

New Zealand Climate Tech For The World

Condensed summary of report key findings

Context:

New Zealand has set a target of reaching net-zero emissions of long-lived gases by 2050, and to reduce biogenic methane emissions by between 24 to 47 percent by 2050. Callaghan Innovation is investigating the role of CleanTech to help achieve these targets.

Callaghan Innovation commissioned an independent report into NZ CleanTech by international CleanTech consultancy, The CleanTech Group.

Released in July 2021, this report, New Zealand Climate Tech For The World, benchmarks New Zealand's current CleanTech and Climate Tech performance against other small, advanced economies (SAEs) such as Sweden, the Netherlands, and Israel. This summary presents the key challenges the report identified, as well as its recommendations on how Aotearoa can improve its CleanTech ecosystem.

Key challenges:

Lack of investment for ClimateTech innovators in NZ

- New Zealand's ClimateTech innovators raise 95% less private investment than in other SAEs.
- Compared to other SAEs, New Zealand's ClimateTech innovators struggle to raise the same amounts of funds that innovators in comparable economies are able to, well below the SAE average in terms of aggregate financing to ClimateTech, amounts of companies getting funded, and average investment amounts.

Disconnect to international markets and investors deepens this issue

- A lack of multinational presence contributes to a lack of dynamism in the fundraising ecosystem – venture financing is often a lagging indicator of value to downstream customers, i.e., investments will move geographically to wherever financiers see new supply opportunities to meet demand. There is a symbiotic relationship between multinational presence and investments.
- Geography creates a challenge for NZ in attracting foreign multinational foreign direct investment (FDI) – NZ does not have the same proximity to large markets that other SAEs have (Ireland / Switzerland / Netherlands to Europe, Singapore to China / Japan / Korea, Israel to MENA countries).
- New Zealand is less active than other SAEs in establishing overseas promotion offices for technology, e.g., Swiss Global Enterprise and the Israel Innovation Authority or

setting up “antennae” in other global clusters, e.g., Swissnex, Danish innovation intelligence outposts.

- New Zealand's R&D infrastructure has demonstrated capabilities to commercialize competitive technologies. However, in the scaling stage, innovators face significant difficulties in accessing financing and more critically, connecting to demand owners.

Ecosystem needs to be lifted as a whole, rather than one-on-one support

- Successful New Zealand innovators that the government has backed have mostly received support on a one-by-one basis, versus the more intentional approaches to lift an entire industry into export markets observed in comparable economies.
- In other SAEs, cross-sectoral innovation collaborations have demonstrated spillover effects and ability to compete in related niche markets, e.g., the Israeli agricultural drone sector (from defense origins) and energy storage in Sweden (from renewables industry). NZ's equivalent would be in agriculture and energy.
- SAEs that lack strong home markets have succeeded in part by organizing coordinated efforts to drive innovators into export markets through innovation agencies (sometimes called “outposts”) that act as both a business promotion mechanism and a source of information flow back into the ecosystem, helping the ecosystem to orient itself toward global demand needs.

Key recommendations:

High-level recommendations for climate tech in New Zealand involve actions that coordinate innovators to create step-change efficiency, cost gains, or decarbonization gains for demand owners and incentivize the long-term engagement of demand owners with the New Zealand innovation ecosystem.

Prioritising sectors will enable NZ to focus on its niche areas where it is best aligned to lead in areas which have well timed market opportunities. For New Zealand, these are agriculture and food, energy and materials and industrial waste-to-value.

Agriculture and food key recommendations:

- Launch New Zealand agtech innovation outposts in key global markets – these outposts should be tasked with both observing and promoting innovative agricultural technologies
- Create specialized entity around agricultural digitalization – beyond supporting in programs such as Callaghan Horticulture Automation Catalyst, form larger-scale entity with ability to support both innovation and connection to demand
- Create intentional program for adjusting to the rise of alternative proteins – pursue low and zero-emissions agricultural processes to circumvent export markets' concerns over emissions content

Energy and materials:

New Zealand's access to unique resources for energy (namely geothermal and hydroelectric) allow it the opportunity to develop novel models of energy innovation, as well

as innovation in industrial sectors able to capitalize on the access to unique sources of renewables.

- Make efforts to concentrate development of energy digitalization around Crown Labs
- Most of the world has not achieved the same level of renewables penetration as NZ, pursue opportunities to carry out pilot tests and experiment with data from overseas customer bases where energy costs for customers may be a more pronounced pain point.
- New Zealand is an ideal testing location for energy efficiency companies that want to experiment with “top-of-the-pyramid” energy efficiency and personal carbon reduction customers
- Consider areas in which New Zealand innovators have potential to solve energy issues (e.g. geothermal innovation, agricultural industrial symbiosis) and direct energy efficiency or emissions digitalization to those sectors best addressed by adjacent New Zealand innovations.

Industrial waste-to-value:

- Embrace the Māori waste avoidance philosophy and whole-of-ecosystem systems thinking to identify opportunities for industrial symbiosis testing, research, and eventual development of technological models that can be promoted to export markets.
- Identify opportunities to infuse the Māori approach into future innovation efforts and make deliberate attempts to plug innovation into Māori industries that maintain a waste avoidance guiding philosophy.
- NZ geothermal innovators the ecosystem should identify not just companies, but industrial processes that geothermal can power that can be piloted in geothermal sites, offering the opportunity to export a “New Zealand model” of industrial development around geothermal sites.
- In wastewater treatment, identify industrial challenges that sit at the nexus of water efficiency, energy efficiency, and process efficiency, make concentrated efforts to zero in on these problems through challenges organized by New Zealand investors, government, and ideally global multinationals in New Zealand.
- Make challenge goals big and seek to induce multiparty pursuit of step-changes that can motivate overseas demand owners to engage New Zealand suites of solutions or invest directly in the ecosystem.