

Submission on the Productivity Commission's "New Zealand firms: Reaching for the frontier – draft report"

February 2020

Introduction

Thank you for the opportunity to provide a submission on the New Zealand Productivity Commission's December 2020 draft report "New Zealand Firms: Reaching for the frontier".

As New Zealand's innovation agency, we work with many businesses and groups of businesses that are at the frontier (and close to the frontier). We have a keen interest and involvement in many of the issues canvassed in the draft report, particularly on innovation ecosystems and effectiveness of innovation policy and operationalisation.

Our submission covers:

- key issues;
- comments on statements presented in the report about Callaghan Innovation's role;
- our perspective on groups of recommendations and
- questions in the report.

Summary of recommendations / suggestions

To make it easier, here is the summary of our recommendations and suggestions that we outline throughout this submission:

Recommendations:

- R1: We recommend that the final Productivity Commission report include the relevant recommendation from the Teece and Brown (2020) report and note that such a programme (dynamic capabilities) is being developed and will be piloted by Callaghan Innovation in 2021.

Suggestions:

- S1: We suggest the Productivity Commission consider whether the recommendations in the report will be sufficiently impactful and whether a more strategic, mission-oriented and integrated approach to economic, industrial and innovation strategy and policy is required. We discuss this further in our responses.
- S2: We suggest that the final report also emphasise the importance of focusing interventions on 'close to the frontier' or 'frontier potential' businesses (although 'close to the frontier' is mentioned in a few places in the report, it would be desirable for this to be highlighted upfront and for a broader range of business examples to be used).

- S3: We suggest that the final report include a discussion on the importance of good business practices/ordinary capabilities, in addition to dynamic capabilities, highlight ways in which these can be developed and reference Callaghan Innovation's role in supporting these.
- S4: We question the merits of a review of innovation policies and suggest two sequential alternatives for consideration.
- S5: Given the likely small window of opportunity and the risk that we are already tracking behind other nations, we suggest any review of innovation policies should be a short, sharp process of no longer than several months, with a view to making recommendations mid-2021.
- S6: We do not believe that further reviews or the current draft RSI strategy will result in the step change in performance desired, and suggest again that Covid-19 presents an opportunity to reset the approach. Additionally we suggest any focus on development of the RSI strategy should be done in tandem with Economic Development Strategy.
- S7: Rather than a backward looking review process of innovation policies, which would examine ways of improving a range of individual interventions, we suggest a forward-looking, mission led strategy process.
- S8: If additional or different areas of focus should be added to the current Industry Transformation Plans (ITP) mix in future, we suggest that these should result from the mission-led innovation strategy process we have proposed.
- S9: We suggest that recommendation R5.1 be changed to read: "The Government should take a more proactive and deliberate approach to attracting FDI that will add value to the New Zealand economy."
- S10: We agree with the tenor of recommendation R8.2 to focus migration policy more on lifting productivity and on highly-skilled migrants but suggest that this not only include technically skilled migrants but explicitly reference skilled entrepreneurs, investors, innovators and leaders.
- S11: Given our role and activities, we suggest we could also play a valuable role in helping to scope the proposed Hui Taumata (R4.1) alongside the agencies currently listed in the draft report.
- S12: We also suggest that the final report do more to note some of the limitations associated with comparing New Zealand to other SAEs.

For clarifying:

- C1: The final report should explicitly clarify Callaghan Innovation's broader role in the innovation system and the full set of services.
- C2: It may well be that the intention is for the recommendation to cover a broader scope of migration policy settings but it would be useful to clarify this in the final report.

For noting:

- N1: We note the report's recommendations to address this situation are largely traditional and will not support the step change required to improve productivity which then provides more choices around how we invest increased wealth creation for the benefit of all New Zealanders.
- N2: It may be worth noting in the final report that the required collective action and joint responsibility in government has been encouraged through the Public Service Act 2020. The development and implementation of an integrated economic and innovation strategy across government agencies and portfolios would be a good way of demonstrating this – indeed, the Act was designed in part to make it easier for the public sector to collaboratively tackle major challenges facing New Zealand.
- N3: We agree with the draft report's findings that a successful innovation and industry strategy requires a large step up in resourcing. We note this should include consideration of the full range of economic development and commercialisation funding as well as how key investment vehicles in New Zealand, such as the publicly supported venture capital funds, the New Zealand Super Fund and ACC, could support the areas of focus.

Key issues

We congratulate the Productivity Commission on preparing a thorough and well-evidenced report. As will be discussed below, we agree with many of the findings and the intentions of the recommendations. However, based on our experience in working with innovative businesses and sectors and drawing on work we recently commissioned on lessons from innovation interventions and agencies, we have identified three areas in the draft report that would benefit from further elaboration.

A new approach to developing and implementing a national innovation strategy for Aotearoa

The report emphasises the considerable distance that New Zealand is behind other nations on measures of productivity, innovation and internationalisation and provides a good explanation of why much of this difference exists due to the unique New Zealand context. It notes that although New Zealand's framework policy settings rate well internationally, these settings are not sufficient to generate a step change in New Zealand's productivity performance. We agree with these findings.

Key recommendations relate to updating the research, science and innovation (RSI) strategy, selecting areas of focus, reviewing funding support and other assistance channelled through Callaghan Innovation and NZTE, undertaking a comprehensive review of innovation policies, ensuring capability support is evaluated, reviewing migration policy, and a range of regulatory improvements. As is actually described in the report, many similar proposals have been recommended and implemented in the past, including through the Growth and Innovation Framework, the Economic Transformation Agenda and the Business Growth Agenda, amongst other processes. None of these initiatives have resulted in a major step change in New Zealand's productivity performance and it is not apparent that repeating the same types of reviews and policy processes will do so now.

N1: We note the report's recommendations to address this situation are largely traditional and will not support the step change required to improve productivity which then provides more choices around how we invest increased wealth creation for the benefit of all New Zealanders.

The report also emphasises that New Zealand should learn from the experiences of Small Advanced Economies (SAEs) that are better performing and draw on policies and approaches that work in these nations (taking into account contextual differences). However, given New Zealand is well behind the performance of these nations, learning from and adapting approaches from these nations may allow us to catch up to their current level of performance over time, but the nations will continue to advance well ahead. Although lessons can be learned from other nations, New Zealand needs to quickly move beyond what others are doing to achieve a significant improvement in performance. We need to design and implement new approaches that will provide a step change in outcomes required..

In addition, the significant economic, demographic, socio-cultural and environmental challenges facing New Zealand over the next 10-20 years, including the long-term impacts of Covid-19, growing inequality, doubling of the 65+ population in Aotearoa, the need to mitigate the impacts

of climate change, the growing importance and power of global value chains, increasing levels of trade protectionism, technological disruption and changes in the future of work, are going to necessitate a significant shift in mindsets and innovation. Traditional approaches and incrementalism will not suffice. Indeed, the report notes that other small economies have typically been much more ambitious and courageous than New Zealand in their approach to innovation policy.

S1: Given all of this, we suggest the Productivity Commission consider whether the recommendations in the report will be sufficiently impactful and whether a more strategic, mission-oriented and integrated approach to economic, industrial and innovation strategy and policy is required. We discuss this further in our responses below.

The diffusion of innovation

A key premise in the report is that New Zealand's innovative and productivity performance can increase through the diffusion of innovation from frontier firms to other businesses. The findings suggest that there is limited diffusion of global best practice into New Zealand but that there is diffusion occurring at the domestic level (or that non-frontier firms can more easily keep up given the relatively low level of capability in New Zealand's frontier firms).

Our observation is that, in addition to the difficulty associated with our distance from markets, diffusion of global capability into New Zealand is limited due to a relatively low level of technological sophistication, a conservative culture and the insular/domestic focus of businesses and investors across the majority of the economy. Similar views were put forward in the Smith and Garden (2020) evidence report, where they note that directors described a New Zealand cultural aversion to risk-taking and failure, at the Board level and at the funder level. The Smith and Garden report also noted that insularity has resulted in less sophisticated approaches to internationalisation. We recall countless discussions with entrepreneurs who share stories of domestic investors that undervalue their ideas and technology, don't have a deep understanding of what it takes to scale a global start up from New Zealand, struggle to get New Zealand firms to take up their service / product, get more support and encouragement for their idea globally and in instances landed investment deals with global investors that result in significantly higher firm valuations. Many of these entrepreneurs will not speak up for fear of being isolated from a very small and connected domestic investor market. We note that these factors are not discussed in the draft Productivity Commission report.

Our recent Unleashing Business Innovation study confirms this. New Zealand businesses have a low growth appetite (44% generally vs 56% Callaghan Innovation customers) and an even smaller appetite for international growth (5% NZ businesses vs 25% Callaghan Innovation customers). That's because growth is tough and they don't have the tools, knowledge and processes to drive efficiency which frees them up for international growth. In regards to technological sophistication, our data shows 5+ tools is the optimal level to drive innovation success with only 12% of NZ businesses having 5+ tools vs 65% of Callaghan Innovation customers. We believe these differences provide insight into the challenges in technology diffusion from frontier firms to other businesses in New Zealand.

In addition, despite the importance of diffusion, the draft report is currently light on how innovation and technology diffusion between world leading (global or small economy frontier) businesses and New Zealand firms could be improved. The report notes that diffusion can occur through supply chains, imitation, learning by doing, the transfer of staff and kiwi diaspora but the

only potential policy prescriptions emphasised are for New Zealand to attract more MNCs and/or for more firms to engage in exporting. However, there are a range of other potential mechanisms that can be explored (e.g., learning missions, using test beds to attract international collaboration).

Three key mechanisms that we consider are particularly important in a post-Covid world are public procurement, digitisation and attracting diffusion skills.

1. Public procurement can be a lever for new innovation and innovation diffusion. Making major procurement projects more innovation-oriented could be achieved through requirements for partnerships between local businesses and international partners (or partnerships between large international domestic companies and SMEs) or through the use of innovation-related criteria in purchasing decisions. We appreciate that this could be challenging in New Zealand given the traditional and overweight focus on value for money procurement (usually interpreted as lowest cost) and the separation of major purchasing agencies/departments from those that are more actively involved in supporting innovation. However the recent changes to the government purchasing rules require agencies to account for broader outcomes and we note Australian IT procurement policy has evolved to the default is to award projects to local providers unless an exception is made.. The significant pipeline of infrastructure and housing projects in New Zealand also presents one opportunity for trialling new approaches. Finally on this point we note that Corporate New Zealand suffers from a similar problem in that procurement is heavily value for money driven rather than innovation driven.

2020 COVID-19 research conducted by Callaghan Innovation reinforces Entrepreneurs identify the opportunity for government to diffuse innovation:

"Give priority to NZ owned and operated innovators (we compete against a 100% international company based in a tax haven)." Revenue: \$1.5m to less than \$2m, R&D spent: \$300k to less than \$400k, lifecycle: Established
"Buy NZ Made" Revenue: \$2m to less than \$10m, R&D spent: \$300k to less than \$400k, lifecycle: Established
"Promote NZ made," Revenue: \$200k to less than \$300k, R&D spent: \$30k to less than \$50k, lifecycle: Established
"For Government to buy more from NZ companies" Revenue: \$10m and over, R&D spent: \$20k to less than \$30k

2. Accelerating the update of digital technologies is another lever that can be pulled to support improved knowledge transfer and innovation diffusion by allowing businesses to create new channels to customers, suppliers and partners and making it easier for them to identify new practices and innovations offshore. Covid-19 has generated a greater understanding of the value of this technology across the New Zealand business community. Additional support to increase uptake and to help equip managers and workers with the appropriate skills to make effective use of the technology could enable a significant cohort of businesses to make further advances in digital transformation and to build their absorptive capacity.
3. New Zealand is a young country and economy comparatively and doesn't have the generations and generations of business practices and wealth that comes with other advanced economies. In order to accelerate we must attract international talent that has this experience, whether that's diffusion of technology across economies or dynamic management capability to grow our international innovative start ups. Aotearoa is one of the most attractive countries in the world and lots of investors and entrepreneurs would love to relocate here but can't because of the immigration settings. The Edmund Hillary Fellowship has tried to address this but this initiative is receiving less support from the government.

Immigration settings to attract talent could be a more modern and expedient vehicle for technology diffusion.

We also note that the report is currently silent on how diffusion is affected by the local environment in which businesses operate. Even businesses operating in 'weightless' areas of the economy are embedded in their local economies and the quality of the regional/local innovation system can impact on the diffusion of knowledge, skills and practices within a region (for example, the extent to which businesses within and across industries are supported to network together and with researchers, public agencies etc).

Government innovation

In 2019, the ratio of government expenditure to GDP was just under 40%. This shows the significant role that government plays in our economy not just in regards to the point above around opportunities for procuring innovative services but also the impact innovative government can have on productivity.

The need for innovation within government to support the development and implementation of a new approach to innovation and industry strategy is a third area where we think further discussion would add value to the final report. Previous attempts for innovation / collaboration between agencies (such as the 10 result areas) have struggled because of the inherent problems when large government agencies attempt to work together on rapid innovation initiatives without the underlying ways of working or technology that supports this.

Callaghan Innovation's Unleashing Business Innovation research (Dec 2019) reinforces how much businesses struggle with government in regards to innovation. There are two relevant questions in this survey that inform, as follows:

1. 85% of businesses do not believe that the New Zealand government supports business innovation (however amongst Callaghan Innovation customers this is 34%).
2. 92% of businesses do not see a clear innovation pathway (89% amongst Callaghan Innovation customers). This reinforces the challenges of innovation diffusion and also the challenges of government not procuring for innovation resulting in entrepreneurs not feeling support and a corresponding lack of technological innovation in government service offerings.

The report notes and we agree that shared public and private sector governance, implementation, monitoring and evaluation of innovation strategies is required. The report also notes a key success factor will be capable officials that can build trust and long-term relationships with stakeholders.

What is less emphasised but which will be critical for success is the need for government to be much more innovative itself. The report usefully describes the large range of policy areas that need to be considered and aligned to improve the performance of frontier/close to the frontier firms and innovation ecosystems – this includes science and innovation, industry and economic development, education, immigration, trade, Māori development, investment and regulatory policy. Achieving this alignment in policy and investment across public sector agencies and the private sector will require truly integrated government policy development and implementation rather than the traditional siloed approach. A review of leading international innovation agencies and economies (Stakeholder Strategies, 2020) found that cross-sector and cross-organisational working were critical for mission driven innovation.

N2: It may be worth noting in the final report that the required collective action and joint responsibility in government has been encouraged through the Public Service Act 2020. The development and implementation of an integrated economic and innovation strategy across government agencies and portfolios would be a good way of demonstrating this – indeed, the Act was designed in part to make it easier for the public sector to collaboratively tackle major challenges facing New Zealand.

Comments on the description of Callaghan Innovation's roles and services

The draft report presents a narrow view of Callaghan Innovation's roles and the scope of our services. In particular, it suggests that our services are largely focused on supporting individual businesses. For example:

- Chapter 7, Page 102:

"Callaghan Innovation, the Government's business innovation agency, is a Crown Entity established in 2013....Client businesses range from start-ups to experienced R&D performers."
- Chapter 7, page 113:

F7.6 Most Government funding channelled through Callaghan Innovation and New Zealand Trade and Enterprise to support innovation and exporting by firms is targeted at individual firms. Some of Callaghan's assistance is targeted at firms in sectors that reflect the Government's choice of areas of the economy or technologies for focused innovation effort. Yet, this assistance aims to build firm capabilities; it does not directly support strengthening the innovation ecosystems in which these firms operate.

This downplays our broader role in supporting the innovation system in New Zealand. Indeed, we are New Zealand's innovation agency, not just a 'business' innovation agency. As stated in the Callaghan Innovation Act 2012, our first three functions are to:

- a) foster an environment that encourages and supports businesses to improve their growth and competitiveness through science and technology-based innovation and related activities
- b) promote and facilitate networking and collaboration among businesses and between RS&T providers and businesses to assist businesses to undertake, or benefit from, science and technology-based innovation and related activities
- c) facilitate the transfer of knowledge and technology between RS&T providers and businesses.

Consequently, a significant part of our service range is focused on supporting the development of the innovation ecosystem, groups of businesses, and collaborations – not just individual businesses. This includes:

- Scale-Up NZ – an online platform showcasing New Zealand innovation to the world.
- Incubator and accelerator programmes – we support innovation infrastructure and service providers to provide early- stage ventures and entrepreneurs with the assistance they need to

develop and accelerate their paths to market. This includes the tech incubator programme which goes to the core function of accelerating commercialisation of crown funded research amongst other research.

- We are partnering with BECA and the EMA to roll-out a nationwide showcase of Industry 4.0 to manufacturers, to demonstrate the productivity improvements and value that can be derived through the use of robotics, automation, data analytics and AI.
- We support the New Zealand Food Innovation Network of regional based food hubs that assist with the development of food and beverage products.
- The Measurement Standards Laboratory, which provides accreditation, calibration and measurement standards services nationally, is a key enabler for exports and technology development for New Zealand industries.
- We host the Science for Technological Innovation National Science Challenge, which aims to develop world-leading science and technologies in the areas of physical sciences and engineering, with a focus on building enduring partnerships between researchers, businesses and Māori organisations.
- The Championing Young Innovators Programme, which encourages young people from primary school to university to pursue careers in innovation.
- The HealthTech Activator, which is a coordinated eco-system wide support mechanism for early stage founders and businesses in the health-tech sector, to improve their access to expertise and support.
- The Bioresource Processing Alliance, which seeks to increase the volume of high-value materials derived from secondary bioprocessing streams and provides a portal for companies to access the science and technical capabilities of not only Callaghan Innovation but AgResearch, Plant & Food Research and Scion.
- We facilitate clusters of Māori businesses with a desire to innovate, with a focus on building connections, reducing the costs of R&D and promoting sharing of knowledge among the partners.
- We support a range of networking opportunities and events where we bring together innovators and opportunities in specialist areas such as Software-as-a-Service (SaaS) cluster to connect, learn or collaborate.

In addition, the following paragraph on page 7 also understates the investment made through Callaghan Innovation:

"Callaghan Innovation received Crown funding of \$80 million in Budget 2020, to broker and provide innovation services to businesses. In financial year 2020, it also earned \$25 million in commercial revenue, interest and other sources. Callaghan Innovation also administers some Business R&D funds, including Growth Grants, Targeted Business R&D Grants, and repayable Grants for Start-ups. We also administered just under \$150m of loans to R&D performers as part of the government's COVID-19 response to support business".

The final report should reference the full level of investment we manage. In 2020, Callaghan Innovation received \$96m of funding from the Crown for its operations, administered \$255m in grants and received over \$25m in commercial revenue.

C1: The final report should explicitly clarify Callaghan Innovation's broader role in the innovation system and the full set of services.

The stated potential conflict of interest in our roles as both funder and direct provider of services

The report notes the potential conflict of interest Callaghan Innovation faces in relation to our roles as a provider of technical services and as a funder of R&D:

Page 102: "Callaghan Innovation is unusual in its balance of services, for historical reasons. When it was established, the former CRI Industrial Research Limited was merged into it. This accounts for the existence of its in-house R&D services. With a large in-house research function, Callaghan Innovation faces some of the same revenue generation pressures as the CRIs. Some inquiry participants considered that this dual role as a funder of innovation support services and provider of in-house research services creates a potential conflict of interest in dealing with firms."

We do not consider that this is an actual issue. Although this was raised by some inquiry participants, presumably there were many participants that did not raise it and also did not consider it an issue. If the Commission wishes to include this in the final report, then to provide a balanced perspective on this potential conflict, the Commission should also note:

- a) This potential conflict was considered at the time of the establishment of Callaghan Innovation and the benefits of combining the funding and provider role were deemed to outweigh the costs. As noted in the Cabinet paper on our establishment, incorporating funding schemes into Callaghan Innovation was consistent with the government's desire to achieve a one-stop-shop for businesses to access R&D and technology advice and support. Alternative options were assessed and discounted, including having funding programmes delivered by a separate organisation, such as MBIE. This would increase compliance costs for businesses, who would need to engage with two different organisations – one for funding and one for other services. A demand side study at the time also concluded that the agency should have a funding role.
- b) Callaghan Innovation has processes in place to manage the potential conflict (indeed, Cabinet introduced provisions in the Callaghan Innovation Act to ensure this). Under Clauses 15(1(a)) and (b) of the Act, we must ensure that any activities we undertake are for the benefit of New Zealand and proactively engage and collaborate with businesses, other RS&T providers and other relevant persons. Under Clause 15(2), when allocating and administering funding, we are required to implement systems and procedures to enable us to act fairly and transparently and to make information about those systems and procedures available on our website, and report on these annually. Furthermore, the Auditor General is required to report on our implementation of these systems and procedures as part of its annual financial audits.

Callaghan Innovation has also adopted a business model to address potential concerns about competition between us and universities or CRIs for contestable science funding. We have made a strategic decision to not pursue contestable funding as a lead researcher so that we can engage in fully collaborative relationships with all science and technology providers. Our role is to support the proposals of others, rather than compete with them. Given our deep

technical expertise and ability to provide specialist science and technical services to deadlines we provide complementary services to universities and CRI's as contractors to enable them to successfully complete their research programmes.

Callaghan Innovation R&D Solutions also often works in areas of the market that New Zealand companies do not yet have a capability to successfully commercialise with the aim of growing New Zealand's capability in these areas. Examples include 3D concrete printing where the market is now developing commercial capability and Callaghan Innovation has spent time educating the market in association with university partners. Additionally Callaghan Innovation has conducted a review of R&D providers of applied research services and has not identified any private providers that we are replicating services of.

- c) There are examples of innovation agencies offshore that provide a combination of funding support and direct R&D and technology services, such as ITRI (Taiwan) and DARPA (US). Indeed, decisions on the scope of services during the establishment of Callaghan Innovation drew on offshore examples.
- d) Finally on this point, our Chief Executive in conversations with government innovation organisations across the world over the past three years (Israel, UK, Ireland, Australia and Singapore) has had consistent feedback from them around the benefits of having funding and technical services within the same government organisation, focused exclusively on enabling business innovation growth.

Comments on key findings and recommendations in the report

The role and importance of Frontier Firms

We support the overall thesis of the report that an important way to lift New Zealand's productivity performance is to lift the performance of New Zealand's frontier firms. However, we think there are some nuances that would be worth clarifying in the report.

Although businesses of different scales and orientation can be high productivity, the report emphasises larger, exporting businesses as the types of firms that New Zealand should further develop and attract and the examples given in the report tend to have this profile (i.e., Fisher & Paykel, Xero, Fonterra etc). This is on the basis that these types of businesses are expected to generate large spillovers. A question that is not clearly dealt with in the report is whether innovation support should be targeted at these types of businesses.

A review undertaken by Callaghan Innovation of international innovation interventions and targets for interventions found that although supporting innovation and R&D in existing large, high performing businesses may generate spillovers, there may be limited additionality generated from this support – these businesses tend to spend more than average on R&D or be existing innovators anyway. The review found that much of the evidence suggests that targeted support at smaller, younger, growing businesses (high growth *potential* or 'near to the frontier' firms) generates greater levels of additional R&D and innovation than supporting frontier or high growth businesses themselves.

Our own research shows that one of the key drivers of business and innovation success is 'attitudinal predisposition' (leading edge thinkers, open mindedness, learning mindset and

ambition) and identifying these founders / leaders and nurturing them regardless of 'business life-stage' is what will drive success. Already we see segments of the market with these attributes (we call them Leading Innovators) punching above their weight from a productivity perspective - they are 15% of NZ businesses but represent 26% share of revenue.

Our own experience with fast growing digital and health tech clients suggests that this is the case:

- Pushpay listed in 2014 and in 6 years has US\$100m in recurring revenue, a market cap of over \$2bn and employs over 100 people in high value jobs.
- Sharesies launched in 2017 and as of December 2020 have more than 250,000 customers and over \$800m of funds under management. They employ around 80 people, are actively growing into Australia *with USA next) and have raised \$35m+ since inception (with a recent \$25m series A investment).
- IMAGR was incorporated in 2017, Toshiba bought a 6% stake in 2020 for USD\$9.5m valuing the company at over \$150m and staff increased from around 30 to over 50 (and growing) in 2020.

We also note that a large company, such as Fonterra, may have groups or teams that are at or close to the frontier even if the business as a whole is not. This suggests that using the term 'frontier ventures' rather than 'frontier firms' would be more accurate. At the least, it would be worth highlighting upfront that the definition of 'frontier firms' includes this possibility.

S2: Hence we suggest that the final report also emphasise the importance of focusing interventions on 'close to the frontier' or 'frontier potential' businesses (although 'close to the frontier' is mentioned in a few places in the report, it would be desirable for this to be highlighted upfront and for a broader range of business examples to be used).

The importance of businesses building dynamic capabilities and how this can be supported

We also support the arguments and findings in the report about the importance of dynamic capabilities in driving productivity growth (e.g., F2.9). However, the draft report provides only limited associated insights or recommendations about how the development of dynamic capabilities can be supported.

The previously mentioned study we commissioned on leading international innovation agencies (Stakeholder Strategies, 2020) identified that they are increasingly seeking to offer wrap-around support to clients beyond generic programmes, including dynamic capability building support. Although, as noted in the Productivity Commission report, dynamic capabilities are typically learned and developed through experience, rather than training, there are a range of ways in which this learning can be supported, including through international exchanges, mentoring and strategic alliances. We note that the Teece and Brown (2020) evidence report recommended the development of a dynamic capability building pilot programme with the involvement of the private and public sectors. Our review of international innovation agencies made a similar recommendation and Callaghan Innovation is currently developing a programme that aims to rapidly build and embed dynamic capabilities in suitable companies through a mix of knowledge transfer, coach supported experimentation and use of high intensity training across all levels of an organisation.

R1: We recommend that the final Productivity Commission report include the relevant recommendation from the Teece and Brown (2020) report and note that such a programme is being developed and will be piloted by Callaghan Innovation in 2021.

In addition to dynamic capabilities, it is well recognised that the development of good practices or 'ordinary capabilities' also supports productivity improvements (Teece and Brown, 2020) and the draft report scarcely references this. Indeed, a strong foundation of good business practices underpins the development of dynamic capabilities (Teece and Brown, 2020). In this context, the Productivity Commission report notes that NZTE provides its customers with capability building services but omits the fact that Callaghan Innovation also provides such services through, for example, our role with the Regional Business Partner Network, Digital Lean, Innovation IP and the Industry 4.0 initiative.

S3: We suggest that the final report include a discussion on the importance of good business practices/ordinary capabilities, in addition to dynamic capabilities, highlight ways in which these can be developed and reference Callaghan Innovation's role in supporting these.

The proposed review of innovation policies, finalisation of the RS&T strategy and proposed review of funding programmes

The report recommends that a full review of innovation policies is required (R.7.8). As part of feedback on this we would like to point out the significant imbalance between funding that's available for IP generation or value discovery compared to the funding to commercialise this research which results in high productivity job creation and scalable Frontier Ventures / Firms (which is where the value add to the economy happens). Secondly we think it's important to recognise that we still have significant work to do in New Zealand to provide wrap around services for commercialisation of science with the academic system still weighted heavily towards academic recognition not commercialisation success.

S4: As noted in our opening comments, we question the merits of such a review and suggest two sequential alternatives:

- An immediate process to identify major innovation and growth opportunities for New Zealand that are arising from Covid-19.
- Using this as a springboard to develop a mission-led innovation strategy for New Zealand.

Despite the significance of Covid-19's impact on the New Zealand economy, the draft report provides relatively limited discussion on the impact from either a negative or positive perspective. The discussion on migration policy does mention the potential to use Covid-19 to reset immigration policy, and the same can be said in relation to innovation and industry policy.

For example, other nations are using Covid as an opportunity to significantly accelerate investment in digital technologies:

- South Korea is implementing a 'Digital New Deal' to build a digital economy and is supporting thousands of businesses to adopt remote working, take part in e-commerce, improve IT security and adopt AI solutions.
- Vietnam launched the National Digital Transformation Roadmap 2025, which sets targets and guidelines to help it reach goals related to e-government, e-economy and e-society (for

example, for the digital economy to reach 30% of the country's GDP by 2030, compared to 5% in 2019) and the National E-Commerce Development Strategy for 2021-25, which includes specific measures to increase the participation of SMEs on e-commerce platforms.

- Singapore initiated and expanded a range of schemes to co-fund business digitisation expenses and the costs involved in adopting AI and data analytics.

In addition to digital opportunities emerging from Covid-19, we and others (e.g., the Edmund Hillary Fellowship) are seeing strong interest from entrepreneurs and highly skilled expats in investing in and/or establishing new ventures in New Zealand. New Zealand enjoys a privileged position of being virtually Covid-free and has a small window to maximise the benefits of this. Our COVID-19 research indicated that 60 percent of our customers thought that Covid-19 provided the potential to accelerate their work or seize new opportunities. The following Linked In post is consistent with much feedback we have received from entrepreneurs on the opportunities and challenges Covid brings.

 **Campbell Brown** • 2nd
CEO & Co-Founder at PredictHQ
3w • Edited • 

As a  in the  I'm proud seeing the  response to COVID. Watching Cricket, Americas Cup, AB's etc from a far with thousands attending is epic... HOWEVER, you now have an opportunity where even more super talented people want to move to NZ, but the criteria to do so is broken. People ask me about 'How can we improve the tech eco-system in NZ?' and it's not more capital (funds like Blackbird and Movac are now changing this), it's a lack of talent who have seen true scale. It may seem crazy suggesting this in the current climate, but acting now to attract new highly skilled migrants (as well as ex-pats) to NZ, can help scale our capabilities, and further diversify and grow our GDP. They can impart their skills on the eco-system, elevating not just by their direct outputs, but more importantly the up-skilling and experience they bring to wider teams. Who when they help create a NZ success story can again impart their knowledge, experience and capital to the next generation of startups. As always - I'm happy to chat **Jacinda Ardern** and Kris Faafoi 



   96 • 22 comments

Hence, rather than undertaking a review at this stage, we would suggest that a process be established to identify a small number of significant opportunities for New Zealand to take advantage of Covid-19 and what is required to advance these in the short to medium-term, which could relate to accelerating digitalisation, attracting entrepreneurial capability and investment, capturing initial opportunities from the significant pipeline of infrastructure projects in train or a different opportunity. The process could involve establishing a small expert team combining private sector and government expertise similar to the arrangements the Productivity Commission report recommends for a review of innovation policies.

S5: However, given the likely small window of opportunity and the risk that we are already tracking behind other nations, we suggest this should be a short, sharp process of no longer than several months, with a view to making recommendations mid-2021.

This could then be a precursor to a more substantial process to develop a mission-led innovation strategy for New Zealand. The draft report suggests that the Government update and finalise its research, science and innovation (RSI strategy) and engage with relevant stakeholders to develop a transparent implementation plan (R7.1 and R7.2).

S6: As noted earlier, we do not believe that further reviews or the current draft RSI strategy will result in the step change in performance desired, and suggest again that Covid-19 presents an opportunity to reset the approach. Additionally we suggest any focus on development of the RSI strategy should be done in tandem with Economic Development Strategy.

RSI strategies and innovation policy reviews are based on a traditional approach focused on innovation interventions that address market failures and improve the coordination of actors in the innovation system. However, the review of international agencies found that other countries are now investing in mission-oriented or mission led approaches and looking to optimise their innovation systems rather than 'fix' them (Stakeholder Strategies, 2020). These approaches are focused on incentivising innovation and investment across the public and private sectors in areas that address major societal and economic challenges or opportunities, often associated with significant R&D investment (e.g., energy, environment or health).

Enduring missions are co-created between businesses, research organisations and government. They encourage resources across sectors to be aligned around the major shared challenges. Central to this approach is a focus on strategic innovation, rather than relying on a range of firm or sector-based interventions to direct resources into the right areas.

Addressing societal and technological challenges associated with climate change could be one such mission. For example, the OECD has identified that at least 30 countries have established major initiatives to advance their economies in the areas of green transport, circular economy and clean energy R&D (OECD, 2020). These include:

- Australia – launched the Technology Investment Roadmap to accelerate the development and commercialisation of low-emissions technologies, with a view to investing in energy storage and low-carbon materials, amongst other things.
- South Korea – the Green New Deal is focused on supporting the economy to move towards a net carbon zero economy and includes the development of clean factories and remanufacturing technologies.
- Denmark concluded a landmark climate change agreement in June 2020 to quadruple the country's offshore wind energy capacity by 2030, invest in green technologies of tomorrow and support the green transition of industry.
- Japan – has introduced an Environment Innovation Strategy to reduce GHG emissions and achieve carbon neutrality. This includes Innovation Action Plans for the establishment of innovative technologies by 2050.

Adopting a mission to scale up climate-related innovation in New Zealand as one pillar of a mission-led innovation strategy would also support the implementation of the Climate Change Commission's recommendations in its recently released report.

S7: Hence, rather than a backward looking review process, which would examine ways of improving a range of individual interventions, we suggest a forward-looking, mission led strategy process.

Such a process would need to be accompanied by clear governance, targeting of capabilities (rather than sectors or projects), allow for experimentation and flexibility, ensure long-term certainty in investment rather than constant change, and involve genuine co-design (consistent with the report's findings (F.6.7) on what the effective implementation of innovation policy requires).

The proposed review of business assistance

The report suggests that the array of business funding support available is confusing for businesses and there is a plethora of government assistance initiatives available (F7.7). It recommends a review of support programmes with a view to reducing and consolidating the number of programmes, simplifying the process for firms to apply for assistance and to make it easier for businesses to identify relevant assistance, including by providing a common platform and 'front door' across programmes (R7.7).

Although there is always scope to improve the delivery of business support, we do not consider a separate review of business support is warranted at this time. In particular, we do not think that consideration of business support should be disconnected from the development of an innovation and industry strategy. Such a strategy and its implementation plan should identify the required levels and forms of investment that are appropriate to achieving each mission, including changes that are required to existing assistance programmes. Such a strategy may demand a more radical overhaul of the way we provide support for innovation across government.

In addition:

- As the report indicates, there are several initiatives that have been in place for some time that are designed to provide a front door and simplify the process for businesses, including the Regional Partner Network and business.govt.nz. Government and local business partners work together each year to identify ways of improving these initiatives.
- Callaghan Innovation has established the Scale-Up NZ portal as a gateway to the broader New Zealand innovation ecosystem, enabling businesses to not only connect with support but to connect with each other. The platform provides in-depth information about innovative NZ businesses, as well as investors, hubs and multinational corporations. Businesses and individuals can use it to build relevant industry connections, based on their unique business requirements.
- The client managers of NZTE and Callaghan Innovation work closely together to ensure we provide a 'no wrong door' system for businesses. Client managers in both Callaghan Innovation and NZTE are knowledgeable about the capabilities of partner organisations and the fuller range of services available across government. They link businesses to whatever institutions and resources are most appropriate, inside or outside their own agencies.
- Finally, the range and number of support schemes in New Zealand does not appear to be especially extensive or confusing compared to support offered in other countries, including small advanced economies. All countries develop different programmes over time to address different types of issues and opportunities and to cater for different types of clients. The end result in each case is a large range of support programmes. Moreover, all countries have

implemented a range of new or enhanced business support initiatives in response to Covid-19, which has increased the size and complexity of their respective support systems, often more than has occurred in New Zealand.

Selecting areas of focus and how Callaghan Innovation could support this

We agree with the broad findings about the need for and benefits of investing in areas of focus or groups of capabilities, which may not correspond to industries defined by standard classifications (F6.5). We agree that this is not about 'picking winners' but is actually about backing momentum in areas where the innovation ecosystem is becoming well developed. We also agree that, in the past, the selection of areas of focus have varied (F7.5) and that greater stability would be desirable.

However, the case has not been made that another process is required to select more or different areas of focus at this time. As the Productivity Commission report notes, the Government's current Industry Transformation Plans (ITPs) are already designed to focus private and public sector support in high potential areas of the economy, i.e., agritech, food & fibre, advanced manufacturing, digital technologies etc, and the process was refreshed mid-way through 2020 in response to Covid-19. These ITPs involve public and private sector engagement and oversight processes as is recommended in the Productivity Commission report (R7.5).

Most of these processes are still at relatively early stages and the outcomes have yet to emerge. However, those that have progressed the furthest, i.e., agritech and digital tech, are showing promise and are identifying a range of cross-portfolio challenges and opportunities to be addressed. For example, the agritech action plan has identified six workstreams covering global connections, commercialisation, investment, regulatory settings, skills development and government support, as well as high impact projects related to a venture capital fund, horticultural robotics and disruptive nutrients technologies.

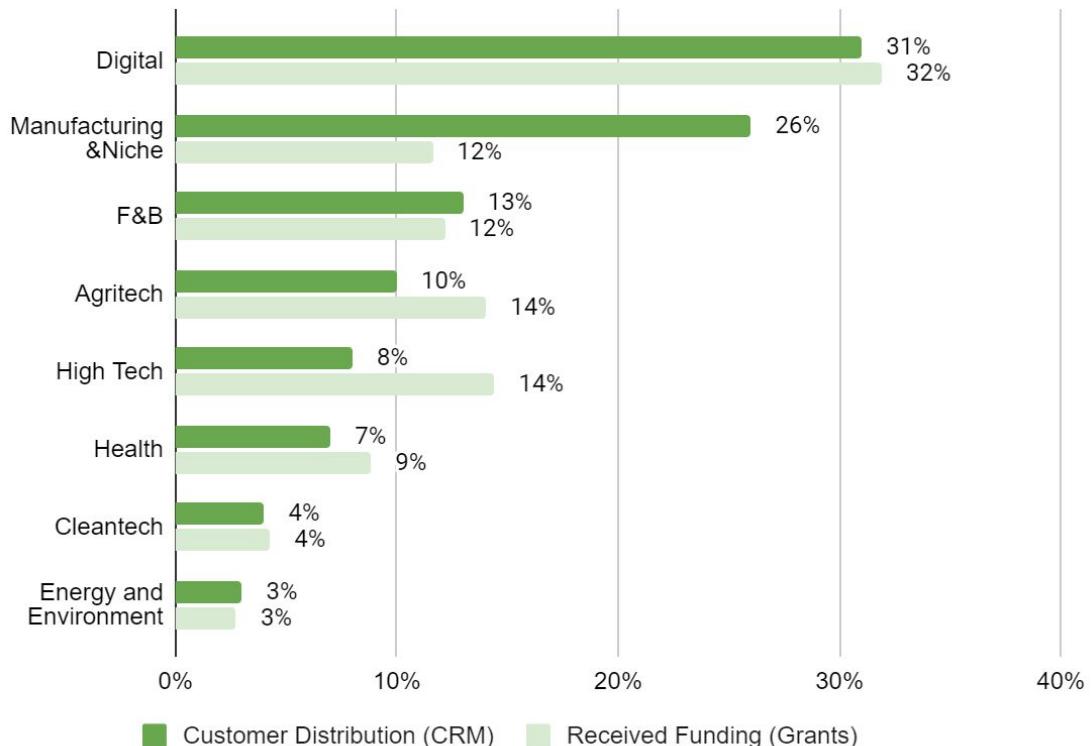
Hence we do not agree with the first point of R7.4 which recommends that the government partner with stakeholders to choose yet another small number of areas of focus at this time. Indeed, this would run counter to the report's finding that there has been too much change in selecting areas of focus. The ITPs should be allowed to run their course.

S8: If additional or different areas of focus should be added to the current ITP mix in future, we suggest that these should result from the mission-led innovation strategy process we have proposed.

However, we do agree with the second point of that recommendation that large-scale investment will be required to make measurable progress in these areas of focus. Decisions on that investment will be made by Cabinet as each ITP process reports back.

We have already noted in this submission that finding (F7.6) is incorrect i.e., that government funding channelled through Callaghan Innovation does support strengthening the innovation ecosystem. Furthermore, the report downplays the level of investment that is currently targeted at firms in particular areas of focus. The report notes that Callaghan Innovation has sector teams focused on supporting businesses and groups of businesses in the area of health technology, food & beverage, digital and advanced manufacturing but clients in these areas represent a significant proportion of services.

Total Customer Engagement vs Grants Recipient - Last 12m



Following from the above, in relation to Q.7.1:

"How could Callaghan Innovation and New Zealand Trade and Enterprise (NZTE) best marshal a proportion of their resources to build the innovation ecosystem of firms operating in areas chosen by the Government for focused innovation policy? How would this fit with their current services to individual firms? How should responsibility for this approach best be shared between Callaghan Innovation and NZTE?"

Our first response is that we are already supporting areas of focus and that this comfortably fits with our services to individual firms. If, through an ITP or an innovation and economic strategy process, we are tasked with focusing more (or less) resources on different areas of the economy, we will work with MBIE and NZTE to determine the best way to do this and how our services can complement their services in supporting the same areas of focus. This could involve specifying a certain proportion of funding towards areas of focus; giving greater weighting to businesses in areas of focus when making decisions on applications for funding; using joint decision-making across agencies; and/or designing new support mechanisms for areas of focus.

However, our second response is that such an approach needs to go well beyond Callaghan Innovation's and NZTE's resourcing.

N3: We agree with the draft report's findings that a successful innovation and industry strategy requires a large step up in resourcing. We note this should include consideration of the full range of economic development and commercialisation funding as well as how key investment vehicles in New Zealand, such as the publicly supported venture capital funds, the New Zealand Super Fund and ACC, could support the areas of focus.

Attraction of high value, knowledge intensive MNCs

The report notes that New Zealand lacks knowledge-intensive multinational corporations (MNCs) (F5.3) and suggests that the government take a more proactive approach to attract high value, knowledge intensive MNCs to New Zealand, which would help develop local capabilities and networks (R5.1).

New Zealand has few MNCs but in our view that largely reflects key characteristics of our economy. Whether MNCs are attracted to a country depends on a range of characteristics such as the size of the domestic market, the income level of the population, proximity to other markets, trade barriers, access to relevant factors of production (skills, technologies, natural resources), regulatory factors and relative corporate tax rates and exchange rates. Due to our limited scale and distance, New Zealand has, until the rise of the digital economy, largely only been an attractive location for MNCs that wanted access to our primary resources.

In theory, increasingly MNCs that deliver weightless goods and services shouldn't be as concerned with New Zealand's limited market scale and distance from other markets but, as noted in the Productivity Commission draft report, a range of other factors will need to be attractive for this to occur and some, such as our relatively small talent pool, will take considerable time to alter. Competing on other potential attractors, such as tax incentives, risk New Zealand participating in a 'race to the bottom'. In this context, Covid-19 has seen a range of countries, particularly in Asia, implementing or accelerating 'reshoring initiatives' to reduce economies' reliance on foreign markets and supply chains. For example:

- Japan has introduced significant subsidies to encourage Japanese businesses to re-shore their production, including for co-investment, sales channel development and digitalisation.
- South Korea is providing tax cuts, funding for relocation costs and advisory services to re-shore 100 Korean businesses by 2022.
- Malaysia introduced the "Malaysia as an Attractive Horizon for Businesses" initiative, including significant tax incentives on major investments in manufacturing sectors (0% tax rate for 10 or 15 years) and for Malaysian companies reshoring (100% investment tax allowance for 3 years), facilitated approval processes, and grants to assist Malaysia owned companies in innovation-based manufacturing and service industries to shift to higher value added activities.

In our view, all of this means that it will continue to be very difficult for New Zealand to attract MNCs to base operations in New Zealand, although we agree with the findings in the report that there are certainly lessons that can be learned from other nations, such as Israel, about how to make the environment as conducive as possible for this investment. However, we suggest that the focus does not need to be on MNCs per se but rather on how to attract high quality FDI in any form, including joint ventures, intellectual property positions and even acquisitions, as long as New Zealand benefits from knowledge/tech transfer, capability development, paths to market

etc. Given New Zealand's characteristics, these foreign investment paths are more realistic and just as relevant.

S9: Hence, we suggest that recommendation R5.1 be changed to read: "The Government should take a more proactive and deliberate approach to attracting FDI that will add value to the New Zealand economy."

In relation to the question:

"**Q 5.1.** What would a well-designed package look like (including its delivery) that is proactive and targeted to attract multinational corporations that are knowledge-intensive, high value-added, oriented to exporting and a source of spillover benefits?",

assuming this applies to high quality FDI in any form, our observation is that key differences between the typical approach to FDI attraction in New Zealand and what we have observed in relation to successful FDI efforts overseas and those associated with our clients include:

- Targeting of specific potential FDI partners based on a thorough understanding of the capabilities that exist that could be of value to those investors.
- Leveraging networks of investment intermediaries, such as advisors, accountants, banks, industry organisations etc to generate leads and support cases for investment.
- Comprehensive, cross-government, national and regional assistance tailored to the MNC/investor/s being targeted (spanning R&D, education & training, infrastructure, consenting support etc)
- Well resourced aftercare and post-investment services, leading to additional investment from investors that already have commitments in the country.

Policy and regulatory issues

The report discusses several policy and regulatory issues that have been identified as barriers to innovation and productivity growth, based on industry case studies (in dairy, horticulture, health tech and software). Our response focuses on two of these.

Refocus migration policy settings

S10: We agree with the tenor of recommendation R8.2 to focus migration policy more on lifting productivity and on highly-skilled migrants but suggest that this not only include technically skilled migrants but explicitly reference skilled entrepreneurs, investors, innovators and leaders.

As is noted in the report, migration is an important channel for diffusion and for New Zealand businesses to improve dynamic capabilities but these insights and practices can equally come from entrepreneurs and investors as they can from technically skilled staff. Although the associated NZIER evidence base report (NZIER, 2020) suggests that policy settings to allow businesses to attract and hire entrepreneurial and wealthy migrants are already high quality, our clients are finding it just as difficult to access those types of skills as they are technical skills. In addition, New Zealand still has a very limited number of serial entrepreneurs that can bring the ambition and capital needed to support a step change in innovation and hence current policy settings on their own have not been successful in attracting these types of migrants. As noted earlier, our observation is that there is increasing interest from offshore entrepreneurs and investors in New Zealand given its current 'safe haven' status and we should identify how to

capitalise on this, including identifying any unintentional barriers that may exist from migration or related policy settings.

C2: It may well be that the intention is for the recommendation to cover this broader scope but it would be useful to clarify this in the final report.

Improve the incentives on DHBs to participate in the health tech ecosystem.

We strongly endorse recommendation 9.6 to use the health sector reforms to improve the mandate, funding and incentives for DHBs to work collaboratively with the health tech innovation ecosystem.

The health tech sector is currently the largest secondary technology sector in New Zealand, with significant opportunity for further growth in coming years, particularly in a post-Covid and health aware environment. Currently, with the couple of exceptions of Waitematā and Canterbury noted in the Productivity Commission report, DHBs do not facilitate early-stage health tech innovation. This is not a criticism of the DHBs because, as is also noted in the report, they are not currently incentivised or empowered to do this. However, this represents a significant missed opportunity to enable early-stage New Zealand health tech ventures to access, trial, monitor and iterate their concepts in local clinical settings and commercialise their ideas. HealthTech companies that have sought greater engagement with DHB's include the likes of Aroa Biosurgery, Pacific Edge, SHI Global, The Clinician and Aranz Medical. These companies have ultimately had to also focus on offshore clinical settings to ensure relevance to international markets as well.

Equally, this represents a missed opportunity for the New Zealand health system to access locally developed technologies and therapies and the potential productivity improvements that can come from those. Callaghan Innovation established the HealthTech Activator, in part, to help fill some of this gap.

The recommendation is also consistent with the New Zealand Health Research Strategy 2017-2027. That Strategy includes the following strategic priorities:

- Strategic Priority 2: Create a vibrant research environment in the health sector, including an action to strengthen health sector participation in research and innovation
- Strategic Priority 4: Advance innovative ideas and commercial opportunities, including actions to support transformative and innovative ideas, create more industry partnerships, and to strengthen platforms for commercialising innovations.

There will be lessons from the implementation of the Strategy to date that can inform the implementation of recommendation 9.6 and the Productivity Commission may want to reference that Strategy in the final report.

Developing Māori frontier firms

We support the insights and recommendations in the report in relation to Māori firms. We were surprised that our work in supporting innovation in the Māori economy and Māori enterprises was not referenced at any point. We are already backing activities that are consistent with recommendations in the report.

As the Commission may be aware, Callaghan Innovation has a specialist team that works with iwi organisations, land trusts, incorporations and businesses that self-identify as Māori. We work with these organisations to connect them to the right services and networks they need to innovate and

grow faster. We have engaged with 118 Maori customers in the last 12 months, with almost half of these receiving a grant.

Consistent with the report's insights, we are focused on supporting a Māori-led approach to improving the Māori innovation ecosystem. For example, we partnered with Te Wānanga o Aotearoa and Māori leaders to develop and implement Kōkiri, which is a business accelerator focused on speeding up the development of early-stage Māori-led businesses. It is built upon a foundation of Kia angitū te tāuira (founder success), designed to strengthen founders and in turn strengthen their business. Another example is Te Whare a Māori – The Māori Innovation Hub at Gracefield, which offers Māori innovators a shared working space and support to assist with collaboration and innovation.

We agree that further research is required to better understand the productivity and performance of Māori businesses and how they contribute to the well-being of Māori (F4.10 and R4.2). In this context, we worked with Figure.NZ over several years to develop and launch the Pātaka Raraunga website. The website consolidates Māori data from a large range of sources into one hub with tools, reports and graphs in order to make the data more accessible.

We would be happy to share lessons from these initiatives and our broader engagement with Māori ventures with the Commission to inform the final report and the question raised (Q.4.2) about how the Government can help build the pipeline of Māori business people with the necessary skills and experience to govern and manage Māori frontier firms.

We have identified that Māori have a much higher propensity for innovation, but under access government services which are rarely Māori centered or considered. Outsourcing to bridge the capability gap is a missed opportunity to build internal capability and increase productivity. Flexible, responsive interagency approaches building long term relationships and co-designing initiatives and solutions with Māori at the centre is a proven method of which Callaghan Innovation has several examples.

S11: Given our role and activities, we suggest we could also play a valuable role in helping to scope the proposed Hui Taumata (R4.1) alongside the agencies currently listed in the draft report.

Learning from Small Advanced Economies

The report stresses that New Zealand can best learn about how to increase productivity, innovation and foster frontier firms from small advanced economies, rather than other economies (e.g., F2.9).

We noted earlier that while New Zealand can learn from the experiences of other SAEs, we need to go beyond this to achieve a step change. In addition, we suggest the final report also note that there are lessons from other 'non-SAE' geographies that can be relevant due to the economies' industrial structure and/or because they are leading practitioners, and/or they are more immediate competitors, and/or because they are key markets (e.g., the UK, the US, Australia).

As a specific example, in developing initiatives to support health tech innovation we have drawn on lessons from the United States because they are a major market and have different regulatory and reimbursement pathways than in New Zealand. Understanding the complexities associated with US regulatory (USFDA requirements) & reimbursement practices is often a pacing item for local health tech companies looking to scale and raise appropriate capital. Conversely, we also drew on lessons from MTPConnect (the Medtech and Pharma Growth Centre) in Australia in developing the HealthTech Activator because of the similar pathways for health technology

commercialisation in that economy and the similarity of capability gaps. Another example is the recent review of international innovation agencies (Stakeholder Strategies, 2020), which identified lessons for mission led innovation strategies and potential initiatives for New Zealand to consider from agencies in the UK, Canada and Australia as well as small economies like Finland, Sweden and Israel.

S12: We also suggest that the final report do more to note some of the limitations associated with comparing New Zealand to other SAEs.

All of the SAEs mentioned are surrounded by or close to significant markets, unlike New Zealand, and all but Israel have a much longer history of business development and innovation than New Zealand has experienced. Although the report notes that New Zealand's size and distance are genuine constraints (e.g., F2.4), it neglects a key point that history and the evolution of capability also matter. For example, many of the example leading companies and related clusters mentioned in the report from other countries have been in existence for around a century or more (e.g., Maersk – est 1904; Novo Nordisk – the original two companies were established in the 1920s; Carlsberg – est 1847; Lego – est. 1932) and have gone through several stages of transition.

New Zealand's history of business development and innovation is much more limited and this needs to be taken into account in conjunction with the small local market and distance. There are only a handful of companies in New Zealand with a relatively long development history (e.g., Fisher & Paykel, Foodstuffs, Talley's, Z Energy/Shell).

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