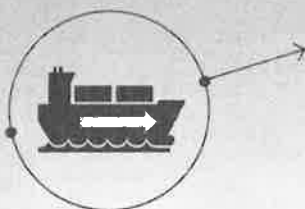


Fit-for-purpose innovation ecosystem



Innovation and creativity in the primary sector will fuel the future economic prosperity of New Zealand. Our ability to differentiate our products to the world's more affluent consumers will create a thriving engine for our country.

An effective innovation ecosystem is critical to enable the sector to thrive in a dynamic and evolving world. Our contributors believe we can no longer afford to have a system tied to traditional academic benchmarks.

Instead, we need a system that directly measures the value that is created from its output. The innovation ecosystems in Silicon Valley or Israel are focused on commercial outcomes, and are models we should aspire to. We need to look past the delivery of perfectly polished scientific papers; and learn how to connect our commercial needs with science explicitly.

A key message from many discussions was that research institutions often prioritise scientific process at the expense of speed and agility. This is unsustainable in a world where the window to commercialise an innovation is constantly shrinking. As we enter the fourth industrial revolution, New Zealand is sitting on top of the powder keg of an agricultural revolution. This revolution is about to transform how produce is grown, processed and consumed around the world – yet we don't seem to be recognising the opportunities that this offers us. We need to accelerate our innovation systems if we want to remain relevant into the future.

Many of our contributors have spent significant time working with or within the science system. Their views provide clarity on what the system needs to enable us to produce a pipeline of transformational innovation. We received many observations about opportunities to enhance the system. We must ensure that it is fit-for-purpose to propel the primary sector towards a more prosperous future.





Impact of lack of industry vision

One contributor noted that we have no shortage of scientists or Government investment into science – yet we are short of the vision to focus our innovation on the transformational bets for the country. We have been arguing in the *Agenda* for years that there is a need for the industry to collaboratively articulate its vision. Without such a vision, it is difficult to identify the highest priority areas that innovation investment should be directed towards.

A number of our contributors highlighted the collaborative work that is currently underway to develop a national forage strategy. The goal of this project is to articulate a vision as to how our pastures can be optimally utilised by New Zealand farmers, and guide R&D investment to enable farmers to realise the potential of their pastures. This is a perfect example of how a vision can guide collaborative investment in to innovation, in turn maximising the benefits for all stakeholders. The creation of a clearly articulated vision for the primary sector will ensure that public investment is partnered with private capital to increase the probability of capturing the best opportunities for value uplift.



Challenges of doing science when the goal-posts keep moving

During the sixties and seventies, the primary sector in New Zealand made long-term intergenerational investment into research. This investment has provided a pipeline of innovation that has supported world-leading productivity growth for decades. The goal-posts in place during this period moved very little, simplifying the challenge of scoring goals and creating success.

Those investing in and delivering innovation today face more significant challenges. The continuous change in the communities' expectations of the sector, and the needs of consumers, means the goal-posts are consistently moving. It is therefore critical that investors and providers are scanning globally for the best opportunities to innovate to secure market leadership. Capturing these opportunities necessarily means company's need to take on greater risks. Taking risks about the future will mean more projects will fail to meet expectations. Organisations therefore need to take a portfolio approach to their investment, spreading their risk, and increasing the likelihood that they seek out collaborative partners to co-invest with.



Regional science focus

We gain local insights from holding our round-tables in varying cities around the country. One of the most significant variances we observe across the country is the varying science and innovation needs that exist in different regions. A process is underway to establish some regional science hubs. The Government received 24 proposals from which they have selected three for further development (relating to viticulture and oenology in Marlborough, space science technology in Central Otago, and precision agriculture in Southland). The ability to embed highly localised and relevant science capability closer to the users of the technology makes sense to us. However it is also important to ensure that the science remains intimately connected to the evolving needs of our markets and consumers, and not isolated from it. From the information available it appears the proposals are focused on productivity rather than consumer needs. There is a concern the hubs will add more governance and overhead to the science system. We strongly support connecting scientists to the users of their work, but believe the focus should be on creating regional landing bases for scientists to engage with the industry.



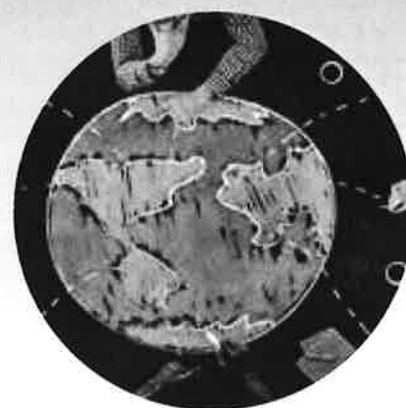
Problem-focused innovation

Many primary sector organisations keep their issues and problems close, working autonomously to try and solve them. When one looks at the best-in-class innovation ecosystems, a key attribute of these systems is that organisations are more willing to share their problems and crowd-source solutions. It is not unusual in Silicon Valley for groups of apparent competitors to join together to spend a day or a weekend hacking solutions to a specific problem the group has been challenged with. Diverse thinking and collaborative problem-solving will accelerate the speed at which issues are addressed and innovation brought to market. Accelerating the innovation rate by open-sourcing our problems and working collaboratively can challenge many organisations but is driving success around the world.



Specialist commercialisation resources

Another regular theme raised by contributors is the challenge of successfully commercialising innovation in New Zealand. There is no shortage of good ideas – we often lack the right people to deliver the solution from the lab to the world. The skill sets needed to develop a product are very different to those required to successfully market a product; and we lack the depth of commercialisation specialists that are able to fuse the handover of a technology to the commercial sector and take the product to market. One approach suggested by leaders is that innovators should be mentored on how to realise value from their ideas. This requires greater investment into post support networks to ensure our best ideas consistently find their way into the daylight.



Leveraging innovation occurring around the world

A comment made on a number of occasions was that our science budgets are comparatively small when benchmarked globally. This reduces our likelihood of unlocking transformational innovation compared to those with greater resources. A core competency we must develop is gaining access to, and leveraging, relevant innovation occurring across the world. In last year's *Agenda* we proposed creating a standalone capital fund, to take early stage investment positions in transformational technologies to provide New Zealand companies with early mover advantages as these innovations are commercialised. This requires a partial refocusing of our science system. Shifting away from fundamental discovery, we must tailor and adapt globally-sourced technologies to make them commercially relevant for our industries. Without taking and leveraging proactive positions in key global innovations we risk stagnating with a science system largely playing catch-up on innovations created by well-funded competitors around the world.

Innovation can take many forms – original research, new approaches to the market and different models for commercialising intellectual property. The development of Rokit Apples has seen many innovations come together to create rapidly growing global demand for this unique product.



Is New Zealand's science system where it needs to be?

The New Zealand Government makes a significant investment into relevant research and development for the primary sector. This is made through a range of organisations and programmes; including the Crown Research Institutes (CRIs), universities and Callaghan Innovation; as well as into programmes such as Primary Growth Partnership (PGP), National Science Challenges, CORE Funding and a range of contestable funding initiatives. Few contributors questioned the sufficiency of the Government's investment. There was much discussion, however, on whether the investment is effectively delivering the innovation step-up needed for long-term value growth.

Contributors recognised the Government is looking to cap its investment into innovation, expecting other organisations to lift their investment. This is resulting in the rules surrounding various programmes being tightened. It was suggested that this year's funding round had been the most contestable to date. Highly contestable funding systems tend to favour investigator-led research programmes. These programmes have more ambitious goals and the backing of an investigator with a proven track record (albeit they may lack alignment to a commercial purpose). Such a bidding process diverts the focus of our best investigators from their work to write funding proposals. Consequently the nexus between Government investment, science output and economic return is becoming blurred.

There was another issue raised relating to overhead levels being built into the public science system and the impact that this has on the efficiency of the system. The PGPs and National Science Challenges have introduced new levels of governance and administration into the system with no link between the growing overhead bill and enhanced innovation returns. Concern was raised that those guiding funding decisions are often more connected to the generation of science rather than its commercialisation. Consequently the wrong lens may be getting applied to the allocation of funds.

We have already touched on the perceptions that New Zealanders have about failure and it was suggested that the negative connotations of failure are shaping the government's investment into R&D. Funding is being pushed towards projects with lower risk profiles, perhaps reflecting a concern that the failure of a project will hit the headlines. The country needs game-changing investment – and the Government needs to direct funding towards high-risk projects; as without the right support, this work will just not happen.

There are varied perspectives on how easy it is to obtain Government co-funding for innovation programmes. Some commentators suggested that the hurdles to securing the funding are too high, so 'why bother?' Yet others note that thresholds are too low at times, particularly in respect of requiring a clear connection to market opportunity. A simpler, more easily accessible system for general R&D funding would accelerate overall innovation. Reverting back to a credit mechanism through the tax system would make it easy for relevant investment to receive Government support, without the cost and complexity that comes with current processes.