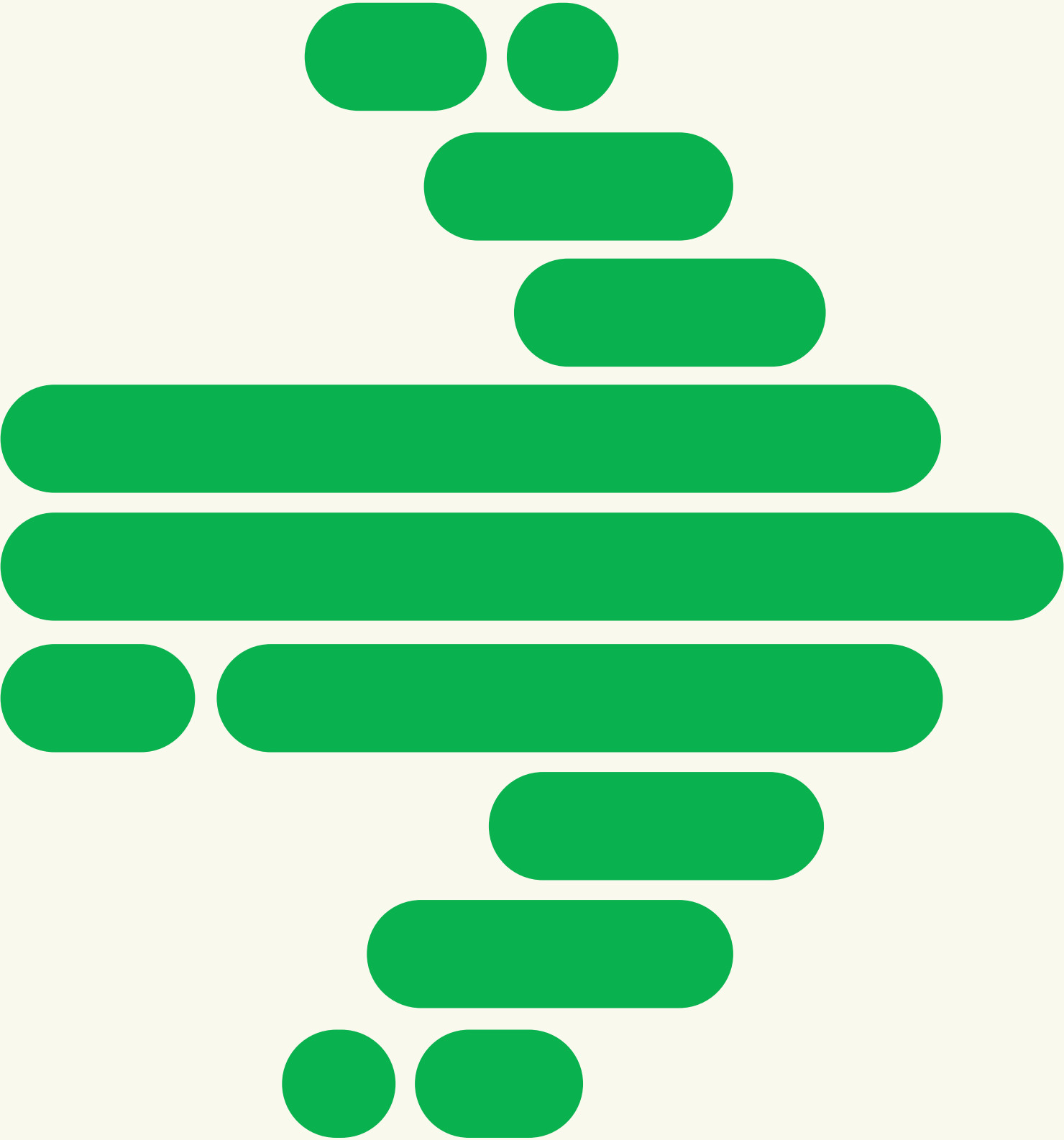




Ara
Ake

Impact Report 2025

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Transitioning our energy system requires much more than innovation. A sustainable and resilient energy system that supports our country's aspirations requires the successful commercialisation of energy technologies that both integrate into and disrupt the current system. Over the past year, Ara Ake has worked with New Zealand and international partners to advance opportunities that bring innovation to market, all aimed at making a positive impact on our energy sector's transition. Our focus has been on developing community energy resilience projects, transforming waste into energy, sharing solar energy, capturing and utilising renewable carbon and maximising the benefits of energy resources like batteries and solar.

The challenges facing New Zealand's energy ecosystem are substantial, and the role of Ara Ake, in supporting energy innovation where it's needed most, has never been more critical. Throughout this year Ara Ake has helped innovators progress from concept to real-world deployment, supported industry partners, and has actively engaged in the wider energy innovation sector. We have hosted conferences and forums designed to develop a more cohesive, collaborative, vibrant and efficient energy ecosystem.

Looking ahead, we remain committed to accelerating New Zealand's energy transition through innovation, partnership, and investment. We acknowledge our stakeholders, partners and communities, who share the vision of a better energy future.

Paul Goodeve
Interim Chief Executive

As New Zealand's national energy innovation center, we are here to power Aotearoa New Zealand's energy transition – faster. By backing bold ideas and turning innovation into real-world impact, we help move our country toward an energy system that's more sustainable, more resilient, and fairer for everyone.

To drive this future energy system, we take a strategic approach to maximise our impact. We channel our efforts into three key priority areas: Sustainable Molecules, Flexibility and Distributed Energy Resources, and Energy Resilience.

We base our work on five guiding principles.

1.

We position where others aren't

We focus on areas within the energy innovation system where others are not active and where we have a unique role to play. We do not duplicate the good work of others but rather enhance it.

2.

Proven technology and business models are equally important

The widespread adoption of energy innovation occurs when both the technology and the business model are proven.

3.

A whole of systems approach is essential

To scale solutions rapidly, we adopt a systems view to ensure outcomes that promote energy equity, security, and sustainability. We use a 'whole of energy systems' approach and collaborate with partners to seek integrated, coordinated solutions.

4.

Innovation plays an important role

Innovation—whether technological, commercial, regulatory or engagement—is crucial in addressing the most critical challenges of transitioning the energy system.

5.

Partnership is the foundation of what we do

Our work reflects the intent of Te Tiriti o Waitangi by fostering genuine partnerships with Māori across the motu. We also build respectful relationships with others, engaging with them in trust and integrity.

39+ Innovators supported.

\$7.68m Funding support awarded to innovators.

\$77.18m Investment (public and private) leveraged by Ara Ake support.

32 Knowledge sharing and collaboration events hosted by Ara Ake.

1125 People attended Ara Ake events.

In 2024 – 2025,
Ara Ake oversaw:

IMAGE:
CentrePort, Wellington. See page 24 for the Case Study.



Energy Resilience and Affordability Conference, Wellington 7-9 October, 2025



Taranaki Energy Updates, New Plymouth monthly



Ara Ake Government Forum, online monthly



Movac and Ara Ake Energy Jam, Auckland, 7 August, 2025



Christchurch Cleantech Trek, Christchurch, 17 July, 2025



Innovators presentations to Minister Simon Watts, with Ghost Dynamics, Wellington, 14 May, 2025



Offshore Renewable Energy Forum, New Plymouth, 1-2 April, 2025



Investing in the Energy Future, Auckland, 9 April, 2025



Queenstown Flexibility Workshop, Queenstown, 31 October 2024



The Carbon Challenge Forum, Wellington, 1 October, 2024



EDB Insights and Learnings Event, Christchurch, 10 September, 2024

Meet some of the
innovators we're
supporting

Sustainable Molecules

Innovator Projects

Fabrum/Stralis:
H2 Electric
Propulsion (HEPS)
Testing with
Liquid H2

Hot Lime Labs:
Commercialisation
Support

EnPot:
Commercialisation
Support

Air New
Zealand:
Sustainable
Aviation Test
Centre

Aspiring
Materials:
1 T/D Pilot Plant
and Ultramafic
Rocks-To-H2
Commercialisation

OpenStar:
Junior Levitated
Dipole Reactor
Upgrade

Capture6:
Containerised
Demonstration

Bspkl:
Commercialisation
Support

Cetogenix:
Energy & Nutrient
Hub Commercial
Pilot

Solray Systems:
Diagen Evaluation
Plant

Reports

Foundational
Systems
Modelling for
Bioenergy / *Scion*

Carbon
Challenge
Workshop
Report

Challenges & Collaborations

NZ Cleantech
Mission
Collaboration

Gasification
Challenge

Carbon
Utilisation
Challenge

Flexibility and Distributed Energy Resources

Innovator Projects

Basis:
Smart Panel
HEMS Pilot

Locky Docks:
Community Power
Hubs

CentrePort
BESS Pilot

LocalFlex:
Market Platform
Deployment

OneEnergy.nz:
Solar Hot Water

PlexiGrid:
Low Voltage
Visibility Pilot

Rinnai:
GridSmart Hot
Water
Aggregation
Pilot

Lastmyle:
Classroom
Heating
Optimisation

Reports

BESS Value
Stacking Report/
Sapere

EDB Challenge
Report

Baselining
for Flexibility
Report/
*University of
Otago*

Multiple Trading
Relationships
Report / *University
of Auckland*

Barriers to
Flexibility Market
White Paper/
Blackdoor

Challenges & Collaborations

National Flex
Discovery Fund
(Challenge)

Queenstown
Electrification
Accelerator /
Rewiring Aotearoa

Energy Resilience

Innovator Projects

Supa Energy:
Supatech
Community
Energy Solution

Kāinga Ora Solar
Energy Sharing
Pilot

Blackcurrent:
Farmlands FLEX &
SIDE Grid Hub

Te Huata
Solar Project

Franklin Energy
Sharing Project

Reports

Christchurch
Community Energy
Activator Report

Raukawa Energy
Innovation Project
Report

Machine Count
Report & Database
/ Rewiring Aotearoa

Challenges & Collaborations

Taranaki
Community
Energy Activator

Community
Energy Challenge

PORTFOLIO SPOTLIGHTS

Sustainable Molecules

Decarbonising the energy sector requires both green electricity from renewable sources and sustainable molecules, such as green hydrogen and renewable carbon. These solutions are particularly suited to hard-to-abate sectors that are challenging to electrify, whether due to technical or commercial limitations. These include heavy transport, waste management, and industries that produce high-value products like methanol, ammonia and steel. In New Zealand, these sectors account for around 20% of total energy use and 46% of non-agricultural emissions.

While sustainable molecule technologies are less mature than electricity-based solutions, Ara Ake focusing in this area presents a significant opportunity for national-scale impact. Innovative approaches, such as carbon removal and utilisation, have the potential to drive substantial emissions reductions both in New Zealand and globally.

The following case studies highlight some of the initiatives Ara Ake is driving in partnership with key stakeholders.

OpenStar Technologies

Clean and abundant energy

Fusion energy, the process of generating power by fusing light atomic nuclei, has the potential to safely provide limitless, clean power for Aotearoa New Zealand and the world. OpenStar Technologies, founded in 2021 in Wellington, is pioneering commercial fusion through its levitated dipole reactor, aiming to replicate the process that powers the sun to deliver abundant, carbon-free energy.

The company brings together world-leading experts in physics, engineering and superconducting technologies. In late 2024, OpenStar achieved first plasma in its prototype reactor, a critical milestone demonstrating the viability of its levitated dipole design.



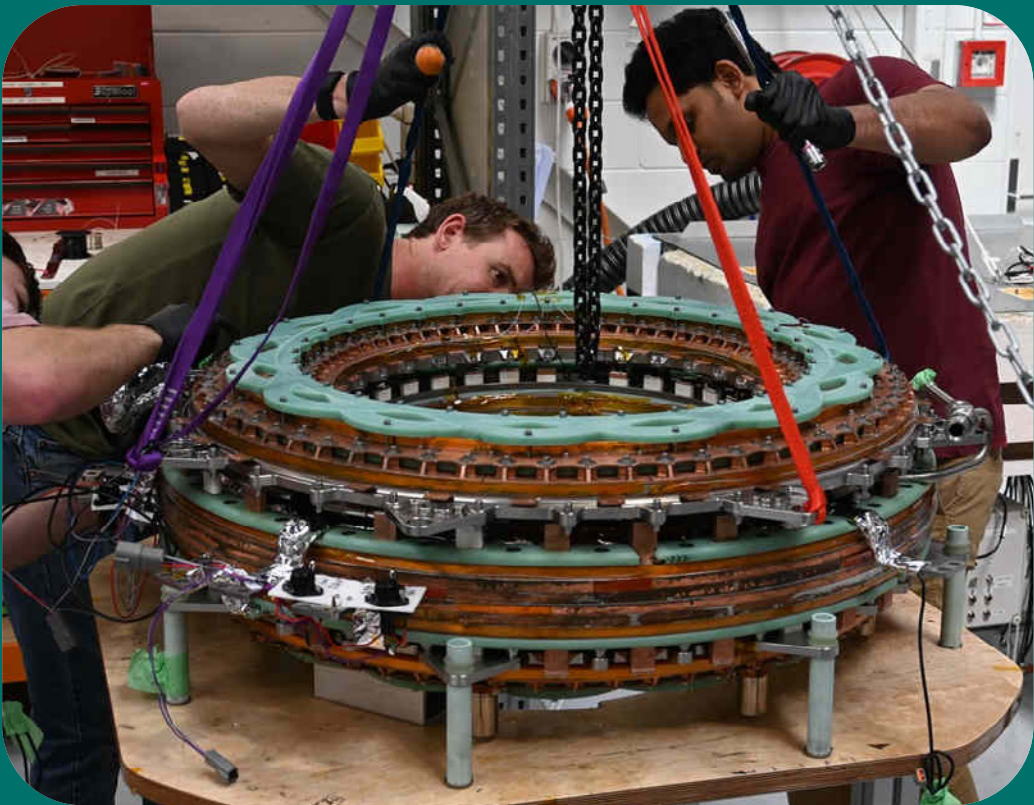
ABOVE

OpenStar team inside the 5.2m vacuum chamber

OpenStar
Technologies
Clean and
abundant energy

Impact unlocked

OpenStar’s work represents a transformative step toward carbon-free energy. Achieving plasma in Junior proves the levitated dipole reactor concept works, providing a strong foundation for future development and international partnerships. The upgraded system will enhance research capabilities, strengthen global collaboration, and accelerate progress toward a commercially viable fusion reactor.



Ara Ake Contribution

Ara Ake is supporting OpenStar with upgrades to its half-tonne, doughnut-shaped magnet, known as Junior. This includes the first global commercial use of a superconducting power supply (flux pump) in a high-field fusion-class magnet.

These upgrades will accelerate research, enable international collaboration, and reduce technical risks, helping OpenStar move closer to commercial fusion energy. The repayable grant also allows the procurement of critical materials and resources needed for Junior, ensuring the project can progress on schedule.

Ara Ake’s support ensures that OpenStar can carry out critical upgrades without delay, mitigating technical risks and enabling the company to engage with international partners. By backing this next-generation energy innovation, Ara Ake is helping to bring fusion energy one step closer to reality, supporting Aotearoa’s transition to a clean and resilient energy future.

LEFT
OpenStar team working on Junior

Stralis and Fabrum Hydrogen electric flight

Reducing aviation emissions is one of the biggest decarbonisation challenges in New Zealand and globally. Liquid hydrogen has the potential to transform regional air travel by providing a clean, scalable fuel source – but the technology needed to store, transport and use it efficiently and safely is still being developed and tested.

Stralis Aircraft, an Australian company developing hydrogen-electric propulsion systems for zero-emissions aircraft, and Christchurch-based Fabrum, a leader in hydrogen production, liquefaction and storage, are partnering with Ara Ake to advance hydrogen-powered aviation. This collaboration focuses on designing, developing and testing liquid-hydrogen storage tanks and a fuel delivery system for Stralis aircraft.

Fabrum's expertise in cryogenic systems and hydrogen storage, and Stralis's innovation in hydrogen-electric propulsion are being brought together to tackle one of the sector's biggest challenges: how to store liquid hydrogen efficiently and integrate it into an aircraft in a way that is safe, lightweight and commercially viable.



ABOVE

Stralis team at their hangar at Brisbane Airport with Bonnie and Clyde

Stralis and Fabrum Hydrogen electric flight

Impact unlocked

This collaboration will enable Australasia’s first liquid-hydrogen-powered flight, showcasing the commercial potential of hydrogen-electric aviation. It builds regional expertise in hydrogen storage, refuelling and aircraft integration, while strengthening industry ties between New Zealand and Australia.

Together, these outcomes accelerate the development of a zero-emission aviation sector and position New Zealand as a growing leader in hydrogen aviation on a global scale.



ABOVE
Bonanza A36—HE

Ara Ake Contribution

Ara Ake is supporting this collaboration between Stralis and Fabrum by providing funding to accelerate technology development. By backing this initiative, Ara Ake is demonstrating the value of strategic partnerships in advancing real-world clean energy solutions and bringing zero-emission aviation closer to commercial reality.

“Our hydrogen liquefier provides readily available liquid hydrogen onsite, allowing the capability to access the critical fuel source to prove and test the tanks and fuel system we are developing for Stralis and their fixed-wing fuel-cell electric aircraft. With Ara Ake support, we are excited to be delivering our light-weight composite tanks and fuel system for Stralis to advance the future of hydrogen-powered flight,” said Christopher Boyle, Managing Director of Fabrum.

Cetogenix

Organic waste to energy

Cetogenix is a New Zealand clean-tech startup transforming organic wastes from agriculture, food and water treatment into renewable energy and green fertilisers. By extracting greater value from waste, the company aims to cut emissions from disposal, provide alternatives to fossil gas, recover nutrients to reduce synthetic fertiliser use, and support the transition to a circular economy.

While anaerobic digestion (AD) is common overseas – for example, biogas plants supply 6% of Germany’s electricity – New Zealand’s pasture-based farming system makes collection of key feedstocks such as manure difficult, limiting uptake. Cetogenix is addressing these challenges with technology designed for local conditions.

Cetogenix’s Ceto-Boost™ technology improves the AD process by breaking down residual solids from traditional AD, generating more renewable gas while producing concentrated nutrients that are easier to transport and use.

In 2024–2025, Cetogenix built and commissioned 2nd and 3rd generation pilot plants in Rotorua to optimise the technology at scale. Early trials with commercial feedstocks have shown promising results, confirming Ceto-Boost™ can deliver greater energy recovery and nutrient efficiency in line with feasibility and techno-economic assessments.



ABOVE
Processing samples showing how Ceto-Boost™ changes the composition of the incoming digestate, eliminating organic solid material and releasing the inert, phosphorus-rich ash from the feedstock.

Cetogenix

Organic waste to energy

Impact unlocked

Cetogenix is building commercial momentum. A pre-sales agreement has been signed with a New Zealand end-user for a full-scale plant due in 2027, alongside partnerships with utilities and waste producers. An MOU with New Zealand's largest AD-biogas operator, Ecogas, targets further deployment, while international opportunities are advancing in the UK, Europe and North America.

Scaling the technology could turn mixed municipal, agricultural and food wastes into a sustainable source of biogas and fertilisers, reducing fossil reliance and positioning New Zealand as a leader in waste-to-energy innovation.

Ara Ake Contribution

Ara Ake co-funded a key feasibility study and supported Cetogenix's scale-up program. This support not only helped validate their technology and its applications but also gave early adopters the confidence to invest, accelerating the path from concept to commercial reality.



ABOVE
The Cetogenix team in front of their technology.

Aspiring Materials

Critical minerals production

Aspiring Materials is a New Zealand clean-tech company who has developed world-first technology to produce a local supply of clean critical minerals.

Industrial, construction and power generation sectors contribute nearly 17% of New Zealand's total emissions, mirroring global trends where industrial processes release billions of tonnes of CO₂ annually. Aspiring Materials addresses this challenge by providing low-carbon mineral inputs for industries that span agriculture, water, construction and energy, while supporting a circular, waste-free economy.

The company's patented Aspiring Process transforms olivine-rich rock - a low-value, abundant resource - into a range of low-carbon critical minerals and industrial materials including magnesium hydroxide, nickel, reactive silica and iron.



ABOVE
Olivine-rich rock.

Aspiring
Materials
Critical minerals
production

Impact unlocked

In 2025, Aspiring Materials opened Stage One of their purpose-built pilot plant in Christchurch, demonstrating domestic capability to produce critical minerals and decarbonise hard-to-abate industry. The pilot plant can process 250 kg of olivine daily, and Stage Two now underway will upgrade the plant to continuous production of 1 tonne per day. This facility allows the team to optimise operations ahead of a planned commercial-scale plant.

The Aspiring Materials pilot plant positions New Zealand as a domestic hub for critical minerals and sustainable industrial materials. At full commercial scale to meet local mineral demand, an Aspiring Materials plant would process 250,000 tonnes of olivine per year. This volume has the potential to remove up to 400,000 tonnes of CO₂ each year, while also providing a local supply of low-carbon materials that reduce reliance on high-carbon imports.

The initiative is the birth of new industry for New Zealand, supporting local employment, industry partnerships, and real-world learning opportunities for students, embedding environmental, economic, and social benefits within the community.

Ara Ake Contribution

Ara Ake has supported Aspiring Materials’ commercialisation journey, helping to accelerate the development of this near zero-emission, waste-free process. By backing the pilot plant, Ara Ake is enabling domestic innovation in critical minerals production and advancing scalable solutions for permanent carbon removal in New Zealand and beyond.



ABOVE
Aspiring Material's new pilot plant.

PORTFOLIO SPOTLIGHTS

Demand Flexibility
and Distributed
Energy Resources

New Zealand's energy system is rapidly evolving, with electrification of households, industry and transport driving up demand. Integrating Distributed Energy Resources (DER) such as solar panels, battery storage and electric vehicles into the grid will be vital for a low-carbon, customer-driven and secure power system. Adjusting consumption or generation in response to external signals - termed 'flexibility' - will help manage demand peaks, lower system costs and support an affordable, efficient transition, potentially saving billions globally and in New Zealand.

By providing an independent perspective and demonstrating how flexibility can deliver value across the entire energy system, Ara Ake helps unlock the full potential of DER for New Zealand's low-carbon future.

The following case studies highlight some of the initiatives Ara Ake is driving in partnership with key stakeholders.

National Flex Discovery Fund

Visible and usable
flexibility

New Zealand’s transition to renewable electricity requires more than new generation – it also needs smarter, more flexible ways of managing supply and demand. Flexible energy resources such as batteries and electric vehicles can reduce peak demand, avoid costly infrastructure upgrades, and enable consumers to play an active role in the electricity system.

For this potential to be realised, flexibility must be used, and to do this, it must be discoverable. Today, much of New Zealand’s flexibility is invisible to electricity networks, the System Operator, and market participants, and so remains unpriced and unused. In response to this issue, Ara Ake launched the National Flex Discovery Fund to make flexibility more visible to the electricity system and potential buyers, while accelerating the commercialisation of emerging solutions.



National Flex Discovery Fund

Visible and usable
flexibility

Impact unlocked

After a competitive application process, grants were approved for 13 flexible service providers through the National Flex Discovery Fund.

Recipients include:

- Supa Energy
- Octopus Energy
- Flex-Able
- PowerHub
- Gridsmart, Rinnai NZ
- Ecotricity
- EWI Energy
- Daikin New Zealand
- Evnex
- Lastmyle
- Cortexo
- Counties Energy
- Simply Energy

Together they represent a mix of innovative start-ups, energy companies and community-based organisations, highlighting the breadth of participation in New Zealand’s flexibility market.

By the end of 2025, funding will connect new providers across platforms including Flexviz, FlexPoint™, Localflex, and GrideX. The funding will also support five projects spanning technologies such as hot water controls, home energy management systems, remote and smart EV charging, and commercial and industrial load. These connections represent a significant pool of new flexible resources, ready to help meet winter demand in 2026 and strengthen system resilience.

Ara Ake Contribution

Ara Ake allocated over \$600,00 to the grant recipients. This funding has been pivotal in enabling flexibility innovators to demonstrate, make discoverable and commercialise their flexibility offerings, and attract buyers such as distributors and Transpower (as both System Operator and Grid Owner). It familiarises flexibility innovators with global open communications protocols for two-way dispatch/verification as the market matures.

Over the medium to long-term, market access and exposure to potential buyers will help flexibility innovators to unlock revenues and build reliability and capacity (in kilowatts and megawatts) to enhance their service offerings. With Ara Ake support, the evolution and maturation of flexibility offerings have been accelerated and closer to commercial readiness.

“We’ve been preparing for a flexible future for a while now, and this funding will help us turn our trials and pilots into a scalable solution. We’re looking forward to supporting the grid as New Zealand’s vehicle fleet continues to electrify,” says Tom Rose, Product Owner, Evnex.

CentrePort Battery energy storage pilot

Electrification is central to decarbonising heavy transport and industry in New Zealand. As an intermodal hub and full-service port in Wellington, CentrePort is embracing this challenge by moving to electrify its operations and pilot innovative energy solutions. With plans to install multiple 500kW EV chargers, CentrePort faces potential electricity supply constraints. The answer is to explore a Battery Energy Storage System (BESS) to enable sustainable growth and network innovation.

Rather than relying on traditional poles-and-wires upgrades, CentrePort is piloting a Battery Energy Storage System at the port in Wellington. The BESS will allow the port to manage electricity demand within its current supply capacity and continue electrification and decarbonisation without triggering expensive infrastructure upgrades. This customer-led solution offers a practical and scalable approach to managing supply constraints, while enabling sustainable growth.



CentrePort

Battery energy storage pilot

Impact unlocked

The pilot will see a 1000kWh / 500kW BESS facility installed to support operational needs and the future electrification of heavy vehicles. The system will complement CentrePort’s existing 122kW solar array and a planned 430kW solar installation due in the 2025 calendar year.

By storing and releasing energy when it’s needed, the BESS will make its energy supply more flexible, help balance local demand, and build resilience for a critical piece of infrastructure in the capital’s supply chain.

Ara Ake Contribution

Ara Ake is supporting CentrePort with a loan to establish the pilot BESS. The project will demonstrate the commercial value of distributed storage solutions in managing local energy constraints, while showcasing innovative business models that unlock multiple market services.

This initiative highlights how customer-driven BESS solutions can strengthen infrastructure resilience, improve asset utilisation, and accelerate New Zealand’s transition to a low-emissions energy system.

CentrePort CEO Mr Delaney says CentrePort is pleased to be partnering with Ara Ake on this, the next step in the port’s energy transition. “It’s a great opportunity to show the benefits of a public/private partnership. This partnership means we continue to move at pace with our energy transition while reinforcing our position as the most efficient port in New Zealand.”

Lastmyle

Optimising classroom heating

Schools across Aotearoa are responsible for around 4% of the nation’s total electricity use. Energy innovator Lastmyle is helping schools reduce fossil fuel heating and energy use through the first-of-its-kind installation of its platform, Maestro, at three large New Zealand schools. The system optimises classroom heating and cooling to improve energy efficiency, create healthier learning environments, and support the wider energy system.

Maestro integrates seamlessly into classrooms, allowing teachers to control heating as usual while the system learns preferences and adjusts in real time. This can deliver a 20% reduction in heating and cooling related energy use and shift demand away from peak times, creating immediate environmental and financial benefits.



Lastmyle

Optimising classroom heating

Impact unlocked

By coordinating classroom heating, Lastmyle’s platform Maestro not only reduces energy bills but also supports the wider electricity system. The platform can respond to peak electric demand grid signals, helping ease pressure on the grid and demonstrating how schools can play an active role in a smarter, cleaner and more resilient energy system.

Ara Ake Contribution

Ara Ake facilitated the collaboration between Lastmyle, the Ministry of Education, EECA, and helped secure funding through the Government’s state sector decarbonisation programme.

By enabling this partnership, Ara Ake is demonstrating how smart, locally developed solutions can deliver measurable benefits for schools, communities and the national energy system. This pilot showcases regional leadership in sustainability and highlights how scalable, customer-led innovation can contribute to New Zealand’s energy transition.



RIGHT
The launch of the Maestro platform at the school Te Paepae o Aotea in Hāwera, with Lastmyle, Ara Ake, and Motion Capital.

OneEnergy.nz

Solar electric hot water system

Hot water is one of the largest energy expenses for New Zealand households, typically accounting for 30–50% of electricity use. For the 700,000 households with constrained incomes, these bills can be a major burden. Many of these homes still rely on traditional electric hot water cylinders, which are both costly and carbon intensive when powered 100% by conventional mains electricity.

OneEnergy.nz has a clear mission: *to bring affordable energy to all Kiwis*, rapidly. With support from Ara Ake, the company trialled its innovative solar electric hot water system in eight homes across Auckland and Christchurch, including two community housing units. The aim was to test performance, savings, and user experience in real-world conditions, with a particular focus on low-income households where the impact could be most profound.



OneEnergy.nz

Solar electric hot water system

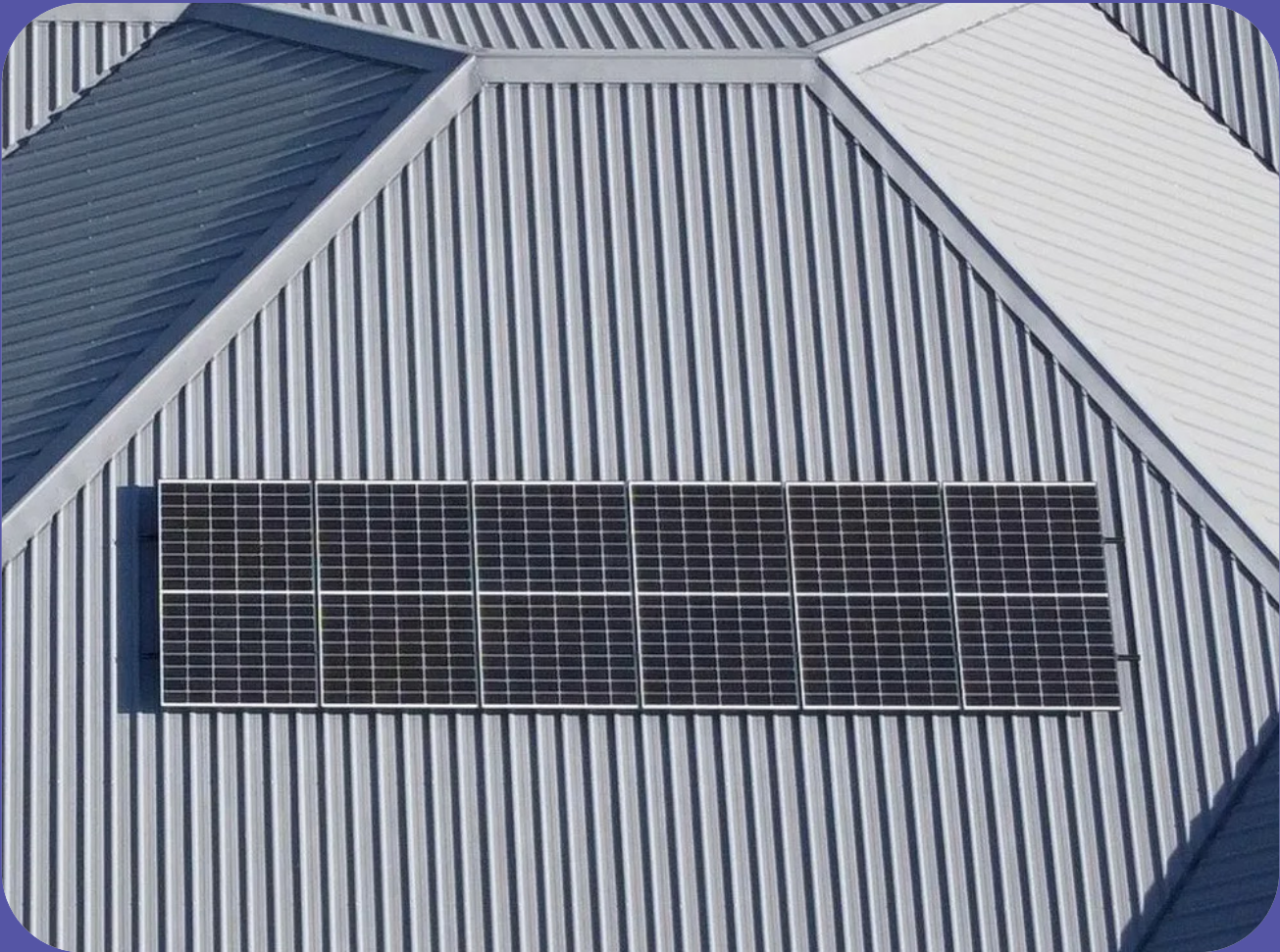
Impact unlocked

The system uses a minimum of six solar panels per home to heat water directly, avoiding the complexity of exporting power back to the grid. Mains electricity provides backup when sunshine is low, allowing households to use most of their solar energy for water heating. Designed to integrate seamlessly with existing hot water cylinders, the system requires minimal installation effort and is expected to pay for itself within five years. During the trial, homes of varying sizes and usage patterns took part, and early feedback guided refinements to the heating algorithm to ensure hot water was always available in the evenings.

Households reported lower power bills, reliable hot water and high satisfaction, rating the system 5 out of 5 for recommending it to others. Even in winter, solar supplemented with mains boosting met households' hot water needs, and households with higher use identified the potential benefits of slightly larger setups. Initially aimed at addressing energy hardship, the pilot also attracted households seeking affordable solar options, greater energy independence, solutions for limited roof space, and alternatives to heat pump systems.

Ara Ake Contribution

Ara Ake supported OneEnergy.nz by facilitating the pilot and enabling collaboration with participating households. This partnership is helping demonstrate a practical, rapidly scalable, affordable pathway for households to access solar energy - reducing costs, lowering emissions, and addressing energy hardship across Aotearoa.



PORTFOLIO SPOTLIGHTS

Energy
Resilience

Decentralising our national energy system is essential to strengthening its resilience. As climate hazards grow in both frequency and intensity, traditional models - reliant on centralised generation and large-scale transmission and distribution - are becoming increasingly vulnerable. For remote and isolated communities, distributed energy resources, which focus on local and smaller scale generation and consumption, offer opportunities to develop local solutions such as microgrids and other innovative community energy projects. Ara Ake's Energy Resilience portfolio emphasises the role of locally led energy solutions that enable communities to generate, manage, and benefit from their own energy initiatives.

The following case studies highlight some of the initiatives Ara Ake is driving in partnership with key stakeholders.

Blackcurrent Farmlands FLEX & SIDE Grid Hub

Blackcurrent is driving energy equity in rural Aotearoa New Zealand through modern microgrid solutions that serve farmers and growers, orchards, lifestyle blocks and schools. Rural communities often face unreliable grid connections and high power costs, with around 50,000 farmers and grower rural electricity customers nationwide. Improving energy reliability, resilience and affordability is key to ensuring these communities can thrive.

Over the past year, Ara Ake has supported Blackcurrent in two major projects advancing this goal. In partnership with Farmlands, Farmlands FLEX empowers farmers to take control of their energy use and costs by turning everyday equipment like rooftop solar panels into smart energy assets. These systems not only help farms reduce fossil fuel reliance but can also generate income by exporting surplus energy to the grid.

Blackcurrent's SIDE Grid Hub project builds on this by enabling power sharing between organisations and their communities across multiple sites. This connected network of localised systems will test the commercial viability of shared energy models and demonstrate value at community, organisational and network levels - improving efficiency, resilience and financial outcomes for rural New Zealand.



Blackcurrent Farmlands FLEX & SIDE Grid Hub

Impact unlocked

By managing on-farm energy through interconnected microgrids, farmers can optimise renewable generation, participate in demand response, and improve local resilience - unlocking new income opportunities and reducing emissions. These innovations position Aotearoa as a leader in agri-energy and demonstrate the potential of flexible, community-driven energy systems.

Ara Ake Contribution

Ara Ake support has been pivotal in helping Blackcurrent expand its reach and validate the real-world benefits of Farmlands FLEX and SIDE Grid Hub. Through co-funding and collaboration, Ara Ake has accelerated the adoption of new rural energy solutions, strengthening resilience, affordability and sustainability across Aotearoa’s farming communities.



Farmlands
FLEX
is here.



Franklin Energy Sharing Gifting renewable electricity

In Franklin, South Auckland, Ara Ake is working with Counties Energy and Climate Connect Aotearoa to pilot an energy sharing model that explores how solar generation, battery storage, and peer-to-peer trading can deliver benefits to the local community.

At Counties Energy’s headquarters in Pukekohe, solar panels and a community-scale battery have been installed, with the electricity generated being shared with community organisations that provide essential services to families experiencing hardship. By gifting renewable electricity, the pilot helps these organisations reduce energy costs and continue supporting their communities.

This model replicates the effect of having on-site solar generation within communities, even though the energy is produced remotely, still providing the same financial benefit. The project tests multiple trading relationships (a concept that allows consumers to contract with more than one retailer or service provider for their electricity needs), using an off-market peer-to-peer trading process. Electricity generated from solar and discharged from the battery is allocated to receiving customers, with credits applied directly to their electricity bills.



ABOVE
Solar being installed at Counties Energy.

Franklin Energy Sharing Gifting renewable electricity

Impact unlocked

The pilot demonstrates how peer-to-peer energy sharing can deliver social, environmental, energy resilience and economic benefits. It supports community organisations in lowering operational costs, reduces emissions by making local renewable energy more accessible, and tests new ways to trade electricity paving the way for greater consumer participation in the energy system.

Ara Ake Contribution

In collaboration with Counties Energy and Climate Connect Aotearoa, and with support from the Electricity Authority’s Power Innovation Pathway, Ara Ake is enabling the project and helping progress regulatory exemptions, ensuring that innovative models like peer-to-peer trading can be tested in a real-world environment.

The Franklin Energy Sharing Pilot is demonstrating how innovation in electricity markets can directly benefit communities while shaping the future of New Zealand’s energy system.

Counties Energy General Manager Commercial and Corporate Affairs Andrew Toop says the project is both an important community initiative and a demonstration of innovative collaboration in the sector to enable new customer-focused outcomes. “This pilot highlights how innovation can increase the uptake of distributed renewable electricity sources within households at all income levels - contributing to a smart, resilient and affordable energy system of the future, offering more energy choice to customers. Counties Energy is 100% consumer-owned - we have been serving our community for over a century - so it is immensely important to us that our innovations support the community we serve,” he says.

Rewiring Aotearoa Machine Count Electrifying our machines

Electrification is a cornerstone of New Zealand’s low-emissions future. While a lot of attention is focused on transitioning electricity generation and associated infrastructure, achieving net-zero also requires transitioning everyday machines from fossil fuels, predominantly to electric alternatives. However, no full inventory of fossil fuel machines, their numbers and scope for electrification, was ever completed.

To understand and accelerate this transition, Rewiring Aotearoa, supported by Ara Ake and EECA, developed the National Machine Count, the country’s first comprehensive inventory of fossil fuel machines. The initiative surveyed homes, businesses, and farms, integrating findings with existing data to map energy use at a granular level.

- The dataset identifies:
- How many machines burn fossil fuels and what they are used for
 - Opportunities to replace them with electric alternatives
 - Potential cost savings and emissions reductions from electrification

It provides households, farms and businesses with insights to make informed choices about electrifying their machines, while offering Government data to guide policy and support the low-emissions transition.



Rewiring Aotearoa Machine Count Electrifying our machines

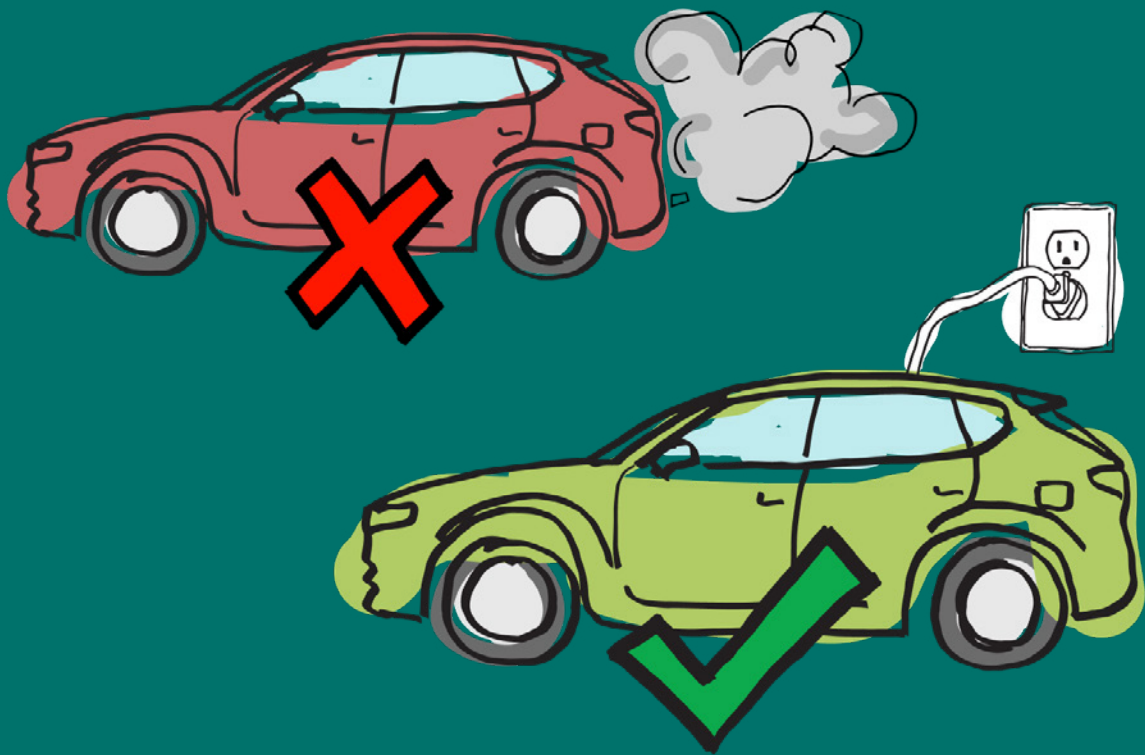
Impact unlocked

New Zealand has around 10 million fossil fuel-powered machines, and almost all are technically feasible to electrify. The Rewiring Aotearoa National Machine Count study has revealed that 84% already have cost-effective, locally available electric alternatives, ranging from cars and hot water systems to farm machinery and industrial equipment.

The National Machine Count empowers New Zealanders to act on energy savings and emissions reduction opportunities. The shift to electrification also creates major opportunities for business and government collaboration - there's room to lead and innovate, especially where electric alternatives are still emerging.

Ara Ake Contribution

Ara Ake supported Rewiring Aotearoa to deliver this free, public dataset. Beyond data collection, the initiative identifies opportunities for innovation in process design, financing mechanisms, and clean technology development. By enabling evidence-based electrification, Ara Ake is helping to create a more accessible, sustainable and innovative energy future for Aotearoa.



Taranaki Community Energy Activator Establishing local energy projects

The Community Energy Activator is a 13-week learning journey based on Ara Ake's Community Energy How-To-Guide, designed to guide individuals and groups through the process of establishing community energy projects. Community energy - enabling local communities to participate in and benefit from renewable energy production and use - can play a pivotal role in ensuring an equitable transition to a net-zero future. The programme provides hands-on support, mentoring from technical experts, and peer-to-peer learning, enabling participants to develop energy projects tailored to their communities, regardless of prior experience.

Following a successful pilot in Christchurch in 2024, the programme ran in Taranaki with nine groups taking part. Their projects span low-cost battery solutions, solar arrays to reduce hardship in Waitara, an Okato energy hub, a solar-for-schools initiative, an energy co-operative, and an iwi-led housing project with a focus on resilient energy. Delivered in partnership with Powerco, Community Energy Network, and Community Energy Taranaki, the programme integrates regional expertise and local support throughout the learning journey.



ABOVE

A weekly session of the Taranaki Community Energy Activator being held at the Ara Ake headquarters.

Taranaki Community Energy Activator Establishing local energy projects

Impact unlocked

The 2024 Canterbury pilot, run in collaboration with Orion Group and Community Energy Network, provided valuable insights into emerging community energy models and their potential impacts on electricity distribution. Building on this experience, the Taranaki programme will generate further understanding of how community energy initiatives can support local needs and inform regional electricity businesses. Designed to run in different regions and deliver tailored solutions, the long-term aim is to expand the Activator across New Zealand, showcasing replicable approaches to community-led renewable energy.

Ara Ake Contribution

Ara Ake helped design and facilitate the Activator programme, connecting participants with experts and regional electricity partners. The Activator is based on the [Community Energy How-To-Guide](#), developed by Ara Ake through interviews and collaboration with multiple experts. By supporting knowledge sharing, collaboration with regional electricity distribution businesses, and hands-on project development, Ara Ake is helping to nurture an empowered, sustainable, and inclusive energy ecosystem across Aotearoa.



RIGHT
Groups meeting with mentors.

Assessing future GHG reduction impact – adoption of CRANE

Ara Ake has worked in partnership with The Lever Room to develop a method which supports our innovators in assessing their current and future GHG reduction impact, based on the CRANE tool.

CRANE provides a consistent, transparent framework to estimate GHG reductions both in the near term and at scale, across multiple adoption scenarios.

Several case studies have been piloted to assess the usefulness of the approach and to develop New Zealand-specific assessment based on the CRANE-methodology. This includes standardised validation steps to ensure the analysis reflects New Zealand's grid, energy use patterns and market conditions.

Here is a case study of OneEnergy.nz that demonstrates the GHG reduction achieved through their solar electric hot water solution.

Case Study OneEnergy.nz

Per-household savings

Solar hot water systems can lower emissions by up to 71% by reducing grid electricity use.

Scalable impact

If OneEnergy.nz reaches 8% household market share by 2035, this would represent around 9,000 households and reduce approximately 1,389 tonnes of CO2e annually.



Why it matters

Our case studies have shown how the use of a robust framework, supported by technical localisation and modelling expertise, can give innovators, investors, and policymakers a credible, comparable view of emissions impact.

- Evidence to support funding and scaling decisions.
- Clear, data-driven metrics to communicate climate impact to stakeholders.
- Open source, scalable and repeatable methodology which can be applied across a National portfolio.

We are now expanding this approach with the MacDiarmid Institute to assess clean tech innovations across New Zealand.

This consistent approach and technical due diligence will ensure that Aotearoa focuses on the innovations that will have the greatest impact to reducing emissions.



Future
Energy
Development

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