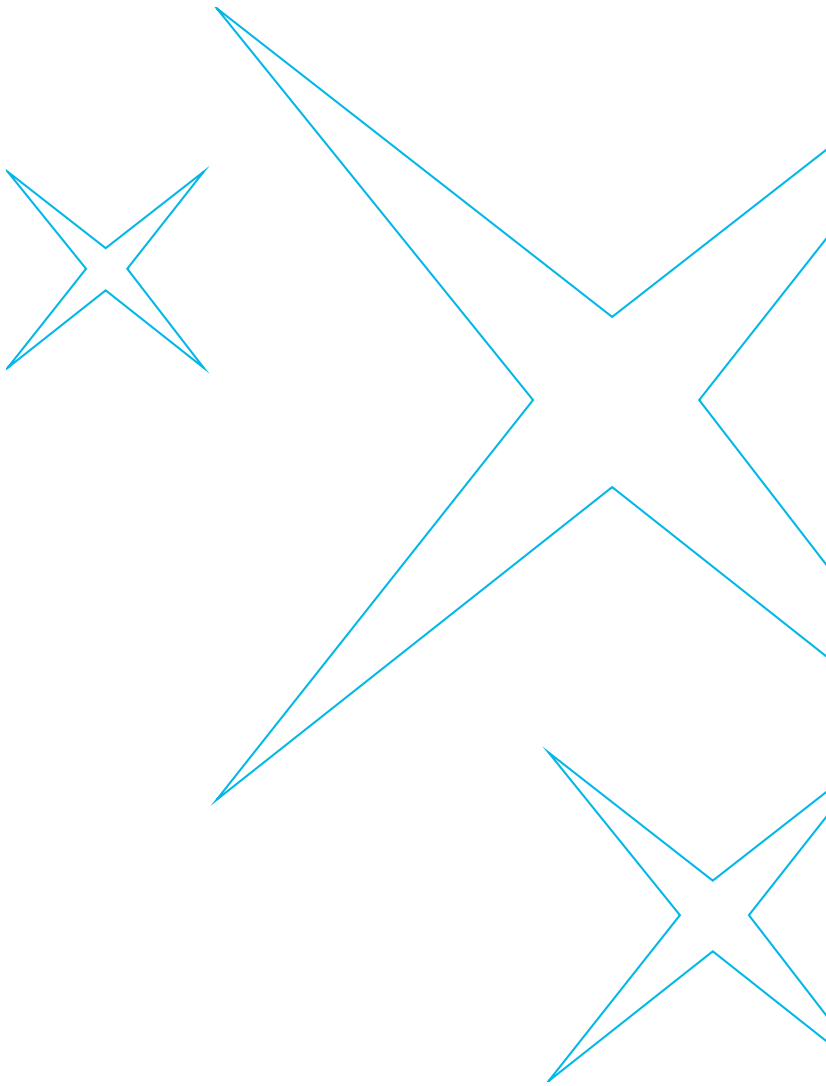
CENTRE FOR
Sustainable
Finance
TOITŪ TAHUA

Novel financing solutions for abundant, affordable, and clean energy

March 2025



Introduction

Achieving New Zealand's goal of doubling renewable energy by 2050, alongside New Zealand's goal to create abundant, affordable, and clean energy, within a resilient and secure energy system, will require considerable investment in the energy sector. This includes renewable electricity generation, energy storage technologies (particularly batteries), electrification of end uses (especially heating and transportation), energy efficiency improvements, and carbon capture and storage. Proven technology solutions in these fields already exist, and analysis suggests that most of New Zealand's energy emissions can be eliminated by 2050 by using these existing technologies that are proven and established in other countries. The challenge for New Zealand is then how to hasten the diffusion of these technological solutions at scale.

The Centre for Sustainable Finance (CSF) is a charitable trust that works in partnership with Government, philanthropies and leading financial institutions to accelerate finance towards national level sustainability and resilience activities. CSF is facilitating a programme to support the identification, exploration, design, and delivery of novel financial solutions in 2025, collaborating with our Partners, the financial sector at large, the energy sector, and the government. The focus of the programme is to surface market-led solutions and approaches that can overcome barriers to investment and enable the scale-up of capital into New Zealand's energy transition.

To gain insights into the barriers and opportunities for novel financing solutions in the energy sector, we engaged with key stakeholders in the financial sector, energy industry, and with government, alongside examining literature and case studies from New Zealand and internationally. Our research and interviews explored key barriers and systemic challenges—from regulatory hurdles to the scale of projects not matching the desire of investors – alongside ideas and opportunities to overcome these barriers. Ideas from this stage were processed through prioritisation criteria to identify projects that were of interest to our Partners, were supported by an authorising environment, and were well aligned to CSF's capabilities.

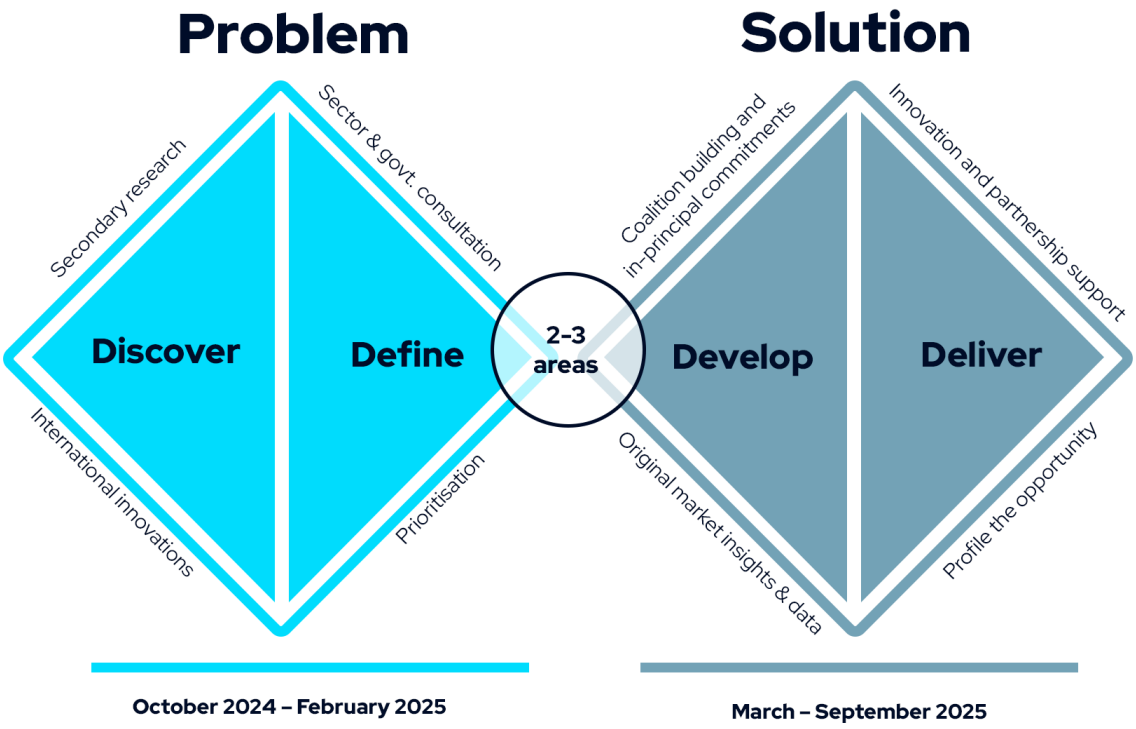
This document presents an overview of these ideas and outlines the results from this prioritisation process from this exploration phase and is not intended as a detailed analysis of specific opportunities or recommendations to Government. It recommends moving forward with two key areas:

- Increasing residential access to finance
- Making less investible projects, investible
    - Aggregating energy efficiency projects to be investment ready
    - Supporting EECA's efforts in exploring financing mechanisms

This document presents:

Methodology for novel financing solutions

This programme follows a double diamond innovation methodology to identify, explore, and implement solutions that accelerate the transition to renewable energy and improved energy efficiency through sustainable finance. In this process, the first stage has been to understand the financial products on offer to finance the energy transition, the barriers to finance, to gather ideas and identify opportunities. The next step is to confirm the prioritisation of which opportunities we should pursue. This report details our learnings from this initial stage of the process, and our recommendation for which focus areas to pursue.



Barriers and opportunities

Stakeholder interviews, literature reviews, and sector analysis identified a number of barriers to abundant, affordable, and clean energy across the residential, commercial / industrial, and grid-level sectors.

The barriers included:

- Challenges arising from New Zealand's reliance on hydro generation and long-distance transmission, which presents both opportunities and difficulties
- A mismatch between available finance and investable projects with smaller projects not appealing to large-scale investors
- Fragmented solutions due to a lack of system-level coordination
- A lack of urgency driven by the perception of gradual growth leading to delays in the energy transition
- Burdensome access to financial products, where complex applications, difficulties with installers, and unclear payback periods hinder uptake.

For a fuller description of these system-level barriers, see Appendix A.

While stakeholders were able to identify discrete barriers preventing or delaying investment in the energy transition, there is also an underlying issue underpinning most of the barriers given their fragmented and interdependent nature. Each individual issue, whether it is regulatory, financial, technical, or institutional, is considered 'necessary' to address, but not sufficient on its own to unlock meaningful progress. As a result, resolving one constraint in isolation delivers limited benefit unless other barriers are addressed in parallel. This dynamic creates a disincentive for action: organisations are incentivised to delay investment until all other barriers are resolved, as being the final mover carries the lowest risk and the highest return on investment (whether time or capital). This serial approach and lack of system-wide coordination delays investment, as the benefit of resolving any single barrier is largely dependent complementary actions that can be influenced but not controlled. Finance sets the criteria for acceptable risk / return and capital will only flow when the thresholds have been met and diligence has been satisfied.

The people we spoke with raised a range of ideas and solutions to address these barriers. A full list of ideas can be found in Appendix B. Of the full list, some ideas were described as addressing a critical barrier, with ability to create abundant, renewable clean energy. The ideas and solutions presented below were the ideas that were described as presenting the greatest opportunity for impact. Notably, investing in energy efficiency and energy savings in the residential, commercial, and industrial sectors appears to present the largest opportunity relative to other energy investments (e.g. power generation). A detailed description of these ideas is available in Appendix C.

	RESIDENTIAL	COMMERCIAL / INDUSTRIAL	GRID AND GENERATION
Barriers identified for each sector	• Burdensome application processes. • Low awareness among bank lending officers. • Concern that terms don't match pay back term. • Energy savings not factored into loan serviceability. • Uncertainty about trustworthy advisors and installers. • Inconsistent pricing for installations. • Financial products only available to homeowners. • Low resale value of homes with solar. • No tax depreciation for individuals • Limited business case for residential investors	• Mismatch of supply & demand: lack sufficiently mature or sufficiently large projects to finance. • No price premium to offset transition costs, unclear payback periods • High due diligence costs, high administrative burden to access finance, and high transaction cost. • Lack of technical capability in some organizations. • Difficulty finding qualified installers and developers. • Equity aversion • No urgency or clear policy signals for decarbonisation.	• Flat demand growth limiting new generation. • Delays in resourcing and consenting processes. • Uncertainty over RMA reforms and Fast Tracking. • Lack of REC standardization and low value. • Attitudinal resistance to PPAs • Regulatory uncertainty around bidirectional transmission, and transmission / distribution investment. • No clear transition pathway for the energy sector. • Uncertainty over government commitment.
Proposed solutions	Increasing residential access to finance	Making less investible initiatives, investible	Firming demand
	Supporting easier access to finance	Aggregating energy efficiency projects to be investment ready	Supporting the provision of PPAs
		Supporting EECA's efforts in exploring novel financing mechanisms.	Data Centre as supported by a Nature-Based Carbon Credit System and / or REC system

Solutions warranting further exploration

In this section, we present the proposed solutions and ideas aimed at addressing the identified barriers in greater detail.

INTEGRATED RESIDENTIAL ENERGY SOLUTIONS

This project aims to simplify and streamline the process of installing residential energy-saving transitions and distributed energy generation (DEG), leveraging insights from other markets. The project will assess tools and information sources available at present and identify gaps such as absence of vetted installers and price guides, concerns about technology effectiveness, perceived admin burden in the application processes, lack of product familiarity among lending officers, or term of the loans perceived to mismatch the payback period. This project would also include supporting Rewiring Aotearoa with their Supercharged Ratepayers Association Scheme. See Appendix D for details on the Rewiring Aotearoa project.

BRIDGING THE INVESTIBILITY GAP

Aggregation platform for sub-scale projects

As global capital continues to consolidate the threshold for the scale of investments required continues to increase. The small size of the NZ market and fragmented structure means that many opportunities are too small to access the low cost, scalable pools of capital. This project proposes platforms to pool initiatives from different businesses enhancing the overall appeal to investors. This role effectively serves as a "strategic financial backbone" to bridge the needs of investors with the opportunities available.

Supporting EECA's efforts in exploring financing mechanisms

This project aims to address the risk / return mismatch for energy efficiency initiatives in the commercial / industrial sector. The Energy Efficiency and Conservation Authority (EECA) has a unique capability to offset some of the 'first-mover disadvantage' associated with establishing new supply chains. The programme explores alternative finance mechanisms, including Energy Savings Loans, which allows businesses to implement energy-saving projects, with repayments made through verified energy savings.

FIRMING DEMAND

Supporting the provision of PPAs

This project proposes the facilitation, coordination, and establishment of Power Purchase Agreements (PPAs) for renewable energy. New Zealand lacks a large number of credit-worthy counterparties for PPAs so this project will look to aggregate volume from multiple businesses and consider ways to enhance credit quality if necessary.

Data Centre lead Renewable Energy Generation

This project proposes supporting more global businesses to establish data centres in New Zealand tagged to the establishment of new renewable generation. To support attracting businesses to New Zealand a focus would be placed on the extent to which New Zealand electricity generation is already renewable. This positioning could be further supported by a develop REC product, and the establishment of a nature-based carbon credit system in New Zealand

Prioritisation of key ideas to progress forward

While stakeholder consultation indicated that all these proposed projects could have significant impact and should be considered critical, we considered to what extent each idea aligned with CSF's strategic mandate and whether there was an authorising environment to progress the idea forward immediately. The ideas were reviewed against a set of prioritisation criteria that considers the:

- **Authorising environment:** Does the project have the necessary stakeholder support, policy backing, or regulatory framework in place? Is there a clear acceptance or endorsement from relevant decision-makers, funders, or government agencies?
- **Mandate and role alignment:** How well does the project fit within the Centre's mission, strategic objectives, and existing role within the ecosystem?
- **Existing team skills and capacity:** To what extent does CSF have the capability and resources to undertake this project effectively?
- **Able to be progressed immediately:** Is there a path to pursue that can commence immediately? Projects that require extensive government leadership, complex legislative approval, or the involvement of a significant number of stakeholders face long implementation timelines and uncertainty. To ensure progress in the near term, prioritisation will favour initiatives that can be deployed under the current policy and regulatory framework, or with minimal adjustments within the staff team or partner network.
- **Indications of alignment and interest from our partners:** Are there signs of buy-in from key industry stakeholders, including financial institutions, energy providers, technology companies, and policymakers? Prioritisation will focus on focus areas that has interest and engagement from the organisations we have spoken with.

	AUTHORISING ENVIRONMENT	MANDATE/ROLE ALIGNMENT	CAPABILITY AND CAPACITY	ACTIONABLE NOW	ENGAGEMENT
Easier access to bank finance					
Aggregating projects					
Supporting EECA					
Provision of PPAs					
Renewable energy for data centres					

Recommendation

Based on the prioritisation criteria, several projects emerged as well-aligned with CSF's mandate, existing team capabilities, and the potential for meaningful progress in 2025. These projects were deemed feasible within the current policy framework and with minimal need for legislative change.

It is recommended that the following ideas are progressed:

- Increasing residential access to finance
- Making less investible projects, investible
- Aggregating energy efficiency projects to be investment ready
- Supporting EECA's efforts in exploring financing mechanisms

It is hoped that the remaining projects, which are also valuable and needed, will be pursued by government and other key players in the wider ecosystem. These initiatives, while essential, may require additional legislative support, leadership, or broader collaboration that extends beyond CSF's current scope.

Next steps

To confirm interest in these projects we will meet with Partners in bilaterial meetings, and scope opportunities to partner on these ideas.

Appendix A: Barriers to accelerating finance for abundant, affordable, and clean energy

This section outlines the key barriers to sustainable finance in New Zealand's energy sector, identified during the research phase. These barriers span multiple areas, including unique challenges posed by New Zealand's energy landscape, flat demand growth, regulatory uncertainty, and a lack of coordination within the sector. We explore how these challenges affect the financing and implementation of renewable energy projects, with a particular focus on the residential, industrial, and grid-level sectors.

NZ'S UNIQUE PROFILE A BLESSING AND A CURSE	New Zealand has significant reliance on hydro generation, limited long-term hydro storage and the need for long distance transmission. This creates a unique energy landscape that requires 'translation' to adapt proven solutions from overseas. Furthermore, there has been flat demand growth over the last decade and continued uncertainty over major industrial demand. This has shaped the extent to which new renewable generation has come online.
MISMATCHED FINANCE	We heard that large incumbent energy companies and industrial energy users have access to the resources and expertise necessary to advance investments yet can struggle. A number of renewable generation projects are "stuck" in the pipeline. We heard also that there is more finance ready to deploy than there are projects available. The question becomes, is access to finance really the obstacle or is the challenge making projects investible? At an industrial level, the scale and nature of available projects does not match the needs of investors. System coordination is needed to build new market structures to unlock new asset classes and scale solutions.
COMPLEX PROBLEM, FRAGMENTED SOLUTIONS	There is a lack of a cohesive plan in New Zealand, and uncertainty over whether New Zealand should pursue distributed generation and solar, particularly given our unique geography. The absence of clear government policy direction and regulatory uncertainty further complicates this situation, increasing the risk premium for renewable energy projects. While we heard about significant momentum, this was in isolated pockets. The ecosystem was described as lacking capability, being underdeveloped, uncoordinated with no clear accountability for recognising and resolving systemic failures or gaps. Current government interventions (i.e. NZGIF, Invest NZ etc.) were described as being specialist solutions to address a specific problem, lacking the flexibility required to address broader barriers to finance.
OPTION TO WAIT / LACKING A BURNING PLATFORM	For energy efficacy initiatives and distributed generation, industry was concerned about first mover disadvantage, compounded by a lack of a validated price premium that could be on charged to customers, uncertainty over the technology, and minimal requirements or directive from government to transition within a fixed timeline. Where financial incentive driven primarily by cost savings it is easy to delay as the savings will still be there next year and technology cost / performance likely to improve. There was a lack urgency and lack of financial incentive for leadership. A lack of urgency, driven by flat energy demand and a perception that the sector will slowly become more renewable over time, has resulted in lower priority for business investment.
BURDENSOME ACCESS	Where there were financial products available, such as home loan top-ups for the residential sector or sustainability-linked loans for businesses, accessing these products was described as burdensome due to complex application processes and high administrative requirements. For residential solutions, there was no list of vetted installers, inconsistent pricing for installation, unclear buy-back rates, unclear ROIs, and risk aversion stemming from perceived risks associated with the technology which deterred many from pursuing these financing options.

Appendix B: Ideas and solutions

Appendix B provides a list of the ideas and solutions proposed to address the barriers identified across the residential, industrial, and grid-level sectors in New Zealand's energy transition. These ideas include a variety of mechanistic solutions, such as financial instruments and functional mechanisms, identified with the potential to accelerate the flow of sustainable finance into the energy sector

		GRID SCALE	COMMERCIAL / INDUSTRIAL	RESIDENTIAL
POLICY & REGULATION	Clear position and planning led by government, including sector transition plans that address national challenges	●	●	●
	Policy on bidirectional feed	●	●	●
	Appropriate sizing and investment in grid infrastructure	●	●	●
MARKET BASED MECHANISMS	Develop PPA market	●	●	
	Develop government REC	●	●	
	Design a mechanism to trade on saved emissions or avoided emissions	●	●	
MARKET FACILITATION	Intermediary to pool projects		●	
	Demonstration projects		●	
BUSINESS SUPPORT	Support to prepare projects		●	
	Index of businesses looking for funding		●	
	Shared tools		●	
CAPABILITIES & AWARENESS	Building capacity and capability	●	●	●
	Building awareness		●	●
FINANCING INSTRUMENTS	Adjust products for homeowners			●
	Products for renters + irregular income			●

Appendix C: Opportunity placemats

Appendix C includes the placemats for each of the proposed ideas outlined earlier. These placemats provide a more detailed description of each idea, including key aspects such as project scope, objectives, barriers addressed, and potential impact. It's important to note that these ideas are still in the ideation stage, and the final product or instrument may look very different after further development and input.

Increasing residential access to finance

Supporting easier access to bank finance

PROJECT DESCRIPTION	This project focuses on residential energy-saving transitions and distributed energy generation (DEG). Identified barriers include burdensome applications processes, limited bank promotion of related products, lack of familiarity of products amongst lending officers, confusion over term length, limited supporting information (i.e., no list of vetted installers, no price guides), and concerns over the effectiveness of technology. This project will assess current tools and information sources available and explore to what extent can services be adjusted to make accessing finance more easeful. The initiative will begin with a small-scale trial in a designated community or customer segment. This may include expanding funding through a Council facility in partnership with Rewiring Aotearoa and exploring saving guarantees in partnership with EECA.
GEOGRAPHY	TBC. This may be one neighbourhood or a customer segment.
INCREASING SUPPLY, OR REDUCING DEMAND?	Reduce energy usage through energy efficiency and increase supply through distributed generation
TARGET INDUSTRY OR SECTOR	Residential
TECHNOLOGY FOCUS	Energy efficient heat and hot water tech and distributed energy generation tech
POTENTIAL PARTNERS	Contributing banks (TBC), EECA, Rewiring Aotearoa

OPPORTUNITY FOR IMPACT	**PRIORITISATION**
• Reduction in household energy consumption and carbon emissions. • Cost savings for households and greater energy resilience. • Improved access to energy efficiency technologies, particularly for under-served communities, contributing to energy justice and social equity.	This project is largely dependent on the interest from the banks. There are some considerations of where to start – in which community or geography.

BARRIERS ADDRESSED

- Burdensome application processes, lack of awareness among lending officers.
- No list of vetted installers and Inconsistent pricing.
- Uncertainty about the value added to the property.
- Lack of understanding on buy-back rates
- Risk aversion due to perceived risks associated with the technology. Doubts regarding the technology effectiveness in delivering savings and meeting payback expectations.

Making less bankable projects bankable

Project 1: Aggregating energy efficiency projects to be investment ready

PROJECT DESCRIPTION	Due to the size of our market investible opportunities tend to be smaller than our global counterparts. Global capital is increasingly concentrated among fewer large institutions, raising the threshold for the scale of investments required. While financial actors are skilled at investing according to their mandates, they rarely engage in bringing stakeholders together or coordinating joint efforts to achieve the necessary scale or influence policy. To address these, this project proposes a mechanism that converges finance and systems coordination—a role that would serve effectively as a "financial backbone" to bridge the needs of investors with the opportunities available. This role would pool multiple initiatives, enhancing the overall appeal to foreign investors.
GEOGRAPHY	Specific to industries with high energy conversion potential.
INCREASING SUPPLY, OR REDUCING DEMAND?	Reduce energy usage through energy efficiency. For example, improving heat processing.
TARGET INDUSTRY OR SECTOR	All industries – one pool at a time.
TECHNOLOGY FOCUS	Energy efficiency and low-carbon technology
POTENTIAL PARTNERS	Invest NZ (TBC), MBIE (TBC), EECA (TBC)

OPPORTUNITY FOR IMPACT	**PRIORITISATION**
• Significant reductions in emissions by converting high-energy processes into more energy-efficient, low-carbon alternatives. Attracting foreign capital to New Zealand. • Supporting New Zealand's transition to a low-carbon economy while maintaining industrial growth and employment in industry.	The intermediary function would require funding and establishment. Government support, private sector investment, potential collaboration with energy providers and financial institutions. Support and collaboration required with Invest NZ.

BARRIERS ADDRESSED

- New Zealand faces specific, persistent challenges in attracting foreign investment due to the scale and structure of our investment market. There can be a mismatch between what investors are seeking and the opportunities available. This project would address this barrier.

Making less bankable projects bankable

Project 2: Supporting EECA's efforts in exploring financing mechanisms

PROJECT DESCRIPTION	A number of barriers have been identified to funding energy efficiency initiatives in the industrial sector. High upfront costs, concerns over pay-back rates and technology, a lack of a burning platform or a price premium, lower levels of capability, and desire for debt products (rather than equity). Concession loans, energy saving guarantees, and energy saving-contingent payments can help overcome these barriers. We are partnering with EECA to explore alternative finance mechanisms and to explore whether such mechanism could be delivered at scale, in partnership with the financial sector. One idea is an Energy Savings Contingent Repayment product which support businesses to implement energy-saving projects without upfront capital, with repayments made through verified energy savings.
GEOGRAPHY	TBC. This may be trailed with a sector.
INCREASING SUPPLY, OR REDUCING DEMAND?	Reduce energy usage through energy efficiency initiatives.
TARGET INDUSTRY OR SECTOR	Industrial.
TECHNOLOGY FOCUS	Energy efficient processes.
POTENTIAL PARTNERS	EECA, the financial sector.

OPPORTUNITY FOR IMPACT	**PRIORITISATION**
• Significant reductions in energy consumption and carbon emissions across the industrial sector, contributing to New Zealand's climate targets. • Future lower operational costs for businesses, improving competitiveness and profitability while supporting long-term sustainability. • Enable businesses to act now without the need for upfront capital.	This project is largely dependent on the interest from the financial sector to support the scaling of financial mechanisms.

BARRIERS ADDRESSED

- High upfront costs and a lack of capital
- Concerns over pay-back rates
- Uncertainty about the stage of technology.
- Lack of a price premium
- Lower levels of capability and burdensome processes to stand up a project and gain access to capital
- Aversion to equity.

Firming demand

Project 1: Supporting the provision of PPAs

PROJECT DESCRIPTION	This project proposes the facilitation, coordination, and establishment of Power Purchase Agreements (PPAs) for renewable energy. Due to the small size of many businesses in New Zealand, the focus would be on either assisting individual businesses to securing a PPA or aggregate demand across multiple businesses to negotiate more favourable terms for renewable energy contracts. The PPAs would be linked to new renewable energy generation, ensuring that the growth of renewable energy in New Zealand aligns with demand. This project could align to the establishment of RECs also.
GEOGRAPHY	Nationwide.
INCREASING SUPPLY, OR REDUCING DEMAND?	Increasing demand to warrant investment in further supply.
TARGET INDUSTRY OR SECTOR	All industries.
TECHNOLOGY FOCUS	All forms of renewable generation, but mainly solar.
POTENTIAL PARTNERS	TBC.

OPPORTUNITY FOR IMPACT	**PRIORITISATION**
• Firming up demand to facilitate the growth of renewable energy. Reduction in emissions. • Supporting businesses in securing long-term, cost-effective renewable energy, which can lower operational costs and improve energy security. This presumes that there is stability in energy prices (or energy prices are increasing over time) and that there are no shocks to pricing (such as Tiwai Point going offline).	The intermediary function would require funding and establishment. Government support, private sector investment, potential collaboration with energy providers and financial institutions.

BARRIERS ADDRESSED
• A key barrier is a lack of implementing renewable projects in response to flat demand for renewable energy. This would firm up demand in New Zealand.

Firming demand

Project 2: Data Centre lead Renewable Energy Generation, as supported by a Nature-Based Carbon Credit System and / or REC system

PROJECT DESCRIPTION	This project proposes supporting more global businesses to establish datacentres in New Zealand. The establishment of datacentres would be tagged to the establishment of new renewable generation. This idea was raised repeatedly due to many global technology businesses seeking to reduce their emissions, including energy emissions, alongside growing energy usage. To support attracting businesses to New Zealand a focus would be placed on the extent to which New Zealand is already renewable. This positioning could be further supported by a develop REC product, and the establishment of a nature-based carbon credit system in New Zealand, which would value and incorporate the country's biodiversity systems, such as mangroves and native forestry.
GEOGRAPHY	New Zealand wide, with a focus suited to renewable energy resources (e.g., wind, solar), and infrastructure development.
INCREASING SUPPLY, OR REDUCING DEMAND?	Increasing demand to warrant investment in further supply.
TARGET INDUSTRY OR SECTOR	Artificial intelligence and technology.
TECHNOLOGY FOCUS	All forms of renewable generation, but mainly solar.
POTENTIAL PARTNERS	This would require the collaboration between government, industry, and investors.

OPPORTUNITY FOR IMPACT	**PRIORITISATION**
• Utilising increased demand to address the use of Huntly. Reduced energy emission. • The nature-based carbon credit system will also incentivize the protection and restoration of New Zealand's biodiversity, such as mangroves and native forests. • Establishment of data centres will attract global investment, create high-quality jobs in the tech sector, and drive New Zealand's growth as a leader in renewable energy-powered digital infrastructure.	This project would require considerable financing and the collaboration of a number of partners. It would require government commitment, mandate, and support or service delivery from agencies such as Invest NZ.

BARRIERS ADDRESSED
• A key barrier is a lack of implementing renewable projects in response to flat demand for renewable energy. This would change the level of demand in New Zealand.

Contact Nigel Gormly with any questions or to request further information on the content of this report.