Submission by

to

He Pou a Rangi Climate Change Commission

on its

2023 Draft Advice to Inform the Strategic Direction of the Government's Second Emissions Reduction Plan

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NZTECH SUBMISSION ON 2023 DRAFT ADVICE TO INFORM THE STRATEGIC DIRECTION OF THE GOVERNMENT'S SECOND EMISSIONS REDUCTION PLAN

INTRODUCTION

1. NZTech thanks He Pou a Rangi Climate Change Commission for the opportunity to submit on its 2023 Draft Advice to Inform the Strategic Direction of the Government's Second Emissions Reduction Plan.

2. We welcome the Commission's acknowledgement (p.158) that targeted investment in climate change within the research, science, innovation and technology system is required: "Without dedicated investment in climate change activities within the RSI&T system, Aotearoa New Zealand will not be able to capitalise on opportunities for low emissions transformation and the RSI&T system reform underway will not have a meaningful impact." [1]

3. We believe that a key means of meeting these goals is the development by Government, with industry support, of a Technology Roadmap. This recommendation forms the basis of our submission.

4. International evidence demonstrates that Technology Roadmaps are an important tool to reduce emissions. A Technology Roadmap would also provide the opportunity to drive collaboration across government agencies, as well as supporting broader innovation and deployment of technology, although further Government investment is also required.

5. A more aligned and coordinated approach between the major emitting sectors and tech would allow opportunities, time horizons and priorities to be developed – a process used by several other countries.

6. NZTech also considers there are a range of key short, medium and longer-term climate technology opportunities that New Zealand's agencies and industries could be progressing. These opportunities are based on international evidence.

7. We believe a range of these opportunities could be incorporated into the proposed Technology Roadmap. Our submission outlines these opportunities in the agriculture, energy, transport, building and construction and waste sectors. The NZTech Alliance is very experienced collaborating with government agencies to produce work such as a Technology Roadmap. An example is the *Towards Our Intelligent Future* report produced in 2019 for MBIE, together with our partners.

8. We also note there are many tech-focused opportunities to reduce emissions such as the positive impact of moving systems to carbon-neutral clouds, the potential of data and AI in sectors such as energy and transport, and the opportunity to align the RSI system with tech development.

9. Leveraging Aotearoa's knowledge-based and digital economies will greatly enhance and advance the transition to a low-carbon future. Empowering and growing industries which are already low emitters – such as the creative sector and digital technologies – will also enable greater economic diversity and resilience.

10. We note that NZTech also recommended the development of a Technology Roadmap to the Ministry for the Environment in 2021 as part of its consultation process on *Te hau mārohi ki anamata: Transitioning to a low-emissions and climate-resilient future*, proposing that NZTech partner with Government to deliver this. We were disappointed that this advice was not taken. When the resulting ERP was published in May 2022, Climate Minister James Shaw drew attention to its lack of focus on tech.

BACKGROUND

11. NZTech is the peak body for the tech sector in New Zealand and a leading voice for the New Zealand technology ecosystem. We represent 20 tech associations with over 2,000 members who collectively employ more than 100,000 New Zealanders.

12. Our mission is to support a values-led, nationally connected tech community that is collectively lifting equity, sustainability and prosperity for all in Aotearoa New Zealand by creating jobs, export growth and impact through tech for good.

13. NZTech is a lead partner in the Digital Tech ITP, a collaboration between the New Zealand tech sector and the New Zealand Government, to help grow the sector.

COMMENT

14. NZTech recommends that the Government develops a Technology Roadmap as an addendum to its Emissions Reduction Plan. NZTech has the capability to partner with Government to deliver this.

15. Several countries comparable to New Zealand have reduced their carbon emissions while also growing their economies. Pre-Covid, these countries all reduced carbon emissions by at least 10% and still grew their economies. Technology roadmaps or equivalents were leading contributors in all these countries. The standout comparable countries for New Zealand are Denmark, Finland, Ireland and Switzerland.[2]

16. NZTech has engaged with MBIE, the Ministry of Transport, the Energy Efficiency and Conservation Authority and Callaghan Innovation who are all broadly supportive of creating a Technology Roadmap. NZTech also considers that establishing a Technology Roadmap would have the favourable outcome of driving collaboration between government agencies.

International evidence of the benefits of a Technology Roadmap

17. New Zealand has the opportunity to follow the lead of countries making greater progress on reducing their carbon emissions by developing a Technology Roadmap.

18. International evidence shows that a Technology Roadmap can have the important twin roles of stimulating and hastening the earlier adoption of emission reductions technology solutions, thereby guiding the development and investment of Aotearoa's climate research and development ecosystem.

19. Several European countries follow this practice, including Sweden which is at the forefront of climate change action. Three other European countries, broadly comparable to New Zealand in size (Denmark, Finland and Ireland) had higher per capita CO_2 emissions than New Zealand, but have now fallen below. The adoption, development and implementation of a Technology Roadmap has been a key contributing factor to this.

20. The United Kingdom (on which New Zealand has modelled its Climate Change legislation, formal advice, and governance approach) launched its first version of a Technology Roadmap in 2010.

21. In 2013, the Technology Executive Committee of the United Nations Framework Convention on Climate Change published a report recommending countries adopt Technology Roadmaps to advance climate change mitigation and adaption.

Engagement with government agencies on a Technology Roadmap

22. NZTech has held informal discussions with MBIE, the Ministry of Transport, and the Energy Efficiency and Conservation Authority (EECA). These have indicated support for a Technology Roadmap that would also provide a focus for industry to collaborate more effectively and partner with government agencies.

23. The Ministry of Transport agrees new innovations in the transport sector must be shaped to deliver positive outcomes for the transport network and climate.[1] EECA's international technology scan highlights a wide range of international available technologies that New Zealand could apply to process heat, one of the country's largest opportunities to reduce energy-related greenhouse gas emissions.[2]

24. The Government's innovation agency, Callaghan Innovation, supports a Technology Roadmap approach. When launching the *New Zealand Climate Tech For The World* report in July 2021, Callaghan commented that climate innovation was a key step towards achieving the country's national carbon targets.[3] It also has the value of building a higher-value export sector and new employment opportunities as has been seen overseas.

25. Callaghan Innovation, New Zealand Growth Capital Partners, the Science for Technological Innovation National Science Challenge, Auckland Unlimited and UniServices have established the NZ CleanTech Mission partnership to convert local CleanTech into thriving and profitable businesses.[4] Initiatives such as this could be prioritised and extended under a Technology Roadmap.

[1] https://www.knowledgehub.transport.govt.nz/assets/TKH-Uploads/TKC-2018/Public-Transport-2045.pdf
[2] https://www.eeca.govt.nz/insights/eeca-insights/international-tech-scan/
[3] https://www.callaghaninnovation.govt.nz/sites/all/files/NZ_Climate_Tech_For_The_World_report.pdf
[4] https://www.callaghaninnovation.govt.nz/technology-and-product-development/new-zealand-cleantech-mission

Promotion of broader innovation and deployment of technology

26. NZTech considers that establishing a Technology Roadmap would better support existing or near-term technology. Greater progress in and support for deploying existing or near-term technology solutions would aid our emissions reduction targets.

27. Empowering and growing New Zealand's already low-emissions industries – such as the creative sector and digital technologies – would enable greater economic diversity and resilience.

28. Strengthening New Zealand's innovation, research and development pipeline to explore, test and commercialise future solutions is one of the keys to meeting our emissions targets. The nature of a Technology Roadmap means it can greatly assist both these short-, medium- and longer-term objectives. Overseas experience highlights these opportunities.

Opportunities for Emissions Reductions in Agriculture

29. Agritech New Zealand, a member of NZ Tech, supports the Technology Roadmap approach. Action 6.2 in the Government's Agritech Industry Transformation Plan outlines that the Government will:

> "Develop a national technology platform view for agritech, outlining where expertise, equipment and support exists and how it can be accessed, along with a roadmap for further development." [5]

This makes sense as greater, early interventions are more critical in agriculture to achieve targeted reductions in emissions.

30. NZTech considers recommendations made by Ian Proudfoot, KPMG's Global Head of Agribusiness, should be developed further and included in the proposed Technology Roadmap because they would enhance New Zealand's methane reduction plan. These actions are to:

    (i) Invest in bringing some of the best scientists in the world working on animal created methane emissions to New Zealand and ensuring that our regulatory framework allows them to do world leading science. This means addressing our legislative framework surrounding gene-editing technologies.

    (ii) Develop a world class research campus, that co-locates all our climate science capability in a single facility that can host the international teams. Connecting international leaders to New Zealand existing experts offers potential for transformational solutions.

[5] https://www.mbie.govt.nz/dmsdocument/11572-growing-innovative-industries-in-new-zealand-agritech-industry-transformation-plan-july-2020-pdf

31. Other opportunities to explore in the agricultural sector that could be part of a Technology Roadmap include technologies for managing large animal emissions, and biotech and seaweed nutrient trials.

Opportunities for Emissions Reductions in Energy

32. NZTech notes the International Energy Agency's (IEA) Net Zero by 2050 Roadmap highlights the short-term priorities in the energy sector that countries should be focused on.[6] This includes banning new sales of fossil fuel boilers, stopping new unabated coal plant approvals, and stopping new oil and gas field approvals or mine extensions.This Roadmap charts key milestones in the pathway to net zero across key emissions sectors. A New Zealand Technology Roadmap should use the same tool.

33. Other opportunities in the energy space include developing an electricity regulation system which better integrates enabling technologies, progressing the digitisation of New Zealand's electricity infrastructure by ensuring a digital platform is in place that dynamically tracks and manages demand, redesigning the regulatory framework to ensure electricity regulation better supports decarbonisation, enabling greater involvement from new generation market participants to boost renewable generation, and targeting passive housing standards and enabling smart home technology in our future housing stock. There are also opportunities to adapt initiatives from the UK Clean Growth Strategy to include in our Technology Roadmap.

Opportunities for Emissions Reductions in Transport

34. NZTech recommends that the New Zealand Government consider opportunities identified in the UK Government's *Decarbonising UK Transport* report, which uses the Technology Roadmap approach to progress its strategy. [7]

35. The report outlines seven separate technological roadmaps which will reduce and remove emissions from the UK's domestic transport by 2050. These include opportunities from hydrogen-fuelled transport, decarbonising the vehicle fleet by incentivising the replacement of vehicles that produce emissions with those that do not, infrastructure development, short-term research and innovation interventions, and improved battery technology,

36. NZTech also recommends the Government consider other opportunities that have been identified in the United Kingdom, including:

    - Smart systems to reduce the cost of electricity storage, advance innovative demand response technologies and develop new ways of balancing the grid to prepare for the impact of EVs (the UK is investing $NZ508 million).
    - Establishing the Centre for Connected and Autonomous Vehicles to position the UK at the forefront of research, development and demonstration of Connected and Autonomous Vehicle technologies (a cost of $NZ480 million, matched by industry)

[6] https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroby2050-ARoadmapfortheGlobalEnergySector_CORR.pdf
[7] https://www.gov.uk/government/publications/decarbonising-uk-transport-technology-roadmaps

37. NZTech also recommends that the New Zealand Government consider opportunities similar to those identified in Finland's Circular Economy Roadmap[8], where transport and logistics was a key focus area with digitisation identified as an essential enabler.

38. Digitisation is a key enabler as passenger transport moves towards smart, easy-to-use transport that is based on the sharing and services practice called MaaS (Mobility as a Service). The roadmap outlines development of incentives and policy tools which encourage technology use to deliver a more service-based transport system.

39. This includes opening up public transport and other service information and payment system interfaces and developing compatibility to promote alternative forms of transport favouring and replacing more carbon-intensive modes. It is a key opportunity for New Zealand's cities.

40. We would also urge the New Zealand Government to consider opportunities identified by the Australia New Zealand Smart Cities Council. The council's report, Mobility Now, [9] highlights how advancing technological capabilities, new service delivery models and unprecedented city growth create great opportunities as well as urgent pressures to deliver new mobility solutions. Although focussed on the Australian market, it has general applicability for the transport element of a New Zealand Technology Roadmap.

Opportunities for Emissions Reductions in Building, Construction and Waste

41. NZTech recommends that the Government consider the Roadmap for Buildings and Construction produced for the Global Alliance for Buildings by the International Energy Association[10]. A range of policy and technology roadmaps have been developed, including:
    - Technology for sustainable new buildings
    - Technology for sustainable existing buildings
    - Technology for sustainable building operations
    - Technology for resilience
    - Technology for materials
    - Technoloy for sustainable appliances and systems, and
    - Technology for urban planning

42. We also recommend that the Government consider waste management opportunities identified by Germany, a world leader in waste management. Its Circular Economy Roadmap[11] has a strong focus on steps New Zealand could consider for a Technology Roadmap.

[8] https://media.sitra.fi/2017/02/28142644/Selvityksia121.pdf
[9]https://www.smartcitiescouncil.com/sites/default/files/anz_smartcitiescouncil_com/public_resources/report_mobilitynow_final_1_0.pdf
[10] https://globalabc.org/sites/default/files/inlinefiles/GlobalABC_Roadmap_for_Buildings_and_Construction_2020-2050_3.pdf
[11] file:///D:/Users/Mark/Downloads/Circular-Economy-Roadmap-for-Germany_EN_Web.pdf

CONCLUSION

43. NZTech and its members believe a Technology Roadmap is an essential element in improving the effectiveness of New Zealand's plans to reduce its emissions, while at the same time strengthening our national innovation, research and development system. The NZ Tech Alliance could add a great deal of value to government by partnering in its development.

44. Thank you for the opportunity to provide feedback on the discussion document. We are happy to engage further with you to discuss our submission and provide any further assistance. If you have any queries do not hesitate to contact me.

    Yours sincerely,

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