly using AI during product research and comparison, while agentic commerce, where AI takes a more active role in completing purchases, is also developing quickly.

Architects, specifiers and procurement teams are beginning to use AI for material selection, vendor comparison and purchasing decisions, and Gartner projects AI agents will intermediate 90% of B2B buying, worth US$15 trillion, by 2028. For products and materials, discoverability will increasingly depend on whether accurate information can be found, understood and compared through digital systems.

This creates an opportunity for natural fibres where credible evidence already exists. Provenance, performance, environmental credentials and assurance can strengthen differentiation, but only if that information is structured, machine-readable and accessible online.

Evidence that sits in reports, certification systems or disconnected databases may have limited value if digital tools cannot find or interpret it. As AI makes comparison easier, genuine and verifiable differences between materials may become more important, not less.

For Aotearoa New Zealand, this creates both an opportunity and a risk. A relatively small and connected fibre sector could move quickly to make provenance, performance and sustainability information easier to discover and use. But much of this data remains fragmented or unstructured.

If verified New Zealand fibre information cannot be readily found and interpreted by the systems increasingly influencing purchasing and specification, competitors with stronger digital visibility may be easier to select.

SECTION 5

From demand signals to opportunity

Responding to demand shifts

The demand signals point to a broad shift in how materials are assessed, selected, and valued.

The opportunity for Aotearoa New Zealand lies in identifying where those shifts intersect with the properties, capabilities and strengths of our fibre system, and where that alignment could translate into greater buyer value.

Future of Fibre Aotearoa is not seeking to uncover every possible opportunity for fibre. Instead, this section focuses on five areas where global demand aligns with attributes, capabilities, or system characteristics that Aotearoa New Zealand could credibly strengthen and translate into buyer value. These are: **trusted and verified evidence**, **health and wellbeing**; **design, meaning and connection**; **high performance natural and bio-based materials**, and **regenerative and circular fibre systems**.

These five areas are not market opportunities in themselves. They describe sources of demand advantage that can strengthen specific market and application opportunities, including strong wool in interiors and the built environment, premium fine fibres, and bio-based materials and ingredients.

Opportunities will draw on these sources of advantage in different combinations. For example, strong wool in interiors may create greater value where health and wellbeing benefits are supported by trusted technical evidence, strong design, and circular or regenerative attributes. Premium fine fibres may rely more heavily on design, meaning, provenance, and verified evidence.

These are not all established advantages, nor are the underlying market opportunities fully validated commercial opportunities or business cases. Some build on existing strengths, while others will depend on further evidence, capability, and market development.

Across all five areas, two cross-cutting capabilities are critical to turning potential into commercial advantage: **innovation and commercialisation**, and **values-aligned partnerships**.

The framework moves from: demand signals → market and application opportunities → sources of demand advantage → capabilities needed to capture value → action.

VISUAL 3. AOTEAROA NEW ZEALAND DEMAND ADVANTAGE AREAS & CROSS-CUTTING ENABLERS



Trusted and verified evidence

Demand advantage area 1: Trusted proof that enables market access and supports premium value

Where the opportunity lies

Trusted and verified evidence is relevant across fibre types and products, but the strongest opportunities are where recognised proof is required for **market access, specification, or premium positioning**. This includes raw and processed fibre, yarns and non-wovens, ingredient materials and components, through to finished goods.

The opportunity spans two levels: the baseline evidence needed to enter and remain in markets, and differentiated evidence that proves attributes valued by particular buyers and applications.

Existing systems including ZQ/ZQ+, Wool Integrity, Fibre Integrity, WoolPass, TruTrace and NZFAP+, alongside industry lifecycle data, provide foundations to build from. The Zentera and Wool Integrity/Norsewear case studies demonstrate how evidence becomes commercially valuable when it connects through to a committed buyer and product.

The opportunity is therefore not simply more certification. It is to make Aotearoa New Zealand evidence **recognisable**, **interoperable**, **accessible, and aligned with market requirements**, reducing duplication and cost while enabling differentiated claims where they create buyer value.

Done well, this could become a shared IP and systems capability for the sector, while supporting individual products and value chains.

Overview

Our fibre system cannot rely on broad claims of being “natural”, “regenerative”, or “sustainable”. Credible proof is increasingly a baseline requirement for market access, procurement, and specification. Beyond compliance, stronger evidence of provenance, environmental impact, quality, and functional performance can support specification, differentiation and premium positioning where those attributes matter to buyers.

Relevant demand signals

- Proof, compliance and digital trust
- Specification-led demand and delivery
- Digital and AI acceleration
- Circular, regenerative and climate-resilient systems

Why this is an advantage area

This is a potential advantage with existing foundations. Parts of our fibre system already have farm-assurance programmes, traceability initiatives, technical testing capability, and relatively identifiable production origins.

These provide foundations for proving origin, production conditions, animal welfare, sustainability, quality and technical performance. Aotearoa New Zealand’s broader reputation for trust and quality may reinforce these attributes when they are supported by recognised evidence.

The opportunity is not based on an assumption that our fibre is inherently superior. It lies in connecting assurance, science, testing, and production knowledge into recognised evidence that buyers and specifiers can use.

This matters defensively as well as commercially: without accepted proof, products risk being screened out before provenance, quality or performance can influence the purchasing decision.



Beyond that baseline, stronger evidence may support specification, preference, and premium positioning where it demonstrates attributes that are genuinely differentiated and valued.

A strategic question is whether existing internationally recognised systems can adequately meet market needs and recognise the attributes New Zealand fibre needs to demonstrate. Where genuine gaps remain, there may be a role for a complementary New Zealand layer or add-on that captures attributes not fully recognised in global schemes.

Such a pathway should align with internationally recognised standards while capturing New Zealand-specific attributes including farming systems, land stewardship, biodiversity, soil outcomes, provenance, and traceability.

Trusted and verified evidence

Demand advantage area 1: Trusted proof that enables market access and supports premium value

CASE STUDY 1

Zentera Wool Company



Farm assurance translated into global brand value

Zentera Wool Company, formerly The New Zealand Merino Company, works with growers, processors and more than 100 global brand partners through its ethical wool certifications, ZQ and ZQ+.

What they do: ZQ combines independently audited animal-welfare, environmental and social standards with fibre testing and traceability back to farm. ZQ+ adds a regenerative agriculture framework that supports continuous improvement in outcomes for land, animals and people.

Key challenges: Credibility depends on consistent farm data, robust verification, chain-of-custody beyond the farm gate and keeping standards aligned with changing regulation and customer expectations. The cost and complexity of evidence must remain workable for growers and brands.

Key learnings: Globally recognised certification schemes like ZQ and ZQ+ convert the verification of farm practices and outcomes into marketable differentiation for brands. This unlocks market access, opportunities for brand connection, and price premiums for certified growers.

What's next: Implement updated ZQ and ZQ+ standards, strengthen digital farm-to-product traceability and lifecycle evidence, and demonstrate how verified outcomes translate into demand for certified fibre and grower value.

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CASE STUDY 2

Wool Integrity / PGG Wrightson / Norsewear



Traceability made tangible through local products

PGG Wrightson's Wool Integrity programme connects independently audited Aotearoa New Zealand growers with Norsewear, specialist offshore scourers and spinners, the Norsewood factory, and retail partners.

What they do: The partnership creates a traceable value chain from paddock to finished socks, beanies, and outdoor wear. Wool Integrity certifies origin, animal-welfare, and environmental standards, while long-term supply orders give growers demand certainty and Norsewear confidence in fibre quality and supply. Norsewear transitioned to a fully traceable range in 2026.

Key challenges: The chain crosses several organisations and countries, requiring consistent specifications, records, and commercial commitments. It must also compete on price while expanding the volume of certified wool and transitioning more products to fully traceable inputs.

Key learnings: Assurance creates greater value when it is attached to a recognisable product and a committed buyer. Traceability can align growers, processors, manufacturers, and customers rather than functioning only as a label.

What's next: Grow Norsewear's domestic and export demand, expand regional manufacturing, and bring more growers and Aotearoa New Zealand brands into the Wool Integrity model.

What it will take

- Prioritise the evidence required for target-market access and specification.
- Align definitions, methodologies, and boundaries where shared approaches add value.
- Strengthen sustainability, quality, and technical-performance assurance.
- Connect existing assurance, traceability, research, and testing.
- Assess where existing assurance pathways, including NZFAP Plus, can better align with recognised international schemes while expressing distinctive Aotearoa New Zealand attributes.
- Make evidence digitally accessible and comparable.
- Resolve data governance and enable affordable participation.

What good could look like in 3-5 years

- Existing standards, assurance, and digital transparency systems are better connected, reducing duplication and strengthening Aotearoa New Zealand's ability to respond to changing market requirements.
- Priority fibre products consistently meet recognised evidence requirements and remain eligible for regulated and specification-led markets.
- In selected applications, stronger verified provenance, sustainability and performance evidence also helps win specifications and supports higher-value positioning, with commercial arrangements ensuring benefits flow back through our fibre system.

Health and wellbeing

Demand advantage area 2: Performance fibres that solve health, comfort and wellbeing needs

Where the opportunity lies

Opportunity exists where natural fibre properties can deliver measurable health, comfort, or indoor-environment outcomes. Priority pathways include interiors and the built environment, such as acoustics, wall panels, bedding, furnishings, carpets and rugs, alongside next-to-skin apparel, personal care applications, and selected technical uses including filtration, and medical textiles.

Acoustic and interior materials warrant particular investigation. According Sense Partners, Aotearoa New Zealand exports of non-wovens, wadding and felt reached NZ$15.5 million in 2023, with average export growth of 16.6% from 2013–2023. This aligns with Aotearoa New Zealand's strong-wool supply and existing non-woven and felt capability.

Existing activity demonstrates different pathways to value including Bremworth, Autex, Floc / T&R Interior Systems and Lof in interiors; Lanaco and WoolAid in filtration and skin-contact applications; and Woolchemy's partnership with Lenzing in hygiene applications. Wisewool's three-year, $2 million sleep-science programme, co-funded by the Ministry for Primary Industries (MPI), is testing strong-wool bedding against synthetic alternatives.

The strongest opportunities will connect a defined user need with independently demonstrated performance, recognised evidence and market partners capable of supporting adoption and scale.

Overview

Buyers and specifiers are placing greater value on materials that contribute to comfort, safety, indoor environmental quality and positive human experience. Natural fibres may create value where these attributes influence material selection, specification and purchasing decisions.

The opportunity is strongest where fibre properties can be translated into tested, reliable solutions that address a clearly defined customer or user need.

Relevant demand signals

- Wellbeing and healthy environments
- Performance-led natural material transition
- Specification-led markets and capability to deliver

Why this is an advantage area

This is an emerging advantage, and strongest for wool. Aotearoa New Zealand has recognised wool science, technical knowledge and existing manufacturing capability relevant to thermal insulation, moisture regulation, acoustic performance, breathability, fire behaviour, odour management and tactile comfort.

These properties are relevant to applications including interiors, insulation, flooring, bedding, next-to-skin apparel, and protective products.

The advantage, however, is not the fibre property itself. Competing materials can deliver many of the same outcomes, often at lower cost or greater scale. Our potential advantage lies in converting relevant fibre properties into tested solutions that meet defined user needs and can be specified with confidence.

Current evidence is stronger for wool than for the wider New Zealand fibre basket, and health, wellbeing or performance claims must remain tightly aligned with what has been demonstrated.



Some key opportunites such as interior and built environment applications are primarily a specification-led market. Adoption depends on products being tested and certified, understood by architects and designers, and incorporated into specifications before procurement.

Assurance is less about broad sustainability claims and more about proof of performance. Built environment, apparel, bedding and institutional markets require evidence that is recognised by buyers and specifiers, including data on fire, acoustics, thermal performance, moisture management, durability, emissions, comfort, safety and, where relevant, health outcomes. To capture value, fibre products will need assurance systems that connect fibre-level integrity with finished-product performance.

Strategic question: How can Aotearoa New Zealand fibre products become easier for architects, designers, specifiers and institutional buyers to select with confidence?

Health and wellbeing

Demand advantage area 2: Performance fibres that solve health, comfort and wellbeing needs

CASE STUDY 3

WoolAid



Merino performance in medical and personal-care products

WoolAid was founded by New Zealander Lucas Smith after seeing discarded plastic bandages while working as a mountain guide. It sources Aotearoa New Zealand merino and works with specialist textile and medical-product manufacturers.

What they do: WoolAid makes breathable merino adhesive bandages, nasal strips, and mouth tape. The original bandage was developed through six years of research and field testing, using wool's flexibility and moisture management to protect minor wounds while replacing plastic fabric with a biodegradable natural material.

Key challenges: Medical and wellness products require consistent performance, skin safety, regulatory compliance, and customer trust. WoolAid must also manage an international supply chain, premium pricing and evidence for health and biodegradability claims while competing with familiar low-cost products.

Key learnings: Our fibre can enter unexpected markets when intrinsic properties solve a defined user problem. Credible testing, intellectual property, design, and specialist processing turn merino provenance into functional value.

What's next: Grow retail distribution globally, extend the product range, and continue building clinical, performance, and end-of-life evidence as volumes increase.

CASE STUDY 4

Bremworth



Strong wool supporting healthier interior environments

Bremworth is an Aotearoa New Zealand carpet and rug manufacturer sourcing New Zealand wool and operating across Auckland, Napier and Whanganui.

What they do: The company uses wool to support warmer, quieter, and healthier interiors. Wool can regulate moisture and absorb some common indoor pollutants, while local design, yarn production, and manufacturing retain more value in Aotearoa New Zealand.

Key challenges: Wool carpet competes with lower-cost synthetic flooring and must meet demanding requirements for price, colour, durability, installation, and maintenance. Health and environmental claims require independent evidence, while legacy manufacturing equipment and disrupted production have constrained efficiency and scale.

Key learnings: Wellbeing value becomes commercially relevant when natural material benefits are combined with design quality, trusted technical data, and reliable manufacturing. Strong wool can move from farm commodity to a specified interior product.

What's next: Continue modernising production, strengthen independently verified health and environmental evidence, and grow architect, designer, and consumer demand for wool flooring in domestic and export markets.

What it will take

- Target defined health, comfort, safety, or indoor-environment needs that matter to customers and end users.
- Identify applications where those benefits influence specification.
- Independently demonstrate finished-product performance.
- Use recognised standards where they exist, supported by robust scientific evidence and buyer-relevant technical documentation.
- Connect fibre assurance with product-level performance evidence.
- Deliver repeatable quality, reliable supply, and technical support.
- Benchmark against incumbent materials on performance, price and availability.
- Investment in R&D and commercialisation pathways.

What good could look like in 3-5 years

- A portfolio of fibre products is routinely selected in defined building, interior, apparel, or institutional applications because it meets recognised performance requirements and solves identifiable user needs.
- Products compete credibly with incumbent materials, while local businesses retain technical knowledge, IP, or customer relationships and capture value beyond raw-fibre supply.

Design, meaning and connection

Demand advantage area 3: Design, innovation and meaning that transforms fibre into premium value

Where the opportunity lies

Opportunity exists in higher-value, lower-volume products where material performance, design quality, specialist making, provenance and distinctive meaning reinforce one another.

Priority pathways include premium knitwear and whole-garment production; engineered natural-fibre yarns and blends; blankets and interiors; design-led strong-wool products; traceable leather goods; accessories and footwear; and Māori-led products where cultural authority is integral to their development.

Woolyarns demonstrates the value specialist fibre preparation, blending and spinning can add, while Noa Blanket Co shows how material, contemporary Māori design and whakapapa can combine in a distinctive finished product. Norsewear and McDonald Textiles demonstrate how locally sourced wool, traceability, design, and modern manufacturing can connect through to finished products and customers.

Investment in digital knitting, 3D and whole-garment technology also creates opportunities for efficient local production while retaining design, quality control, technical knowledge and closer supply-chain relationships.

The opportunity is to compete through **distinctiveness and value per product rather than volume alone**, while retaining design, technical knowledge, IP, manufacturing capability or customer relationships in Aotearoa New Zealand.

Overview

Premium buyers increasingly value products that combine function, quality, provenance, longevity, craft and emotional relevance. Aotearoa New Zealand could capture greater value by combining internationally competitive design and product innovation with performance, provenance and distinctive place-based meaning.

Relevant demand signals

- Premium value through performance, design and meaning
- Performance-led natural material transition
- Resilient and relational value chains
- Proof, compliance and digital trust

Why this is an advantage area

This is an existing but uneven advantage, strongest when Aotearoa New Zealand combines fibre quality, specialist manufacturing, design capability, provenance and close producer-to-brand relationships.

Provenance and cultural knowledge can contribute differentiation that competitors cannot easily reproduce. Innovation and design then convert fibre attributes into products, intellectual property and buyer value, while brands and market relationships determine how much of that value is retained in Aotearoa New Zealand.

Understanding the connections between craft, design and manufacturing is also critical to translating fibre into products with genuine meaning and emotional relevance at different scales. This is particularly important in a small economy that is unlikely to compete through commodity scale.



However, provenance alone does not create premium value. Products still compete internationally on design quality, performance, desirability, and customer relevance.

Storytelling is not always clearly attributed or commercially controlled, and cultural narratives require authentic authority and partnership.

To support premium positioning, fibre products also need credible, internationally recognised evidence where buyers require it, while retaining the ability to express distinctive local attributes such as farming systems, land stewardship, biodiversity, soil outcomes, animal welfare and provenance.

Design, meaning and connection

Demand advantage area 3: Design, innovation and meaning that transforms fibre into premium value

CASE STUDY 5

Woolyarns / Perino / New Zealand Cashmere



Specialist spinning turns fibre blends into premium yarns

Lower Hutt-based Woolyarns is a privately owned yarn spinner working with growers, fibre suppliers, designers, knitters, weavers and brands. Its activities include producing Perino yarns and development of a cashmere line through New Zealand Cashmere.

What they do: Woolyarns spins woollen yarns and engineers specialist blends using merino, brushtail possum, cashmere, silk, cotton, lyocell and hemp. Its capability spans fibre preparation, blending, spinning and finishing, supported by advanced textile machinery and specialist technical expertise in bushtail possum, cashmere and other fibres. This enables product development, direct grower relationships and chain-of-custody control.

Key challenges: New Zealand Cashmere needs more participating growers, consistent quality and sufficient volume. Complex blends and yarn innovation requires trials, experienced technicians and minimum production runs.

Key learnings: Spinning is a critical value-creation layer, determining yarn performance, handle, durability and design potential, allowing New Zealand materials to reach premium markets.

What's next: Grow cashmere supply and market demand together, retain specialist skills, and co-develop new natural-fibre and recycled blends with designers and committed brand partners.

CASE STUDY 6

Noa Blanket Co



Wool carrying whakapapa, identity and intergenerational connection

Noa Blanket Co was founded in 2021 by Whakaawa and Joshua Te Kani, bringing together textile design, mātauranga Māori and New Zealand wool manufacturing.

What they do: Noa creates luxury blankets from 100% Aotearoa New Zealand lambswool, produced in Aotearoa from farm to loom. Each design draws intentionally on Māori stories, identity and values, turning the blanket into a keepsake, artwork and taonga for gifting and intergenerational connection.

Key challenges: Growth must protect cultural integrity and ensure stories are represented on the founders' terms. The business must also balance local production costs, weaving capacity, minimum runs, intellectual property and premium pricing while building wider market understanding.

Key learnings: Fibre value is not only technical or environmental. Wool can carry whakapapa, memory, belonging and relationships to people and place. Contemporary Māori design creates cultural, emotional and commercial value without separating product from story.

What's next: Grow local and international markets, and scale production without diluting cultural intent, material quality or the close connection between design, story, and provenance.

What it will take

- Target a clearly defined premium buyer and reason to choose.
- Deliver internationally competitive design, performance and product quality.
- Turn distinctive fibre attributes into clear product propositions.
- Back provenance, animal welfare and environmental claims with evidence.
- Develop cultural value through authentic authority and partnership.
- Use assurance to support premium positioning, not simply compliance.
- Build distinctive brands and propositions that can sustain willingness to pay.

What good could look like in 3-5 years

- A visible group of fibre products competes internationally on design, performance and distinctive meaning rather than origin alone.
- Aotearoa New Zealand businesses retain valuable brands, IP or customer relationships, buyers clearly recognise the products as being from Aotearoa New Zealand, and premium return flows back to the producers and partners contributing to that value.

High-performance natural and bio-based materials

Demand advantage area 4: Meeting specialist market needs through high-performance materials

Where the opportunity lies

Specific opportunities are emerging in three areas:

1. **Performance textiles and technical media** including engineered blends, filtration and specialist textiles
2. **Functional ingredients and components**, such as powders, pigments, additives and coatings; and
3. **Bio-based materials**, including composites, construction and automotive materials, and higher-value uses for fibre, forestry and manufacturing side-streams.

Existing activity demonstrates different pathways to value. Wool Source is developing wool-derived powders, pigments and functional ingredients for new material applications, while Lanaco shows how wool can be engineered into high-performance filtration media for specialist international markets.

Performance sports and outdoor materials are a further pathway to investigate, with market signals pointing to an unresolved need for natural-fibre systems capable of meeting demanding performance specifications.

Capturing opportunities requires pathways from research to commercial production, including scaled prototyping, testing and pilot manufacturing. Emerging capability such as the BioFactory in Rotorua could help support a pathway for forestry conversion into higher-value bio-based materials.

Overview

Aotearoa New Zealand could create higher-value uses for natural fibres, fibre-derived inputs and bio-based materials in applications where performance, functionality and renewable origin create market value.

Relevant demand signals

- Performance-led natural material transition
- Specification-led demand and delivery
- Circular, regenerative and climate-resilient systems

Why this is an advantage area

Aotearoa New Zealand has an emerging, application-specific advantage, combining a diverse biological resource base with fibre science, testing capability and growing innovation in engineered fibres, functional ingredients, composites and other advanced materials for non-traditional applications.

The strongest opportunities are likely to be specialised markets where formulation, performance, functionality, technical knowledge or IP matter more than commodity volume.

Aotearoa New Zealand is unlikely to compete with large manufacturing economies on scale alone. Advantage will depend on combining local resources and technical capability with the right processing and manufacturing partners, while retaining valuable IP, specification control, technical knowledge and customer relationships.

Evidence is currently strongest for selected wool applications. Hemp and harakeke also show potential, but remain at an earlier stage of technical and commercial validation.



Sport, active and outdoor performance applications could provide a useful test case for performance-led fibre innovation. At the Threads of Tomorrow Summit 2026, Patagonia identified challenges in achieving some required performance attributes with natural fibres, signalling an unresolved market need. Aotearoa New Zealand combines high-quality natural fibres and fibre science capability with a strong sporting and outdoor identity, internationally recognised athletes and teams, and diverse environments for product development, testing and demonstration.

The opportunity is not simply to replace synthetic fibres with existing natural materials, but to develop next-generation natural-fibre systems engineered around demanding performance specifications and clearly defined market needs.

This capability could extend beyond sport into technical components, interiors, acoustic materials and healthcare products, where measurable material performance creates value.

Aotearoa New Zealand has a strong starting point, particularly in wool, but progress will depend on connecting fibre science, textile engineering, material innovation and design with clear global market requirements.

High-performance natural and bio-based materials

Demand advantage area 4: Meeting specialist market needs through high-performance materials

CASE STUDY 7

Wool Source / WRONZ / Lincoln Agritech



Strong wool re-engineered as a functional ingredient

Wool Source is an Aotearoa New Zealand ingredient manufacturer commercialising technology developed with the Wool Research Organisation of New Zealand (WRONZ), Lincoln Agritech, government and wool growers.

What they do: Its patent-protected process transforms strong wool into particles, powders and pigments while retaining natural properties. The ingredients can replace fossil-derived inputs in screen-printing inks, bioplastics, 3D printing, personal care and other products. Pigments contain 92–100% bio-based carbon, and trials include Kathmandu apparel.

Key challenges: Each application needs formulation, performance testing, regulatory evidence and customer trials. Wool Source must scale production economically, protect intellectual property and convert early collaborations into repeatable demand while demonstrating feedstock traceability and end-of-life benefits.

Key learnings: High-value opportunities emerge when wool is treated as a functional ingredient rather than only a textile fibre. Science can unlock properties such as moisture, odour and oil absorption, filtration and flame resistance for new markets.

What's next: Expand the customer pipeline and production scale, validate performance and environmental claims across applications, and ensure commercial growth translates returns for New Zealand.

CASE STUDY 8

Lanaco



Space-proven wool filtration scaled for cleaner homes

Auckland-based manufacturer Lanaco works with selected New Zealand wool growers and global customers across air purification, respiratory protection, medical, industrial, and aerospace markets.

What they do: Lanaco engineers EcoStatic® wool-based filter media that capture airborne particles while managing moisture and resisting flame. In 2026, Blueair launched EcoLast™, the world's first bio-based wool air-purifier filter, developed through a multi-year partnership. It is 100% USDA Certified Bio-based, removes 99.97% of airborne particles and lasts up to 18 months–50% longer than standard synthetic filters. The technology builds on media selected for the NASA Orion emergency breathing apparatus.

Key challenges: Lanaco must maintain strict performance, safety and manufacturing consistency while scaling specialist wool supply and integrating its media into global product platforms.

Key learnings: The Blueair launch translates space-proven science into a high-volume consumer application. It shows that a material containing wool and plant-based fibres can replace petroleum-based filtration without compromising technical performance or service life.

What's next: Support the global EcoLast™ rollout, scale production and grower supply, and extend certified wool filtration into further appliance, industrial, respiratory, and medical applications.

What it will take

- Target validated industrial needs and specialist applications.
- Demonstrate measurable advantage over incumbent materials.
- Establish consistent feedstock grades and specifications.
- Meet safety, certification and customer-approval requirements.
- Ensure compatibility with manufacturing systems.
- Focus on applications where New Zealand evidence and capability are strongest.
- Invest in R&D, pilot-scale and commercialisation pathways

What good could look like in 3-5 years

- New Zealand businesses supply several commercially validated fibre-derived materials into specialist international markets.
- Products deliver repeatable performance and have committed customers and scalable production pathways.
- Processing may occur across complementary global supply chains, but Aotearoa New Zealand retains valuable IP, feedstock control, technical expertise or end-customer relationships and captures a meaningful share of the value generated.

Regenerative and circular fibre systems

Demand advantage area 5: Regenerative and circular fibre systems that create measurable value for nature and markets

Where the opportunity lies

Opportunity exists where whole-of-life fibre systems create measurable value through regenerative production, lower-impact processing, circular product design, use and material recovery – rather than addressing impacts at individual stages.

Specific pathways include regeneratively produced fibres linked to verified outcomes; repair, take-back recovery and recycling; higher-value use of textile waste and biological side-streams; whole-plant harakeke systems; products designed for durability, reuse or biological cycling.

Existing activity demonstrates different parts of this system. ZQ+ connects wool production with regenerative improvement; WoolWorks demonstrates processing decarbonisation through electrification, heat recovery and energy-efficiency investment; and Untouched World shows how market demand can pull through renewable and circular solutions using diverse natural and bio-based fibres, recycled inputs and material recovery. UsedFULLY converts textile waste into industrial inputs, while Kowtow's Regenerate trial explores biological cycling through biochar. In harakeke, Te Hononga Hapori Harakeke / The Harakeke Community Alliance connects fibre and by-product production with land restoration, while Te Whiri Whītau links pā harakeke, local manufacturing and circular processing within an Indigenous-led fibre system.

The strongest opportunities connect dependable material streams, measurable outcomes, viable processing pathways and clearly defined customer demand from the outset.

Overview

Aotearoa New Zealand could differentiate selected fibre systems by connecting measurable environmental outcomes, circular product design and credible end-of-life pathways into propositions that create value for buyers and natural systems.

Relevant demand signals

- Circular, regenerative and climate-resilient systems
- Performance-led natural material transition
- Proof, compliance and digital trust

Why this is an advantage area

This is an emerging but uneven potential advantage across Aotearoa New Zealand's fibre streams. We have a substantial biological resource base, natural fibres with useful durability, repairability and potential for safe biological return, alongside emerging examples of circular design, fibre recovery and higher-value use of side-streams and underutilised materials.

Parts of our production system are also grounded in long-term stewardship, animal welfare and place-based relationships with land. Mātauranga Māori and concepts of intergenerational responsibility may offer distinctive approaches where Māori leadership, authority and benefit are embedded appropriately.

These foundations do not automatically make fibre grown here regenerative, nature-positive or circular. Natural origin and biodegradability claims are insufficient on their own.

The opportunity lies in connecting measurable outcomes for land, biodiversity and climate with product design, use and end-of-life, and demonstrating that these systems deliver environmental and social outcomes that are credible, commercially viable and relevant to buyers.



This is strongest where outcomes are built into the value proposition from the outset and linked to clear buyer, procurement or specification requirements so they can be recognised and rewarded.

Alignment with international standards is important, however these may not always fully capture local practices and attributes that differentiate Aotearoa New Zealand's fibre system from others. There is opportunity to explore this further as a sector.

Alongside a credible evidence base, regenerative and circular fibre systems also require practical solutions for durability, repair, reuse, reuse and biological return, supported by viable processing and commercial models that buyers can recognise and reward.

Regenerative and circular fibre systems

Demand advantage area 5: Regenerative and circular fibre systems that create measurable value for nature and markets

CASE STUDY 9

UsedFULLY



Textile waste converted into precision industrial additives.

UsedFULLY is a textile cleantech company with a commercial line in Auckland and European operations at Brightlands state-of-the-art circular economy campus in the Netherlands. Its fibre-to-industrial fibre solution has been proven in Aotearoa New Zealand with customers including Resene and Fulton Hogan.

What they do: UsedFULLY converts cellulose-rich textile waste into precision additives for protective coatings, asphalt, adhesives and composites. The underlying solvent-free technology, to which UsedFULLY holds the global exclusive licence, was developed by the Bioeconomy Science Institute.

Key challenge: Female founders in Aotearoa New Zealand receive less than 3% of available investment funds, making access to capital challenging for female-founded and led companies like UsedFULLY.

Key learnings: When a western, closed-loop fibre-to-textiles approach to textile waste failed to stack up economically in Aotearoa New Zealand as a small, remote country, UsedFULLY developed a nature aligned, te ao Māori spiral economy approach that delivered both a technically and economically sound solution.

What's next: Continuing production locally, while scaling to full industrial scale at Brightlands circular economy campus in the Netherlands. Building partnerships, accessing international investment, and onboarding industrial customers globally.

CASE STUDY 10

Untouched World



Long-term fibre innovation led by environmental brand values.

Christchurch-based Untouched World, founded by Peri Drysdale, works with Aotearoa New Zealand growers, yarn and fibre innovators and values-aligned collaborators to create New-Zealand-made knitwear and apparel in their own workrooms.

What they do: The company turns natural fibres into enduring, design-led apparel connected to place and purpose. Its work spans pioneering possum-merino blends, New Zealand-made knitwear, Spiber's fermentation-derived Brewed Protein fibre, waste-yarn products and UN-led Threads of Change accessories.

Key challenges: Novel fibres and collaborations require long development cycles, specialist supply chains and credible evidence. International certification and product-stewardship requirements are costly for a SME, while animal-fibre, regenerative and circular claims need careful communication and verification.

Key learnings: Design-led brands can create meaning and value by combining performance, longevity, provenance and experimentation. Untouched World shows that advantage lies not in one fibre, but in sustained capability to turn materials, relationships and environmental values into products people connect with.

What's next: Select and evidence the strongest story, scale fibre and waste collaborations, and strengthen affordable verification, traceability and stewardship pathways for markets.

What it will take

- Define credible regenerative, nature-positive, ethical and circular outcomes.
- Measure relevant land, biodiversity, climate, and animal-welfare outcomes.
- Embed Māori leadership and authority appropriately.
- Explore how place-based attributes could be recognised alongside international standards.
- Design for durability, repair, reuse, recovery or safe biological return.
- Account for the full product, including finishes and blends.
- Establish practical end-of-life systems and demonstrate buyer relevance.

What good could look like in 3-5 years

- Our fibre value chains demonstrate measurable land and environmental outcomes alongside durable products and practical recovery or biological end-of-life pathways.
- Manufacturers can access recovered fibres as a reliable source of recycled content.
- Buyers recognise these attributes in purchasing or specification decisions, and commercially viable models reward the producers, processors and partners responsible for delivering those outcomes.

Innovation and commercialisation

Cross-cutting enabler 1: Capability to turn market opportunities into commercial value



Strengthening our capability

We need stronger pathways from material and fibre innovation through design, testing, pilot production, and customer validation to repeat commercial supply. This includes shared testing and pilot capability; specialist and digital manufacturing; prototyping and demonstration; customer-backed trials; product qualification; where relevant, animal and cultivar genetics to improve fibre quality over time; and clearer routes to investment and scale.

Existing examples show this capability at different stages. Muka Textiles and Autex combine fibre and product development with established innovation, manufacturing, and market capability; UPWEARS, Lof and Floc connect materials knowledge with design, technology and market application; while Norsewear's investment in advanced knitting machinery has unlocked both efficiencies and new design capability.

Overview

Our ability to build fibre advantage will depend on how effectively we connect market need, research, technical capability and commercial partners to turn material attributes and ideas into differentiated products, IP and commercially viable solutions.

Demand signals this enabler supports

- Performance-led natural material transition
- Specification-led demand and delivery
- Premium value through performance, design and meaning
- Circular, regenerative and climate-resilient systems
- Wellbeing and healthy environments

Why this matters for Aotearoa New Zealand

Aotearoa New Zealand has fibre science, design capability, bio-based materials innovation, and examples of successful product development. But these capabilities are fragmented and can be difficult to navigate, making it harder to connect the right expertise, infrastructure and commercial partners around an opportunity.The challenge is to turn these strengths into connected pathways and repeatable commercial outcomes at greater scale.

Investment, design, and commercial capability need to sit alongside R&D, with stronger connections between each stage. Innovation should begin with a defined market need and move through testing, customer validation and scale-up, rather than stopping at technical proof.

The opportunity is to create defensible value through IP, technical knowledge, design, specifications or customer relationships, while retaining strategically important capability in New Zealand.

CASE STUDY 11

UPWEARS / Bioeconomy Science Institute



Natural fibres meet sustainable e-textile technology

UPWEARS is a Horizon Europe collaboration led by France's INRAE, with New Zealand's Bioeconomy Science Institute playing a major role in biomaterials, sensing, circularity and additive manufacturing alongside partners spanning the European textile value chain.

What they do: The project is developing bio-based and hybrid e-textiles for sportswear, using natural fibres, sustainable sensors, biomimetic fabrics, green chemistry and digital manufacturing.

Key challenges: Smart textiles must combine comfort, durability, washability, sensing performance and safety with sustainable end-of-life options. Integrating electronics with natural fibres, scaling new processes and coordinating a value chain add technical and commercial complexity.

Key learnings: Health and wellbeing opportunities extend beyond passive comfort: Natural fibres and other bio-based materials can be part of responsive and sensing systems. Aotearoa New Zealand gains speed and capability by contributing its fibre and biomaterials expertise while accessing international expertise, infrastructure, data and value chains through Horizon Europe.

What's next: Develop and validate the cycling application prototype, optimise materials and sensors, reduce manufacturing waste and chemical use, and establish an end-to-end value chain by the project's 2028 completion.

Innovation and commercialisation

Cross-cutting enabler 1: Capability to turn market opportunities into commercial value

CASE STUDY 12

Lof



Strong wool transformed through light, colour and place

Lof is a Waiheke Island design studio working with Palliser Ridge Farm and Aotearoa New Zealand makers to create lighting from strong wool.

What they do: Lof knits regenerative wool into pendants that soften illumination, absorb sound and bring warmth and texture into interiors. Its Harakeke Gold colourway is hand-dyed on Waiheke using locally foraged harakeke, creating one-of-a-kind golden-brown pieces. Collections such as HIWA connect form with place and story; Hiwa-i-te-rangi is the Matariki star associated with aspiration and new beginnings.

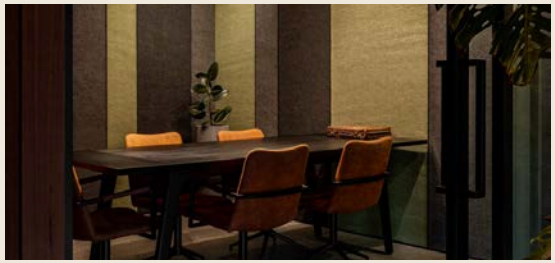
Key challenges: Scaling requires consistent fibre and fabrication, acoustic and environmental evidence, access to specifiers, and logistics for large forms. Plant dyeing adds colour variation, handwork and the need to harvest responsibly.

Key learnings: Design can reveal strong wool's value through sensory experience, function and cultural connection. Harakeke Gold shows how local colour, material provenance and natural variation can deepen a product's identity rather than being treated as defects.

What's next: Grow specification and export demand, expand the lighting and plant-dyed collections, verify performance, and maintain responsible sourcing and circular production as volumes increase.

CASE STUDY 13

Floc / T&R Interior Systems



Strong wool engineered for quieter, healthier spaces

Floc is an Aotearoa New Zealand strong-wool acoustic interiors range developed by T&R Interior Systems and manufactured in Christchurch for commercial, workplace and public spaces.

What they do: Floc transforms locally grown, scoured and needle-punched strong wool into acoustic wall and ceiling products. The range includes rolls, tiles, baffles and shaped panels that absorb sound while bringing natural texture, warmth and design flexibility into interiors, including surface pattern and colour innovation.

Key challenges: Natural acoustic products must meet verified fire, acoustic, durability and environmental requirements, offer dependable colours and supply, and compete with established synthetic and mineral-fibre systems. Different Floc formats also have different material compositions, so health and sustainability claims must be product-specific.

Key learnings: Wellbeing is shaped by sound, material choice and the sensory quality of spaces. New Zealand strong wool can become a specification-ready architectural material when fibre properties are supported by testing, design formats and technical service.

What's next: Grow specification locally, in Australia and other export markets, expand project evidence and design options, and strengthen accessible acoustic, environmental and material-health information for architects and procurement teams.

What it will take

- Start with a clear market need or customer problem.
- Connect research, design, prototyping, testing, market validation and scale-up into clearer pathways.
- Make existing expertise, infrastructure and pilot-scale capability easier to find, access and navigate.
- Retain and build specialised technical skills and tacit knowledge.
- Build commercialisation and investment capability alongside R&D.
- Create and protect differentiated IP and technical know-how.
- Focus investment on applications with credible market potential.
- Retain strategic control where it helps keep value in New Zealand.
- Build stronger connections and shared problem-solving across research, industry, investors and markets.

What good could look like in 3-5 years

- Aotearoa New Zealand has clearer, more connected pathways from market need and research through to testing, scale-up and commercial supply, helping more fibre innovations become commercially validated products.
- Businesses can access the capability needed to test and scale ideas, investment follows stronger market validation, and Aotearoa New Zealand retains valuable IP, technical knowledge or market relationships from the innovations it helps create.
- Successful fibre innovation also strengthens Aotearoa New Zealand's wider reputation for quality, ingenuity, and innovation.

Values-aligned partnerships

Cross-cutting enabler 2: Partnerships that connect capability and retain value for New Zealand



Strengthening our capability

Many fibre opportunities require long-term partnerships across production, processing, manufacturing, investment and markets, including capability that may sit offshore.

Different models are already emerging. Rubisco and Te Rūnanga o Arowhenua connect hemp cultivation and processing with regional outcomes; KiwiFibre and Māori partners link harakeke with processing and commercial applications; Wilson & Dorset connects design, multi-generational international partnerships and premium markets; and Honest Wolf combines farm-grown wool and brand ownership with offshore manufacturing.

Together these demonstrate opportunities to share investment, capability and IP while structuring relationships so that knowledge, strategic assets, and value are retained in New Zealand.

Overview

Aotearoa New Zealand does not need to perform every stage of a fibre value chain onshore to capture more value. The opportunity lies in building enduring partnerships that combine local production, knowledge and innovation with complementary processing, manufacturing and market capability, with aligned incentives and clear mechanisms for sharing risk and value.

Demand signals this enabler supports

- Resilient and relational value chains
- Proof, compliance and digital trust
- Specification-led markets and capability to deliver
- Premium value through performance, design and meaning
- Circular, regenerative and climate-resilient systems
- Performance-led natural material transition

Why this matters for Aotearoa New Zealand

Parts of our fibre sector already use long-term contracts, direct producer relationships, collaborative product development and assurance-led value chains. New Zealand's relatively small networks can also enable producers, researchers, designers and market partners to connect more directly.

However, partnership itself is not an advantage. Fragmentation, duplicated effort and weak coordination still need to be addressed.

The strategic opportunity is to build domestic and international partnerships around clearly defined market opportunities, combining complementary capability while retaining control of strategically important assets such as brand, IP, specifications, technical knowledge or customer relationships.

CASE STUDY 14

KiwiFibre



Harakeke composites linking regeneration and technical performance

KiwiFibre was founded in 2020 by William Murrell (Ngāi Tahu) and Ben Scales. It works with Biotenax, Ngāti Ruapani ki Uta ki Tai Co-op, Te Tapu o Tāne and Ngāi Tahu to build harakeke supply and processing capability. They have expanded into traceability, extraction and processing knowledge, and natural fibre global distribution systems.

What they do: KiwiFibre is building the infrastructure behind a new advanced natural materials industry, beginning with harakeke as a new generation of reinforcement materials. They are backed by venture capital investors Icehouse Ventures, Startmate and Agnition Ventures, demonstrating investment interest in Aotearoa New Zealand performance fibre innovation.

Key challenges: Scaling requires reliable harvesting, consistent fibre processing, shared infrastructure, application testing and lifecycle evidence, while ensuring industry growth reflects kaitiakitanga and manaakitanga.

Key learnings: KiwiFibre combines a distinctive indigenous fibre, technical performance, Māori partnership and the potential to regenerate whenua and create regional value. Material innovation and industry-building must advance together.

What's next: Develop planting and infrastructure in partnership, and expand applications such as composites, apparel and interior quality ingredient materials that align with existing processing specs.

Values-aligned partnerships

Cross-cutting enabler 2: Partnerships that connect capability and retain value for New Zealand

CASE STUDY 15

Wilson & Dorset



Transforming sheepskin for modern living, five generations in the making

Wilson & Dorset is a Wānaka-based brand that develops interiors and accessories from Aotearoa New Zealand sheepskin. It was founded in 2007 by Ben Wilson and Amanda Dorset. Their product range includes bean bags, rugs, bags, hats, vests, cushions and footwear.

What they do: Wilson & Dorset have reimagined sheepskin by moving it into the heart of the modern home through beautiful form, colour and texture. They continue the Wilson family's multi-generational 30-year partnership with AUSKIN Group, who's China facilities hold Oeko-Tex, Intertek, SEDEX and SMETA standards and ISO 9001:2015 certification. Wilson & Dorset have shareholdings in AUSKIN group and visit regularly to push innovation and product design.

Key challenges: Pelts vary in quality and are aggregated through a large meat-processing system in Aotearoa New Zealand. Premium sheepskins require high animal welfare standards, careful processing and selection, consistent tanning and manufacturing, verified environmental credentials and committed buyers.

Key learnings: Sheepskin gains value when design, marketing, tanning, manufacturing and a premium market align to create a brand and product people feel proud to have in their home. Supply chain partnerships secure quality, drive innovation and help retain IP.

What's next: Continue their mission to provide the best sheepskin in the world, win consumers back from synthetics and grow globally.

CASE STUDY 16

Honest Wolf



Farm-grown strong wool developed into a premium brand

Honest Wolf was founded by Sophie and Sam Hurley on Papanui Estate near Hunterville and works with wool, leather, and manufacturing partners overseas, including India.

What they do: The brand transforms 35-micron strong wool into felted bags and accessories, pairing farm provenance with New Zealand leather and hardware. They are also developing a 'wool experience' destination in Hunterville to tell the story of wool and create a space for Aotearoa New Zealand brands to retail product.

Key challenges: A farm-based brand must coordinate small volumes across processors, maintain consistent material quality, manage premium pricing and explain why strong wool belongs in contemporary accessories. Growth depends on reliable manufacturing and avoiding provenance becoming only a marketing story.

Key learnings: Direct ownership of the farm story can connect growers with customers and retain more value beyond the wool auction. Partnerships provide capabilities the farm does not hold, while product design makes strong wool visible, useful and desirable.

What's next: Expand international and corporate partnerships, increase the range and volume using Papanui Estate wool, strengthen supply-chain evidence, and ensure growth supports durable products and value returned to the farm.

What it will take

- Build partnerships around a shared market opportunity.
- Engage buyers and end users early.
- Clarify roles, risk, investment, IP, and data ownership.
- Align incentives, data and value-sharing across the value chain.
- Use complementary domestic and international capability.
- Retain control of strategic assets and customer relationships.
- Build long-term relationships, not short-term project partnerships.

What good could look like in 3-5 years

- Enduring fibre value chains that combine domestic and international capability around clearly defined markets.
- Partners share risk and investment, products move efficiently through complementary global supply chains.
- Aotearoa New Zealand retains key IP, brands, specifications, or customer relationships so innovation, market knowledge, and economic value flow back into the domestic fibre system.

SECTION 6

From insight to action

What this means for our fibre system



Aotearoa New Zealand will not capture greater value from fibre simply by promoting its inherent attributes.

Provenance, natural origin, performance or environmental qualities only become sources of advantage when they respond to a market need, can be demonstrated, are translated into products, delivered consistently, and connected to buyers.

The potential demand advantages identified in the previous section point to a system challenge.

To capture greater value, our fibre system needs to:

- **Understand where market demand and value are moving.**
- **Demonstrate fibre and product attributes with credible evidence.**
- **Convert science, materials and ideas into products that meet buyer and specification requirements.**
- **Connect design, meaning and performance to genuine buyer demand.**
- **Build enduring relationships across the value chain that support long-term investment and appropriate value sharing.**

This does not mean every part of the fibre value chain needs to be rebuilt locally. In some cases, greater value may come from strengthening domestic processing or manufacturing capability.

In others, we may create more value by retaining science, IP, design, specification knowledge, brand or customer relationships, while working with complementary international partners through mechanisms such as licensing or specialist services.

Identifying where capability and control matter most is therefore a central strategic consideration.

Strengthening the system

Three areas for action have emerged. Together, they bridge between potential demand advantage and the capabilities required to turn it into sustained value.

Validated demand should guide where the system invests. Market intelligence and engagement with buyers, specifiers and market partners should identify priority opportunities and the evidence, capability, infrastructure, innovation, partnerships and investment needed to pursue them.

The eight action areas are interdependent. Many capabilities already exist, but are fragmented and difficult to navigate and access. Progress will require industry leadership and coordination across businesses, fibre organisations, Māori entities, research, education, investors, government and market partners. The next stage is to clarify ownership: where collective action is required, where individual organisations should lead, and where Future of Fibre Aotearoa can most usefully convene, test or accelerate action.

Turn market demand into direction

1. Build market intelligence and buyer connection
Build continuous intelligence on where demand and value are changing and validate opportunities directly with buyers and specifiers. Use this insight to identify priority markets and guide capability, infrastructure, evidence, innovation and investment. Focus effort where New Zealand has a credible proposition, strengthen market visibility, understand access and specification requirements, and feed insight back into product development, research and commercial decisions.

2. Clarify investment and implementation pathways
Clarify the ownership, leadership and delivery models required to move priority opportunities from research and pilot stages into sustained commercial implementation, and make the pathways between capability, partners, funding and support easier to navigate. Map and communicate public, private and industry funding pathways across innovation and commercialisation, so businesses can more easily understand what support is available and when. Investment should focus on opportunities with demonstrated demand and a credible pathway to value creation, with clearer connections between the organisations and capabilities needed to deliver them..

Build trust, evidence and coordination

3. Connect and extend evidence and digital systems
Build on existing assurance, LCA, traceability and research to close priority evidence gaps against buyer, regulatory and specification requirements. Assess where internationally recognised systems already provide what is needed, and strengthen connections between these systems, and product-level data and market-facing digital platforms. Target additional research or verification only where clear gaps remain, particularly for priority performance and sustainability claims.

4. Strengthen assurance and standards pathways
Assess whether existing internationally recognised assurance and standards systems can meet identified market needs and recognise the attributes New Zealand fibre needs to demonstrate. Where they are sufficient, prioritise alignment and uptake rather than creating new requirements. Where a genuine gap remains, explore a complementary New Zealand layer, add-on or fibre-specific pathway. This could include a wool-specific standard, a broader New Zealand fibre assurance framework, or an add-on module recognising attributes such as farm systems, soil carbon, biodiversity, animal welfare, provenance, traceability and circularity. Any new approach should be justified by demonstrated market need and minimise cost, duplication and compliance burden.

5. Value chain partnerships and value retention
Build enduring domestic and international partnerships around defined market opportunities, with clear roles, aligned incentives and transparent mechanisms for sharing risk and value. Use complementary offshore capability where it strengthens competitiveness, while deliberately retaining the assets that create long-term value for New Zealand, including IP, technical knowledge, specifications, brand, provenance and customer relationships.

Grow the capability to deliver

6. Map processing, prototyping and scale-up infrastructure
Map and connect existing processing, manufacturing, prototyping and testing infrastructure alongside the specialist capability that supports it, making relevant capability easier to identify and access. Identify strengths, vulnerabilities and gaps, with investment guided by priority market opportunities and delivery needs.

7. Strengthen skills, education and leadership
Strengthen skills across production, processing, design, technical development and commercial leadership. Address gaps in vocational, technical and digital pathways, and improve the translation of design, science and market intelligence into commercial outcomes. Prioritise capability development where it responds to validated opportunity and critical system needs.

8. Strengthen innovation-to-market pathways
Create more connected and navigable pathways for market-led innovation, linking science and R&D with design, market insight, prototyping, testing, commercial capability and investment. Strengthen support to move validated ideas from concept to scale and market adoption. Innovation should begin with a clearly defined market need or customer problem, not technology or production capability in isolation.

Continue momentum, together

These action areas are interdependent. Their value will come from focusing collective effort and investment around validated market opportunities, supported by the infrastructure, research, people, relationships and knowledge needed to deliver.

Industry now has an opportunity to lead: bringing together market demand, evidence, capability, partnerships and investment, with clear ownership of what happens next. Working across fibre types, value chains and organisations will be critical to build on our strengths, close priority gaps and turn opportunity into enduring value for Aotearoa New Zealand.

Recommendations

Priorities for strengthening Aotearoa New Zealand's fibre system

TABLE 6. RECOMMENDED ACTIONS, LEADERSHIP & OUTCOMES

Priority Areas		Actions	Initial Focus	Leads	Contributing Partners	3–5 year outcome	Priority & timeline
Turn market demand into direction	1	**Market intelligence and buyer connection**	Market intelligence identifies priority applications and markets, and collective pathways allow access to market opportunities	Industry, with Government	Industry + fibre organisations + NZTE/MPI + market partners	Priority fibre opportunities are informed by regular buyer and specifier insight, with clearer routes to target markets and faster feedback into product development and investment decisions.	Do now 3-6 months
	2	**Investment and implementation pathways**	Ownership, leadership, funding and delivery pathways are clear, connected and easier to navigate.	Industry, with funders	Funding agencies + Investors + government + industry + fibre organisations + research organisations	Businesses can identify and connect with the right capability, funding and partners more easily, enabling validated opportunities to progress from pilot to sustained commercial delivery.	Build next 12-24 months
Build trust, evidence and coordination	3	**Evidence and digital systems**	Existing LCA, assurance, traceability and product evidence points are connected and aligned with market and specification requirements	Industry, with Government	Industry + fibre organisations + science/research + government	Priority fibre products have connected, accessible evidence that meets market and specification requirements and supports market access, comparison and differentiation.	Do now 6-12 months
	4	**Shared assurance and standards pathways**	Assess existing and potential assurance pathways against international requirements and distinctive New Zealand attributes.	Industry, with Government	Fibre organisations + industry + government + standard-setting/assurance partners	Priority fibre products can use recognised assurance pathways that meet international requirements while evidencing distinctive New Zealand attributes where these matter to buyers.	Do now 6-12 months
	5	**Value chain partnerships and value retention**	Value-chain partnership models built around shared market opportunities, with clear roles, aligned incentives and mechanisms for sharing risk and value.	Fibre organisations, with industry	Industry + fibre organisations + market partners	More market-led value chains operate through long-term commercial partnerships, with clear ownership of IP, specifications, customer relationships and mechanisms for retaining value in New Zealand.	Explore 12-24 months
Grow the capability to deliver	6	**Infrastructure mapping**	Existing infrastructure & specialist capability strengths, vulnerabilities and gaps are identified; investment needs are clarified	Industry, with research organisations	Industry + fibre organisations + government + research organisations	Priority processing, prototyping, testing and scale-up capability is visible, connected, easier to access and aligned with validated market opportunities, with critical gaps clearly identified.	Do now 6-18 months
	7	**Skills, education and leadership**	Critical skills across production, processing, design, technical, digital and commercial capability are connected more clearly to market outcomes.	Industry	Industry + education + skills boards + fibre organisations	Critical technical, production, design, digital and commercial skill gaps are reduced in priority areas, improving the sector's ability to move opportunities from concept to market.	Build next 12-24 months
	8	**Innovation to market pathways**	Connected innovation pathways support validated market opportunities	Industry, with funders	Industry + research organisations + design + innovation agencies + investors	More market-validated fibre innovations progress from R&D and prototype through testing, investment and scale-up to commercial adoption.	Do now 3-12 months



"We got to know the whole wool sector by trying to pick it apart and work out what's the best supply chain and how does it all work? We really took the wool into our own hands and went through that whole process from end to end."

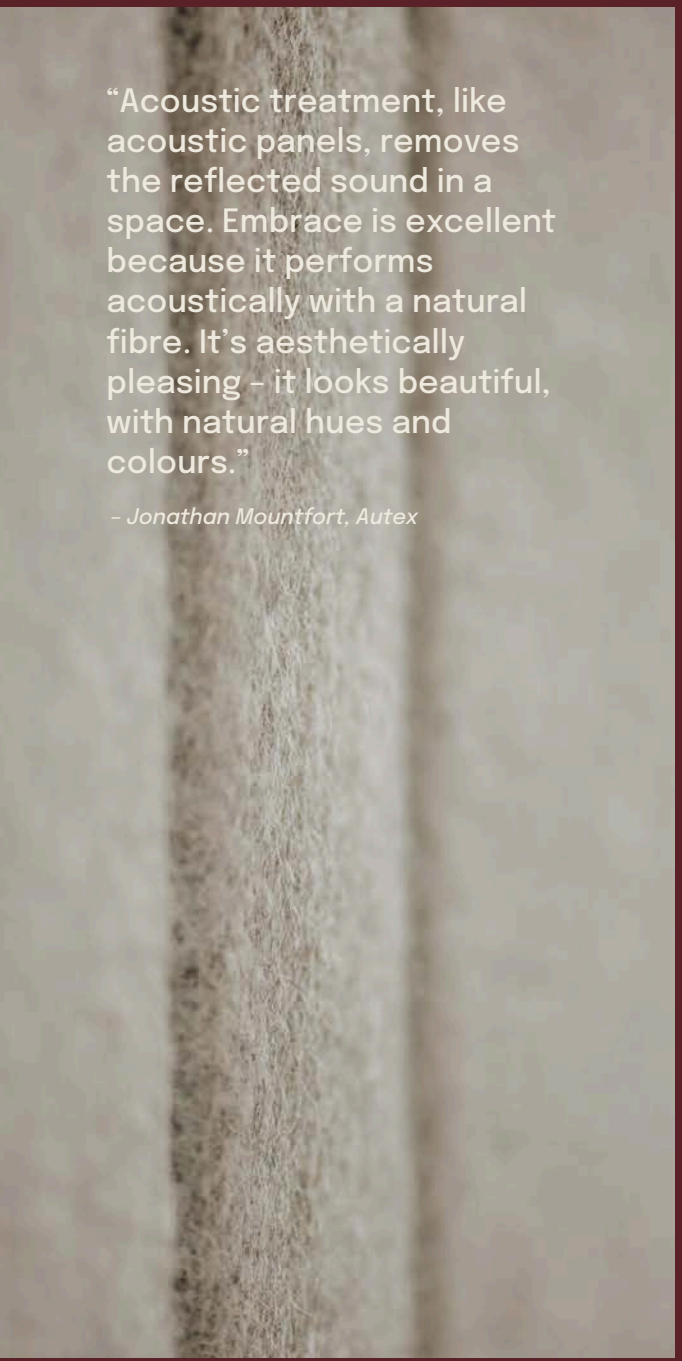
– Jonathan Mountfort, Autex

Designing the loop

Caitlin Easson, 24, and Jonathan Mountfort, 45, are part of the design team at Autex, a company that made its name by developing award-winning architectural textiles, including acoustic panels. By collaborating with businesses across New Zealand, Autex's design team is now innovating with wool. Caitlin and Jonathan both love developing products using natural fibres that are grown in New Zealand.

Jonathan: I've been at Autex now for coming up fifteen years. I grew up in suburban Rotorua, left at seventeen, moved down to Wellington and started studying mechanical engineering. It wasn't really very creative – but foundationally, fantastic. I did two years of a National Diploma in Engineering, Mechanical, then left and had a gap year, cruised around, and got a job in corporate catering. I ended up as a chef and working on Lord of the Rings for quite a while, and worked my way up to manager. I realised I couldn't have any effect there doing what I was passionate about – I connected product, production and industry with environmental impact and basically figured there's only one way to change the system and that's from the inside. So I went back as a sort of relative hippie to design school to do a National Diploma in Product Design and Development.

Caitlin: I grew up in Waiuku, just south of Auckland. Through my design studies I became passionate about the environment. As a designer, I have a responsibility to design with intention and create positive impact. My communication degree didn't really fill that for me, so I went back and studied product design. I did a lot of research on hemp and designed hemp acoustic panels. A furniture designer told me about Autex and said that Jono is really passionate about wool and that he's doing some really awesome stuff. I've been with Autex since last year.



"Acoustic treatment, like acoustic panels, removes the reflected sound in a space. Embrace is excellent because it performs acoustically with a natural fibre. It's aesthetically pleasing - it looks beautiful, with natural hues and colours."

- Jonathan Mountfort, Autex





Previous - Caitlin and Jonothan at Autex's manufacturing facility in Auckland.
Far left - close up of Embrace acoustic panel made from 100% wool.
Top - Embrace fabric colourways.
Left - Caitlin designing at her desk.

Photographer: Michelle Porter

Jonathan: Last year we launched Autex Future Lab after looking at what else can we bring in to diversify our raw material base. We did a study of available fibres and landed on strong wool. At present, most wool goes offshore greasy, or unprocessed, and we were like, 'Well, we're a New Zealand manufacturer manufacturing all of our polyester product in New Zealand. We must be able to make a wool product in New Zealand as well.' We ended up collaborating with Rubisco and Interweave. Our wool comes from a single station - Otairi Station in the Manawatū. It's dyed in Christchurch, then manufactured in Auckland. The main mission for our first project, the Embrace Wall System, was to create a blueprint - how do you do wool right? This enabled us to scale manufacturing. It is a long-lasting interior lining product, and you can simply replace the fabric, then it can go back into another industrial process or, in a worst-case scenario, it can go to landfill or be used as a weed mat or a geotextile, and it will return to the earth without damaging that environment. Through Embrace, we've moved into a nature regenerative space using existing infrastructure in new ways.

Caitlin: Working on a project that is using wool and making sure that it's going to good use is really awesome. Autex really aligns with my morals as a designer. And it's not just natural fibres - the way we look at plastic is incredible. We have developed our own in-house pelletiser which enables us to transform manufacturing offcuts into recycled PET accessories for our products. It is about the system. There is no inherently sustainable material - sustainability depends on how the system is designed from the beginning, and how it is managed at the end of its life.

Jonathan: Caitlin's nailed it - there are no sustainable materials, it's about sustainable product ecosystems. To make a truly circular system work, you retain value, both economic and environmental, at each phase change of a material. So it's a new old way of looking at things: this is how it was back then - and now how do we do that in 2026 and beyond? How do we bring it all into the digital age? How does it all fit together? And yeah, it does feel like you're on the cusp of a revolution - we're neo-industrial revolutionaries. The wool industry does need to work together. There's a lot that needs to be done at the front end of wool before it goes off and becomes all the different products like your jersey or socks, or an acoustic panel or a lampshade. We need cohesive processing - the scouring, the combing - until it gets to a point where the wool becomes a yarn and it splits off into very different product systems. We used to be there, and we've just got to build it back again - and we've got to build it back in a way that revolutionises or changes the systems that already exist overseas.

Extract by Felicity Connell for Shepherdess Magazine

Next steps

The next phase is to move from insight to implementation. The three priority areas and eight actions provide a shared framework for action, building on work already underway across fibre organisations, industry, research and government.

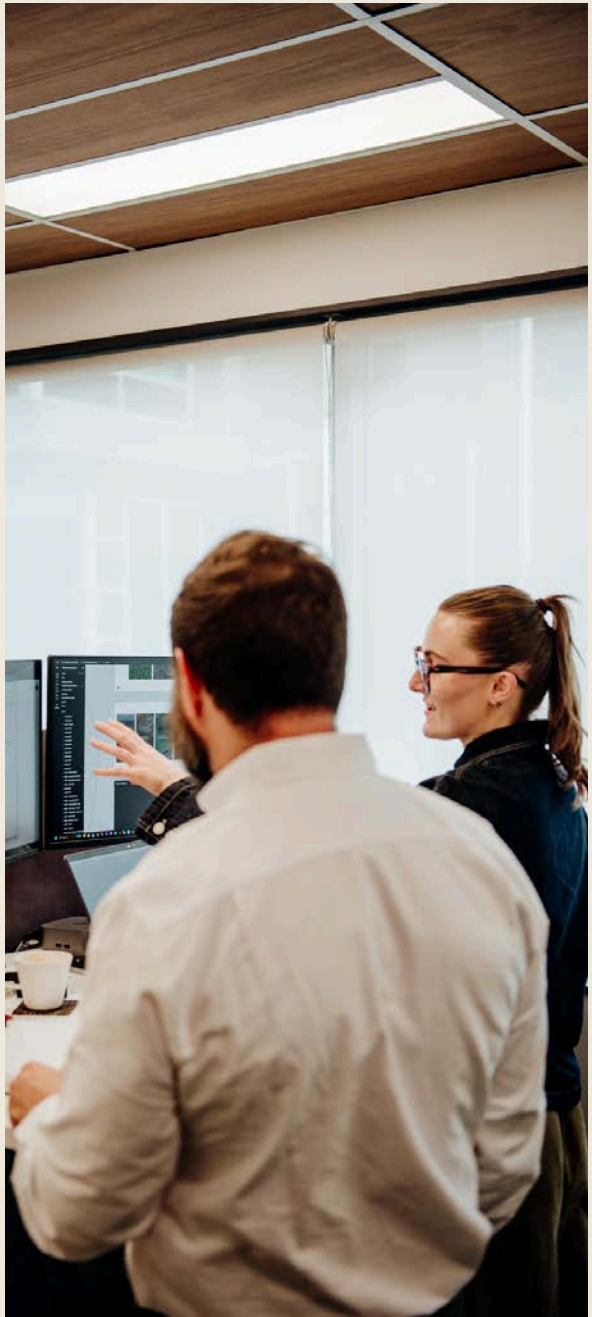
The immediate task for Future of Fibre Aotearoa is to identify credible leads for each action, clarify ownership and transition responsibility to the organisations best placed to take them forward. Collective effort should focus where coordination is needed, gaps remain, or shared action can add value without duplicating existing work.

Market demand should guide where effort and investment are focused. Actions can then be prioritised as: **do now**, where demand and ownership align; **build next**, where capability or coordination needs strengthening; and **explore**, where market potential or commercial pathways remain less certain.

Priority should be given to actions that unlock value across the system, cut across multiple fibre types or demand advantage areas, address known capability gaps and improve market access, specification or value retention. Where commercial opportunities are tested, industry should be involved from the outset, with credible buyer or market demand and a pathway to commercial viability beyond project support.

This should align with and support work already underway by others in the sector including New Zealand Wool Collective, Te Hononga Hapori Harakeke, Bioresource Processing Alliance, New Zealand Hemp Industries Association and the New Zealand Product Accelerator.

Future of Fibre Aotearoa will support this next phase by convening partners, connecting existing activity, testing selected priority initiatives and helping establish clearer pathways for implementation.



From fibre potential to enduring value

Aotearoa New Zealand's fibre opportunity is not simply about producing more, or relying on the inherent qualities of natural materials. Greater value will come from being deliberate about where our fibre can solve real market needs, what needs to be proven, and which capabilities and relationships are required to deliver.

New Zealand does not need to recreate every part of the value chain or compete purely on commodity scale. The strategic task is to retain control of the assets that create enduring value including knowledge, IP, design, specifications, brands, provenance and customer relationships, while using domestic and international capability where it adds strength.

The opportunity therefore lies not in fibre alone, but in our ability to connect these strengths into a system that responds to market needs and retains more value for New Zealand.

With shared direction and sustained action, New Zealand can build a connected fibre system, valued not simply for what it produces, **but for the value it creates, for people, place and generations to come.**



Join us in creating a thriving and connected fibre sector that creates enduring value in the way we grow, design, make and regenerate.

ask@fashiontextilesnz.org
fashiontextilesnz.org/future-of-fibre-aotearoa/about

SECTION 7

APPENDICES

Fibre system: definitions, scope and system map

1. How Future of Fibre Aotearoa defines fibre

Future of Fibre Aotearoa defines fibre as “any raw, minimally processed material, whether grown, cultivated, bio-engineered, regenerated or recycled that can be transformed through spinning, weaving, knitting, felting, moulding, additive/digital manufacturing techniques or other forming processes into textile or composite products.”

2. Scope and boundaries

Future of Fibre Aotearoa takes a system-wide view of fibre, from production and recovery of fibre inputs through processing, product development and manufacturing to markets and end use.

The work considers:

Fibre inputs - Established and emerging fibres produced in Aotearoa New Zealand, including wool, skins and hides, possum, mohair, alpaca, cashmere, hemp, and harakeke. The work also considers recovered textile fibre and, through horizon scanning, experimental bio-based materials and fibre applications.

Processing and transformation - Handling, sorting and primary processing; secondary processing; product development; manufacturing and finishing; and reuse, recovery and recycling. Processing may take place in Aotearoa New Zealand or offshore as part of global value chains.

Applications - Apparel and footwear, interiors, the built environment, and technical and advanced material applications.

Supporting capabilities - The knowledge, research, technology, design, skills, infrastructure, assurance, investment, relationships and market capability that enable fibre to be transformed and connected to markets.

The focus of this work is fibre produced or recovered in Aotearoa New Zealand and the domestic and international value chains that connect it to markets. We do not assume that all stages of a fibre value chain need to take place onshore. Local and international capability can work in combination.

Conventional paper, pulp and packaging are recognised as an important part of the wider fibre and forestry system but are outside the core scope of this work. The project has focused primarily on textile, composite and other material applications where there is potential to create and capture higher value through durable fibre products and materials. These boundaries could be expanded through future work.

Food and feed products are also outside scope. However, side-streams, by-products and underutilised resources from food, forestry and other biological production systems are considered where they have potential as inputs into fibre or bio-based material applications.

3. Fibre maturity

Established fibres are those with existing commercial industries, supply chains and recognised market applications. They have established production and/or processing capability and already participate in domestic and/or international markets, often at meaningful scale.

This does not mean their New Zealand-based value chains are complete or mature in every respect. Established fibres may still face significant gaps in processing, manufacturing, market connection or value capture, and may offer substantial opportunities for innovation and new applications.

Examples include wool, skins and hides, and possum fibre.

Emerging fibres are those where commercial activity exists but production systems, processing capability, supply chains or markets are still developing.

They may have growing production or market interest, while facing constraints such as limited processing infrastructure, technical capability, market development or investment. In some cases, fibre is one of several potential outputs from a production system, and commercial viability may depend on developing markets for multiple co-products.

Examples include hemp, harakeke, mohair, alpaca and cashmere.

Experimental fibres and material pathways activity includes new or exploratory fibre sources, processing technologies and material applications that are currently at research, prototype or early commercial development stages.

These may include new uses for existing fibres, side-streams and underutilised biological resources, as well as emerging bio-based material innovation. Some feedstocks may already be available at significant scale, while the technologies and commercial pathways needed to transform them into new materials remain experimental. Examples include fibre-derived powders and pigments, new cellulosic materials, mycelium and other biological resources, and new applications using food, forestry or textile side-streams and recovered materials.

4. Further information

For a more detailed analysis of Aotearoa New Zealand’s current fibre system, including sector structure, capability, value flows and available economic data, see the *Future of Fibre Aotearoa Ecosystem Mapping report* (2026).

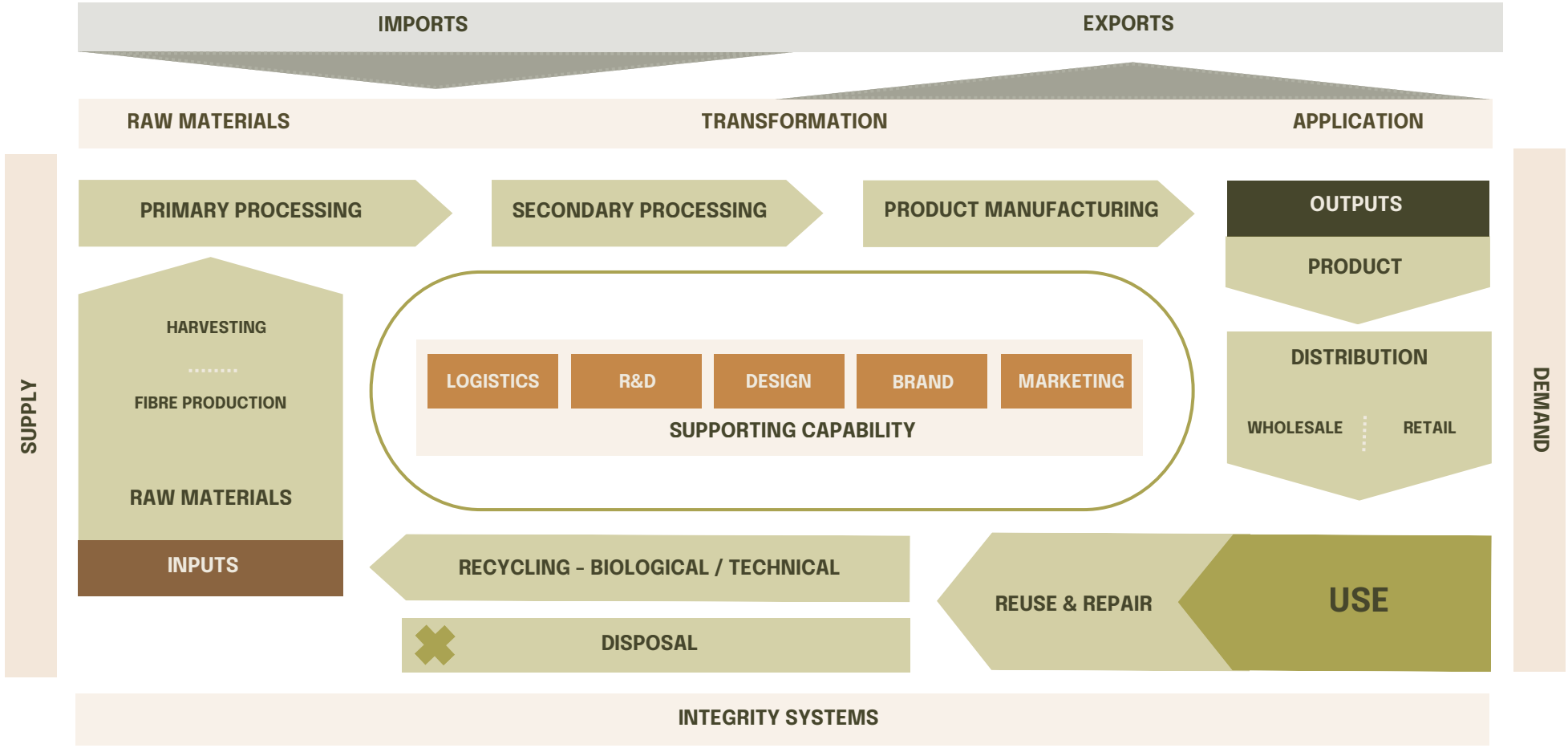
This is supported by the *Future of Fibre Aotearoa: Current State Analysis report* (2026), by Coriolis commissioned by Fashion & Textiles New Zealand to capture available information and data on the value and volume of the fibre sector and related manufacturing.

Together, these companion reports provide the supporting evidence and analysis that underpin the high-level system synthesis presented here.

Fibre system: definitions, scope and system map

VISUAL 4. AOTEAROA NEW ZEALAND FIBRE SYSTEM SYSTEM MAP

Fibre system overview



Future of Fibre Aotearoa

Wool

Established - with emerging and experimental pathways for strong wool in built-environment and wool-derived ingredients.

Overview

Wool remains Aotearoa New Zealand's largest fibre stream by volume and value, but it is on a structural decline path as sheep production becomes increasingly meat-led and wool export volumes continue to trend down.

Fine wool prices continue at high levels, while coarse wool prices are increasing from historic lows. Most wool still leaves New Zealand after early-stage processing, and a large share of downstream value is captured offshore in manufacturing and finished goods.

The sector has a long history of fragmentation and duplicated effort, but recent signals point to stronger alignment and co-ordination (e.g. New Zealand Wool Collective, Wool Impact, Wool Alliance partnership, auction consolidation, domestic manufacturing partnerships) and growing use of direct value-chain relationships in some segments.

Fine wool has a proven premium model through direct brand partnerships and integrity programmes (e.g. ZQ), while strong wool's trajectory depends more on specifier-led demand pull, particularly in interiors and the built environment.

Current state

Wool is a natural protein fibre grown on sheep. In 2025, 23.4m animals across about 11,046 farms produced ~114,600 tonnes of wool within an estimated value of ~NZD$540m. Shorn fleece is classed then exported greasy or clean for further processing off shore, or scoured and processed through domestic manufacturers e.g. into yarn, fabric, knitwear, carpets and non-wovens.

Most of our wool is exported for further processing overseas, with fine wool generally exported greasy. In 2025, 85.3 kilotonnes (kt) of wool exports were valued at approximately NZ$513.1m at the point of export. As shown in Table 7, fine wool accounted for only 14.7% of export volume but 29.2% of export value, demonstrating its disproportionately high value, while strong wool represented 68.7% of volume and 55.3% of value. China and India accounted for approximately 41% and 19% of export volume respectively and purchased high volumes at below-average export unit values, while Australia and Italy achieved higher-than-average export unit values.

Our wool value chain retains strong core operational capability in primary production and scouring, with established onshore strengths in selected manufacturing and testing.

Maintaining capability depth and renewal is a current challenge. Stakeholders consistently report skills loss and succession risk across specialist textile, manufacturing and research roles, including tacit process knowledge built through experience that is difficult to replace once lost. This is particularly acute between innovation and scalable, market-ready production.

Continued decline also creates a longer-term risk that wool becomes further de-emphasised within meat-led production systems, potentially affecting fibre quality and reinforcing lower-value outcomes.

TABLE 7. AOTEAROA NEW ZEALAND WOOL EXPORT VALUE/VOLUME BY WOOL TYPE (2025)

Wool type	Micron	Greasy / clean	Volume (2025)	Volume %	Export value (2025)	Value %
Fine wool	<24.5µm	Mainly exported greasy	12.5 kt	~14.7%	~NZ$150.0m	~29.2%
Strong wool (includes the mid-micron and coarse categories)	24.5–35.4µm & >35.4µm	Mid-micron types mixed clean and greasy, course types mainly clean.	58.6 kt	~68.7%	~NZ$283.6m	~55.3%
Other wool / remaining categories and oddments	Various	Unspecified	14.2 kt	~16.6%	~NZ$79.5m	~15.5%
			85.3kt	100.0%	$513.1m	100.0%

Source: Coriolis (2026), based on 2025 export data. Export values are reported on a Free on Board (FOB) basis and do not represent farm-gate prices or grower returns. Wool-type groupings are indicative proxies derived from Coriolis export HS-code categories.

Wool (continued)

Established - with emerging and experimental pathways for strong wool in built-environment and wool-derived ingredients.

Recent developments

Even as volumes continue to trend down and consolidation of the auction system and wool broker entities continue, there are clear signs the wool industry is starting to re-organise and collaborate. Wool Alliance is strengthening co-ordination across Wool Impact, Campaign for Wool NZ, WRONZ and Beef + Lamb NZ, with a plan to establish a peak industry body for wool by the end of 2027.

Policy at home and abroad is also shaping the wool sector. In July 2025, New Zealand Government introduced a directive to specify wool for government refits and new builds – though uptake has been slow in practice. Recent free trade agreements are also influencing wool value chains e.g. UK, Europe and India. This includes the emergence of increased sustainability requirements to meet regulations e.g. EU Digital Product Passports, and potential manufacturing partnerships in India.

In parallel, strong wool is being repositioned beyond carpet and interiors toward built-environment and technical applications (including filtration, insulation and acoustic nonwovens), while innovation pathways are expanding into a variety of wool-derived ingredient categories such as keratin, peptides, powders and pigments.

Non-woven wool manufacturing is on a growth trajectory in Aotearoa New Zealand and local carpet manufacturers are building closer relationships with architecture and design specifiers, and investing in design and colour development has increased demand where these efforts have been made. This indicates on-shore manufacturing pathways must be innovative and well connected to the market.

Together, these shifts suggest momentum in co-ordination, market focus and product innovation, but not yet a turnaround; export values have improved from 2020 lows, yet export volume continues to fall and overall value remains well below the 2015 peak.

Key applications & markets

Wool's end uses vary strongly by fibre type and processing route. Fine wool most often flows into next-to-skin apparel and premium knitwear (commonly via specialised offshore processing and greasy export). Strong wool still largely serves interiors, but is increasingly being steered toward new categories including non-woven built-environment applications where insulation, acoustic and fire performance is valued, as well as wool-derived ingredient systems used as technical material inputs. Short-fibre streams feed into woollen-system yarns, felts and blends.

Wool demand sits across two different markets: a) commodity/raw fibre through the auction system and b) value-added product markets where specification, performance, design and integrity can earn premiums.

Our current competitive advantage is through performance-led applications and evidence-based credentials, which are typically transacted through a forward contract mechanism between the grower and a downstream customer. Direct relationships across the chain also reduce supply chain friction, with long-term contracts and stable pricing enabling investment and story-telling across the value chain, from growers to manufacturers and brands. The auction system provides on-site characterisation testing, can move significant volumes of wool bales and allows for immediate financial transaction and logistical next steps. Even if growers have some wool committed to contract, wool types that sit outside specifications may be sold at auction. Both are important mechanisms in Aotearoa New Zealand.

Value chain insights

Aotearoa New Zealand has strong wool production and scouring capability but downstream manufacturing is limited, so significant value is often captured offshore. Dependencies include key offshore processing steps e.g. top-making, worsted yarn spinning and also specialist testing and equipment required for validation and scale-up.

The most effective pathways reconnect value back to farm through more direct, long-term relationships across the chain (grower → processor → manufacturer → brand/specifier), where clearer demand signals and consistent specifications can support quality, integrity and premium outcomes.

Maintaining a full value chain onshore is challenging in practice because capability in wool science and textile manufacturing has reduced over the past two decades, contributing to skills loss and succession risk for many businesses and research institutions. The sector is now in a generational shift, with a new cohort entering the wool industry with design, manufacturing, materials innovation and market-led expertise; championing design-led, circular, partnership-based models that bypass the traditional commodity system.

There is significant potential for value capture through the expansion of targeted onshore manufacturing e.g. nonwovens, but also through value chain partnerships that combine IP and know-how into higher-value propositions.

Higher-value and technical applications may also require specifications and testing beyond traditional wool measurements, strengthening the need for closer relationships between producers, processors and manufacturers around end-use requirements.

Skins and hides

Established. We retain capability across collection, preservation and primary leather manufacture, including tanning and specialist finishing, although the sector's processing base has contracted significantly and most final product manufacturing now occurs offshore.

Overview

Skins and hides are an animal-derived co-product material stream from meat processing (e.g. cattle/deer hides, sheep skins) and also pest control activities (e.g. possum pelts and fur). They sit within the 'fifth quarter' of the meat system: valuable co-products that improve whole-of-animal value recovery and reduce waste. This is an export-led category: most material leaves Aotearoa early in the chain as salted, pickled or wet-blue hides/skins for finishing and manufacturing offshore. Although Aotearoa New Zealand produces high-quality hides and skins, much of the margin is captured later in the chain.

Current State

Skins and hides remain a large co-product stream in Aotearoa New Zealand, with modelling indicating ~54,000 tonnes in 2025. Export revenue is estimated at ~NZD$255m (mainly raw hides, pickled skins and wet-blue, plus a small finished-leather component), with a further ~NZD$27m linked to domestic finished goods and artisan activity. Key export markets include China and Italy, reflecting the offshore location of much of the finishing and manufacturing value capture. We retain strength upstream (collection, preservation and some primary processing), but most material leaves early in the chain, so finishing and most end-product manufacturing value is captured offshore.

Possum continues to be processed domestically in niche pathways, including overlap with textile manufacturing (e.g. wool/possum yarn blends). Historical figures indicate annual volumes in the order of 50–100 tonnes: Woolyarns reported using 40–50 tonnes of possum fibre in 2012 (Woolyarns Limited, n.d.), while NZIER recorded 44 tonnes exported to China and 56 tonnes used domestically, based on industry figures supplied in 2013 (Corong & Schilling, 2014). These figures are indicative only and should not be treated as estimates of current production, although continued possum trapping and yarn manufacturing indicate that the pathway remains active in Aotearoa New Zealand.

Recent developments

Recent developments are being shaped by a sharper focus on co-product value and a higher bar from global markets.

Aotearoa New Zealand meat processors are increasingly recognising the potential of co-products from the production system, and skins and hides are no exception. At the same time, demand is concentrating toward leather supply chains that can credibly prove environmental performance, traceability and consistent quality, as leather faces stronger competition from low-cost synthetics and newer plant-based alternatives.

Regulation is also lifting requirements (especially in Europe, including the direction of travel toward Digital Product Passports), which increases expectations for traceability and processing information. In response, the sector's practical focus is on 'quality lift' (defect detection, tighter process control, and cleaner chemistry/post-tanning where viable) and better use of side streams (e.g. collagen) for higher-value applications. This is supported by collaborative sector research by LASRA, which works across the full leather production system.

We also heard from industry that more direct, brand-linked partnership models are emerging in some niches e.g. luxury leather goods, to reduce intermediaries and tighten quality feedback, even when processing occurs offshore, but this is not yet widespread.

Value chain insights

Where value is captured depends on how far material travels down the value chain before export; raw/pickled and wet-blue exports push finishing and manufacturing margin offshore, while selective onshore finishing or niche manufacturing can retain more value–but only when tied to committed market demand and viable compliance economics.

The practical opportunity is therefore in premium niches where quality, provenance, traceability and environmental performance can be evidenced, and where there is real market pull to retain more processing value onshore.

Where higher premiums are available, a key strategy is to shorten the value chain by selling closer to brands and treating onshore or offshore processing steps as partners so requirements, transparency and value can be linked back to origin. Across the category, a key gap remains the commercial capability to connect the chain end-to-end (producer → processor → brand), not just the technical processing.

The most credible onshore value plays sit in premium niches built on repeatable quality, defect reduction, and integrity/provenance, within practical limits set by chemistry and wastewater compliance.

Possum remains a separate sub-system with different supply dynamics (pest harvest), different market logic (niche, story-led), and different constraints (aggregation and consistency at small scale).

Hemp

Experimental to emerging. Potential across multiple co-products and material applications, but with gaps in knowledge, genetics, processing capability, product development and markets to resolve.

Overview

Industrial hemp is a low-THC cultivar of *Cannabis sativa* that can produce multiple material streams from the same crop: seed for food and ingredients; bast fibre for textiles and other fibre products; hurd or shiv for building materials; and other biomass fractions with applications under development.

This whole-plant potential is important, but the optimum combination of products and markets is not yet established in Aotearoa New Zealand. Different cultivars, growing systems and harvest decisions favour different outputs, and maximising one may compromise another. The opportunity is therefore to determine which varieties, processing pathways and products can create viable and differentiated value chains.

Current state

Aotearoa New Zealand's industrial hemp sector remains small and fragmented, spanning trials, early commercial production and emerging processing and product-development ventures. Indicative NZHIA estimates suggest a sector value of around $10 million in 2025, up from $3–5 million in 2020, while an MPI-commissioned estimate suggests it could reach around $30 million by 2030 under current trajectories.

Around 180 hectares are estimated to produce approximately 1,800 tonnes of fibre biomass and 540 tonnes of bast fibre, although volumes and yields vary and these figures should be treated as indicative.

Capability is developing, but gaps remain in cultivar selection, agronomy, processing, product performance and market development. Access to proven genetics suited to specific end uses, and the R&D required to test them, remain constraints. Specialist skills, testing and downstream product-development capability are also limited, with some expertise still accessed offshore.

Regulatory reform has removed one longstanding barrier. Since 28 May 2026, the previous industrial hemp licensing regime has been replaced by a permission-based system, although notification and requirements for some activities, including importing seed and plant material, remain.

Recent developments

There are signs of a more tangible processing and innovation base emerging. In Canterbury, activity is strengthening fibre processing and product development for interiors and built-environment applications. In Taranaki, work is exploring place-based production and construction materials, particularly applications for hemp hurd.

Together, these developments shift the question from whether hemp can be grown successfully towards whether Aotearoa New Zealand can access and grow appropriate varieties and convert their outputs into repeatable, specification-ready products with viable markets. Further R&D remains necessary to underpin robust commercial and investment cases.

Key applications and markets

Applications vary by plant fraction and processing route. Bast fibre can be used in textiles and non-wovens for apparel, interiors and technical applications. Hurd has applications in building materials such as hempcrete and insulation. Other potential pathways include geotextiles, biochar, composites, bioplastics and other engineered materials.

Construction is one visible near-term pathway, but requires products to meet performance, testing and specification requirements, alongside capability among designers, specifiers and builders. Hemp may also have value as an ingredient in other material systems, including wool blends, non-wovens and intermediate materials.

Value chain insights

Value creation depends on connecting cultivar and growing decisions with processing capability, product requirements and markets. These connections are not yet consistently established in Aotearoa New Zealand or globally, meaning ventures may need to develop several parts of the system simultaneously, from accessing suitable genetics through to processing, product development, testing and market creation. Whole-plant utilisation may improve value capture, but the optimum mix of outputs and markets still needs to be tested.

The nearer-term priority is therefore building the evidence and capability for commercialisation: R&D into genetics and end uses, processing and product development, performance testing and specifications, skills, and stronger connections between growers, processors, manufacturers and prospective buyers.

Harakeke

Re-emerging. Deep cultural provenance and distinctive performance potential. Māori leadership, appropriate protection of mātauranga and IP, and development of reliable processing and market pathways are central to its future.

Overview

Harakeke (*Phormium tenax / Phormium cookianum*) is native to Aotearoa New Zealand and botanically distinct from European flax. It has been grown, harvested and woven by Māori for centuries and has its own whakapapa, mātauranga and tikanga. Muka, the fibre extracted from harakeke leaves, is a taonga with longstanding use in whatu and other cultural and practical applications.

Alongside this cultural significance, harakeke has potential as a contemporary performance material. Its future development needs to recognise both: protecting mātauranga Māori, cultural integrity and IP while developing fit-for-purpose material formats and value chains appropriate to new applications.

Current state

Commercial activity is currently very small. Around 20 tonnes of leaf were harvested and processed in 2024 and an estimated 10-20 tonnes in 2025. Muka represents only part of the harvested plant, with yield and fibre characteristics influenced by cultivar, processing method and desired fibre quality.

Harakeke also has a significant industrial history. Aotearoa developed a substantial harakeke processing and export industry during the nineteenth and early twentieth centuries, with exports reaching around 32,000 tonnes in 1916. While this industry subsequently declined, mātauranga and cultural practice continued, alongside pockets of processing and research capability.

Today, the challenge is not simply rebuilding the former industry, but developing a contemporary model that combines Māori knowledge and leadership with processing, research, design and market development. A recent sector-led feasibility and business-case by Te Hononga Hapori Harakeke (2026) has strengthened the evidence base for re-establishing a modern harakeke industry, testing land-use, harvesting, processing, market and investment conditions.

Recent developments

Harakeke is moving from prototyping towards early industrial scale. New mechanical processing capability is being developed alongside commercial harvests, cultivar work and engineering-led research into harvesting and extraction. Research is also exploring how muka can be refined into consistent material formats for different applications.

Pā harakeke are also being established in different regions, including through Māori-led initiatives connecting fibre production with whenua restoration and regeneration. Coordination is strengthening through collaboration between tangata whenua, growers, researchers and commercial ventures, creating an opportunity to develop shared approaches to integrity, knowledge protection and scale-up. A distinctive development is the proposed RRRT planting model, which integrates fibre production with riparian planting, revegetation, restoration and land-use transition. The study identifies under-utilised whenua Māori, riparian and flood-prone land, marginal land and land requiring environmental remediation as potential production settings, with fibre production linked to biodiversity, water and land-restoration outcomes.

Key applications and markets

Applications remain largely at prototype-to-early-commercial stage. Muka's strength creates potential across textiles, composites and other higher-performance applications, while different processing approaches may enable finer material formats suitable for apparel and interiors.

The opportunity is not necessarily to compete with global commodity fibres. Harakeke's distinctiveness lies in combining material performance, provenance, design, Māori knowledge and connection to place. Environmental functions, including erosion control and wetland restoration, may create additional value where fibre production is integrated with wider land and ecosystem outcomes.

Value chain insights

A viable harakeke value chain will depend on matching cultivar, harvesting and processing decisions to defined material specifications and markets. Greater consistency in fibre quality, processing and intermediate formats will be needed to enable manufacturers and designers to work confidently with the material.

The feasibility study also reinforces the importance of a whole-plant approach. Its business-case analysis suggests commercial viability may depend on developing multiple product pathways so fibre-production costs can be shared across muka and other by-products, alongside regional processing hubs, collaborative production models and progressive automation.

There is also potential to consider harakeke as a whole-plant system, with possible value from leaf residue, gel, seed and seed oil alongside muka. However, commercial development needs to proceed alongside appropriate Māori leadership and governance, ensuring that scaling harakeke strengthens rather than separates the material from its cultural foundations.

Mohair, alpaca and cashmere

Emerging. Premium niche animal fibres, with established pockets of production and processing capability but small volumes and different market-development challenges across each fibre.

Overview

Mohair, alpaca and cashmere are produced in Aotearoa New Zealand at relatively small scale. Mohair comes from Angora goats, cashmere from the fine down of cashmere goats, and alpaca fibre from alpacas. Their opportunity lies less in commodity-scale production and more in differentiated, higher-value yarns, textiles and finished products where quality, provenance and specialist attributes matter.

Each starts from a different position. Mohair has an established aggregation and manufacturing pathway but limited local supply. Cashmere is rebuilding from a very small base, with genetics and fibre quality central to its development. Alpaca has an established collection and grading system, but its market has contracted significantly and needs greater diversification.

Current state

Indicative estimates suggest we produce around 20–30 tonnes of mohair annually from approximately 7,500 goats, around 1.6 tonnes of cashmere from approximately 8,000 goats, and potentially around 33 tonnes of alpaca fibre from an estimated 8,300 alpaca and llama. Available data is limited, so these figures should be treated as indicative.

Processing and value-add are concentrated among a small number of operators. Capability exists across collection, classing, scouring, fibre preparation, spinning and specialist manufacturing, but small volumes make maintaining throughput difficult.

Alpaca illustrates both the strengths and vulnerability of these small systems. An established fibre pool provides collection, grading and testing, including defined micron, length and colour specifications. However, industry feedback indicates the sector has contracted by around half since 2020 following the collapse of a tourism-linked duvet market that previously accounted for more than 90% of fibre sales. Scouring is also constrained by limited access to commercial facilities able to accommodate specialist fibres.

Recent developments

For mohair, changes in domestic spinning capability have created some transition as machinery is relocated, while specialist weaving and fabric manufacturing remain active. Some fibre is imported to maintain manufacturing throughput, highlighting the gap between available Aotearoa New Zealand supply and downstream capability.

Cashmere is seeing renewed investment, including genetics-focused work to improve fibre quality, yield and consistency, alongside small-scale onshore fibre preparation; however more farmers and herds are needed to grow fibre volumes.

For alpaca, the priority is shifting from dependence on dominant bedding market towards other uses. Existing aggregation and quality systems provide a platform for this transition and operate despite a highly dispersed grower base.

Key applications and markets

Current applications include premium yarns, knitwear, woven textiles, blankets, interiors and blends with wool. The strongest positioning is in markets where buyers value fibre quality, provenance, natural attributes and animal welfare rather than volume.

There is potential to retain more value through Aotearoa New Zealand-made yarn, fabric and finished products, including specialist knitwear and small-batch manufacturing. Alpaca also demonstrates the importance of matching fibre grade to application, with finer fibre directed towards yarn and coarser grades towards products such as duvet and pillow fill.

Value chain insights

These fibres are complementary to wool and can use some of the same processing and manufacturing infrastructure, while requiring specialist preparation and handling. Their small scale makes aggregation, quality consistency and coordination particularly important.

The pathway differs by fibre: mohair needs sufficient local supply to support existing downstream capability; cashmere needs continued improvement in genetics, quality and processing; and alpaca needs diversified markets alongside its established collection and grading system.

Across all three, the opportunity is to build small but complete premium value chains, connecting growers with aggregation, specialist processing, designers, manufacturers and markets. Better market transparency around volumes, quality, pricing and value-add would also help producers make more confident decisions about genetics, fibre preparation and production.

Bio-based materials

Experimental. Aotearoa New Zealand has strong research capability and abundant biological resources. Many could be transformed into higher-value materials and ingredients, but most opportunities are still at pilot or pre-commercial stage. Reaching scale will depend on reliable supply, processing capability, market demand and investment.

Overview

Bio-based materials are made from biological resources rather than fossil-based raw materials. They can be produced from forestry, fibre, marine and food-system biomass, using processes including fermentation, bio-manufacturing and bio-fabrication to create materials, ingredients and other inputs.

In Aotearoa New Zealand, a significant opportunity lies in the side-streams generated by our existing primary industries. Much of our primary production is designed around food rather than materials, meaning valuable biological material can sit outside the main product stream.

Food and agricultural side-streams such as kiwifruit residues, grape marc, apple pomace, poultry feathers and collagen from animal and fish sources can potentially become inputs into new material systems.

Opportunities also exist to derive greater value from underutilised biological resources and by-products that are currently disposed of, exported with limited processing, or used in low-value applications.

Forestry is different because material production is already a primary purpose, but significant residues remain available for higher-value use via cellulose fibre conversion.

The opportunity is therefore not simply finding new uses for residues. It is creating reliable pathways that connect biological resources with processing technologies, material specifications, manufacturers and markets.

Current state

Aotearoa New Zealand has strong bio-based materials research and a growing number of pilot initiatives. Capability is supported by the Bioeconomy Science Institute, Bioresource Processing Alliance, New Zealand Product Accelerator and universities, providing research facilities, technical expertise and early commercialisation support.

The potential feedstock base is significant. Forestry residues alone represent around 4 million tonnes of potential woody biomass input, although this should not be interpreted as material that is immediately available or economically convertible. In terms of total forestry volumes, Aotearoa New Zealand produced 31.5 million tonnes of logs in 2025, with two-thirds exported. Food, agricultural, marine and other primary-sector side-streams add further potential. Recent top-down biomass mapping by Bioeconomy Science Institute estimates secondary bioresource availability at roughly 107 million tonnes p.a. for horticulture (including wine grapes and prunings), 300,000 tonnes p.a. for marine, and around 1 million tonnes p.a. for meat and wool. These figures use a broad definition of "secondary resource" and reinforce the scale of primary-sector biomass theoretically available for conversion into bioproducts.

However, resource availability does not automatically create a viable material industry. Residues vary in volume, quality, seasonality, location and competing uses. To support commercial manufacturing, feedstocks need to be identified, characterised, aggregated and transacted reliably. Processing infrastructure gaps and uncertain demand continue to constrain conversion at scale.

A key strength is the depth of research and technical capability. The larger gap lies between research and commercial production: moving promising materials from laboratory quantities through repeatable pilot-scale manufacture to volumes that customers can test, specify and buy.

Recent developments

Global interest in circular and bio-based material solutions is increasing as companies seek alternatives to fossil-derived materials and respond to expectations around carbon, chemistry, traceability and circularity. Aotearoa New Zealand is connected to this development through local research and international collaborations, including global R&D programmes.

There is also growing attention to how intellectual property and licensing can allow Aotearoa New Zealand-developed technologies to scale through local and international partnerships. This is important because retaining value does not necessarily require every manufacturing stage to occur here. Licensing, IP ownership and deliberate offshore manufacturing partnerships can provide routes to scale where local markets or infrastructure are insufficient.

Pilot biorefinery, biofactory and distributed-manufacturing approaches are beginning to demonstrate different ways of converting biomass into higher-value products. At the same time, pressures on traditional forestry processing reinforce the opportunity to diversify the products and value generated fromAotearoa New Zealand's biological resources.

There are also developments in wider ecosystem connectivity and community building. In early 2026, the Bio-Based Building Network was established in Aotearoa New Zealand to support bio-based material adoption within the built environment in practice, connecting researchers, innovators and manufacturers with policymakers, architects, builders and specifiers.

Bio-based materials (continued)

Experimental. Aotearoa New Zealand has strong research capability and abundant biological resources. Many could be transformed into higher-value materials and ingredients, but most opportunities are still at pilot or pre-commercial stage. Reaching scale will depend on reliable supply, processing capability, market demand and investment.

Key applications and markets

Bio-based materials have potential across packaging, consumer products, interiors, construction, textiles, composites, coatings, chemicals and other industrial applications.

One important pathway is drop-in substitution: developing bio-based materials that can work within existing manufacturing systems while replacing fossil-derived inputs. Technologies that can use established equipment, specifications and supply chains may face lower barriers to adoption. An example is the 2026 Earthshot nominated NZ company Naturally Genius (formally Mushroom Material), which has developed a mycelium-based material from agricultural waste that can be moulded using existing polystyrene manufacturing equipment. Beyond material substitution, bio-based products may also create value through traceability, stewardship and compatibility with emerging digital product passport frameworks.

The built environment presents a significant opportunity because it combines large material flows with demand for lower-carbon and circular solutions. However, construction also has demanding testing, certification, durability and liability requirements. Early-stage ventures may therefore enter through less regulated applications, including packaging and consumer products, while building the evidence and manufacturing capability required for more highly regulated markets.

Interiors provide another potential pathway, particularly where products have relatively short replacement cycles. Bio-based alternatives can enable material lifespans and end-of-life pathways to be better matched to how products are actually used, rather than relying on persistent petrochemical materials for temporary applications.

Value chain insights

The opportunity is not limited to residues and waste streams. Some biological resources may support multiple product pathways simultaneously, with commercial viability depending on the ability to generate value from a range of outputs rather than a single material stream. This is particularly relevant for emerging bio-based systems where environmental, social and cultural outcomes may be considered alongside financial returns. It is important to develop integrated value chains that connect biological resources with processing technologies, material specifications, manufacturers and markets, while maximising value from both primary products and co-products.

Three interlinked constraints consistently emerge: the missing middle between laboratory research and industrial production; market access; and feedstock consistency and aggregation.

The missing middle is particularly important. Without repeatable intermediate-scale output, potential customers cannot adequately test performance, accept liability or commit to demand. Yet without committed customers, ventures struggle to justify investment in the infrastructure needed to produce at that scale. Shared pilot and intermediate-scale manufacturing capability could help bridge this gap, allowing different feedstocks and technologies to move through development without each venture needing to build its own infrastructure. Storage, aggregation, testing and end-of-life infrastructure also form part of this system.

Market access depends on more than technical performance. Strategic partnerships, including expertise-for-equity partnerships, with established engineering firms, research organisations, manufacturers, designers, suppliers and contractors can help de-risk emerging materials by providing technical validation, credibility and routes to market.

Adoption may also be accelerated through large-volume customers and procurement programmes that provide predictable demand. Internationally, public procurement and regulation are increasingly being used to create markets for lower-carbon and bio-based materials, including requirements for state-financed public buildings to use 50% timber and other bio-based materials in France.

Feedstock consistency and aggregation remain equally important. Regional networks and industrial symbiosis can connect biological side-streams with processors and manufacturers, creating systems in which one industry's by-products become another's material inputs.

Aotearoa New Zealand's opportunity is therefore broader than individual bio-based products. It is to build the connections, infrastructure and commercial pathways that turn an abundant biological resource base and strong research capability into repeatable material value chains, while using global partnerships where they provide the best route to scale.

Recovered fibres

Emerging. New Zealand has active collection and mechanical processing pathways, but they remain small relative to the overall textile waste stream.

Overview

Textile waste includes a wide range of manufacturing and supply-chain waste, such as yarn, fabric, offcuts and unsold stock, as well as used textiles from households and businesses. Circular pathways include reuse, repair and recycling. It is a complex resource due to different product types, fibres, blends and components, including zips, fastenings and coatings.

Current state

Recent material-flow estimates suggest Aotearoa New Zealand manages at least ~220,000 t/yr of end-of-life textiles estimated to go to landfill (Coriolis Sankey estimate; n.b. conservative boundary and carpet/home textile waste uncertainties). Smaller flows are captured through donation and secondary markets (~10,000 t/yr), used clothing exports (~3,000 t/yr), and recycling (~1,500 t/yr). Textile waste landfill tonnage estimates are higher in a recent report by Eunomia at ~243,000 t/yr (2025). These differences reflect different system boundaries, methods, assumptions and data gaps.

While we have some established collection and mechanical recycling activity in Aotearoa New Zealand, fibre-to-fibre recycling, where waste textiles are regenerated into textile-grade fibre, remains early-stage, with limited onshore technology, infrastructure and commercial-scale capability today.

New Zealand does not have a regulated product stewardship scheme for textiles, although some local brands and retailers do fund voluntary take-back services. The charity sector also plays an important role in enabling reuse and resale pathways.

Recent developments

In recent years, there has been an increasing focus on voluntary and regulated product stewardship for textiles, alongside stronger expectations for credible diversion outcomes and reporting. Momentum also continues in collection, sorting and recycling, with automation for sorting and deconstruction repeatedly raised as a key bottleneck to scale, and sector coordination is growing, including through the recent launch of Charitable Reuse Aotearoa.

Innovation is broadening too, from pathways that convert bio-based textile waste into biochar for soil regeneration by Wellington-based brand Kowtow, through to practical circularity strategies within manufacturing where clean, known-quality streams can be made into inputs such as recycled yarn, as demonstrated through Untouched World's "rubbish socks" made from merino offcuts and UsedFULLY, which converts cellulose rich textile waste into precision additives for customers like Resene and Fulton Hogan, with a commercial line operating in Auckland and European operations in the Netherlands.

Design approaches are also maturing, such as Autex's recyclable PET systems and take-back/reprocessing pathways, enabling end-of-life material to become inputs for new products.

Key applications & markets

Textile waste is relevant to a wide range of applications and markets, from established or technically accessible uses such as insulation and acoustics, underlays, felts, wadding and panels or boards, through to higher-value uses where composition can be controlled and performance proven.

These applications may depart from textile-to-textile recycling, with textile-to-fibre processing enabling new circular uses in technical and built-environment markets by replacing virgin or imported feedstocks. Some pathways may represent downcycling, while others can retain or create greater material value depending on the quality, performance and future recoverability of the output.

Value chain insights

Value is created in turning mixed textile waste into consistent intermediates buyers can trust through scalable sorting and deconstruction, quality assurance, and repeatable loops where composition and take-back are designed end-to-end.

Blending recycled content with virgin materials could reduce impacts and support market uptake. However, there is a systems-level challenge in getting these pathways to scale in Aotearoa New Zealand: consistent feedstock supply and quality, efficient sorting and component removal, clear specifications and reliable offtake all need to line up.

Interview insights also emphasised that scaling depends on automation for sorting and deconstruction, and that commercial, known-composition streams such as uniforms and commercial linens are often the most practical starting point for repeatable pathways and origin/take-back loops.

Macro shifts methodology

Future of Fibre Aotearoa undertook a market signal scan in July 2026 to understand the changes in global demand that may influence Aotearoa New Zealand's fibre system.

Synthesis process

1. Scanning and clustering

More than 300 individual market signals were captured through the research, drawing from over 90 individual sources including published market and industry reports, policy and regulatory developments, company and brand activity, articles, interviews, sector engagement and other market intelligence. Sources are included in the references section of this report.

Signals were clustered and interrogated from multiple perspectives to understand areas of repetition, contradiction and potential impact. AI tools were used during this stage as an analytical tool to challenge the project team's emerging interpretation and identify areas that may have been overlooked.

2. Assessment and synthesis

Clusters were refined manually into a concise set of strong recurring signals. This process considered not only how frequently something appeared, but what was actually changing and whether there was evidence of changed behaviour in markets.

The stronger signals were assessed against questions including:

- Is there evidence of genuine market or buyer demand?
- Is the signal supported by more than one source, market or form of evidence?
- Is there evidence of changing purchasing, specification, regulation, investment, product development or value-chain behaviour?
- Is the change already established, emerging, or longer-term?
- Does Aotearoa New Zealand have, or could it credibly build, an advantage in responding?

Where appropriate, the research also considered feasibility, the ability to return value across the value chain, potential scale or niche value, differentiation, and the need for further validation or investment.

Strong signals were then synthesised into eight market demand shifts capturing the recurring changes observed across the evidence base.

3. Test and refine

The eight draft market demand shifts were then presented to the Future of Fibre Aotearoa Steering Committee and Governance Group in July and August 2026 for discussion and refinement.

Glossary of key terms, tables and visuals

Glossary of key terms

Assurance
Processes used to substantiate or verify claims about a fibre, product or production system.

Bio-based materials
Materials made wholly or partly from biological resources.

Buyer
An organisation or individual purchasing fibre, materials or products within a value chain, generally a B2B relationship.

Consumer
The person who ultimately purchases and/or uses a finished product.

Customer
An organisation or individual purchasing a product or service. Depending on the value chain, the customer may be a buyer or a consumer.

Fibre system
The production, processing and recovery pathways, knowledge, technologies, products and markets that enable fibre to be transformed and connected to value.

Provenance
Information about where a fibre or material comes from and how it was produced.

Specifier
A person or organisation that determines the material, product or performance requirements for an application, such as an architect, designer, engineer or procurement organisation.

Traceability
The ability to track fibre, materials or products through each stage of a value chain.

Value
The economic, functional, social, cultural and environmental benefits created by a material, product, or activity.

Value capture
The ability to retain a share of the value created from a material, product or activity by for example producers, businesses, communities and Aotearoa New Zealand.

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Steering Committee

Composed of fibre, textile and apparel industry subject matter experts, the Future of Fibre Aotearoa Steering Committee provides insight and ensures sector alignment. Meeting on a quarterly basis, the Steering Committee reviews, guides, connects and contributes to the project research.

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In addition to ongoing review by the **Steering Committee** and **Governance Group** members, we acknowledge the time and contribution from technical and industry experts to review this report in full or by section.

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Industry case studies

Zentera Wool Company, PGG Wrightson, Norsewear, WoolAid, Bremworth, Woolyarns, NZ Cashmere, Noa Blanket Co., Wool Source, WRONZ, Lincoln Agritech, Lanaco, UsedFULLY, Untouched World, Bioeconomy Science Institute, Lof, T&R Interior Systems, KiwiFibre, Wilson & Dorset and Honest Wolf.

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Rob Ward	Beverley Productions	Wool	Manufacturing, knitwear apparel

References – Signal trends

The market shifts presented in Section 4 were developed from a scan of more than 300 market signals drawn from published research, industry reporting, public presentations and Future of Fibre Aotearoa stakeholder interviews. The references below are grouped by market shift and reflect the wider evidence base that informed the analysis.

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References – Signal trends (continued)

The market shifts presented in Section 4 were developed from a scan of more than 300 market signals drawn from published research, industry reporting, public presentations and Future of Fibre Aotearoa stakeholder interviews. The references below are grouped by market shift and reflect the wider evidence base that informed the analysis.

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References – Signal trends (continued)

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Use of artificial intelligence

Artificial intelligence tools were used iteratively during the development of this report to support research interrogation, test emerging conclusions from different perspectives, explore alternative framings, develop structural options, and assist with drafting and editorial refinement.

The research process remained human-led. Market signals, analysis and interpretation were developed by the project team, with AI used as a supporting tool to challenge and refine that thinking. All final content, analysis, sources and conclusions were undertaken by, and remain the responsibility of the project team.

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