

17 May 2024

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Science Sector Advisory Group
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DairyNZ submission: Science Sector Advisory Group – Phase 1 consultation

DairyNZ welcomes the initiation of the Science Sector Advisory Group and its first phase of work on the role of science and innovation in Aotearoa New Zealand.

We are an industry-good organisation, funded by all dairy farmers to conduct research, policy work, and extension. We are deeply involved in the New Zealand science system as a private research organisation with core competencies in dairy and environmental science, and economics. We participate as a research investor, a collaborative research partner (both nationally and internationally) and as a user of science.

This submission shares our initial reflections on New Zealand's science, innovation, and technology systems, informed by our long history of research engagement with government, farmers, CRIs, universities, agribusiness, and other research entities.

We urge the Science Sector Advisory Group to keep a clear view of the issues to avoid replicating the problems through what could appear to be convenient solutions.

Summary of our submission

1. Science in New Zealand is underfunded. No amount of reorganising institutions and funding mechanisms will be sufficient to resolve this. Underfunding includes:
 - a. Public science spending generally.
 - b. Poor investment by government and regional councils in operational research, data collection and performance monitoring.
 - c. Private research funding that is only average for small to medium-sized enterprises in the OECD.
2. The low levels of investment are compounded by over-competition, fragmentation of investment and delivery, and lack of effective priority-setting. This leads to:
 - a. Too many public entities in the system.
 - b. High overheads through the cost of governance, management, and inefficiencies associated with overly competitive and oversubscribed funding processes.
 - c. Low people productivity and poor career prospects.
3. MBIE's focus on transformational science has led to low investment in critical foundational and incremental science.
4. In an under-funded system, priority setting matters. Funding should be allocated to high priority areas with well-planned research programmes that are influenced by active participation of end-users. Greater international collaboration can support lower priority areas.
5. The structural issues outlined above need to be addressed if the science, innovation and technology system is to contribute to Aotearoa New Zealand, including – for example – the Government's target of doubling export value.

Question Set 1: The Science, Innovation and Technology System

1. What future should be envisaged for a publicly supported science, innovation and technology system?

DairyNZ seeks a future science system that is mission-led and works with public and private sector users to deliver a more productive economy, and greater environmental and social benefits for all New Zealanders.

2. What are the opportunities, challenges, and barriers that need to be addressed to build a more thriving research, science, innovation, and technology system that delivers positive sustainable growth and prosperity for New Zealand?

New Zealand's future science system needs:

- Increased investment by government (central and local) and the private sector.
- An explicit, mission-led focus on addressing the key challenges that our country faces, with close collaboration between public and private sector users and an emphasis on practical use and application of the science. (Note: while we have supported the National Science Challenges, they seem to have under-delivered on their 'moonshot' ambition. In our view, this was due to a fragmented approach with an absence of large, visionary projects with the ability to impact at scale).
- Strengthened international collaboration at individual scientist and organisational levels.
- Successive governments that have adopted a culture of evidence-based policy and data-driven action. This requires government agencies to be commissioning and engaged with research organisations and communities.

3. What principles should underpin the design of a science, innovation, and technology system for New Zealand, given its demographic composition and distinctive cultural makeup, its geographical position, and its social, environmental and economic futures?

One of the major structural barriers to greater science efficiency, effectiveness and impact is the number of public research and funding entities and the level of competition between them.

We agree that closer partnerships are required between publicly funded research entities, the private sector, government agencies and communities. Developing these partnerships will require time (so less time is wasted developing bids and on over-management), shared interests and adequate funding. As such, partnerships, especially with end users, should be seen as an investment in relevance and delivery and funded accordingly. In turn, effective partnerships increase the chances of co-investment and in-kind support.

Mātauranga Māori should be meaningfully embraced and respected in any future system and supported with appropriate funding structures. Effort should also be dedicated to building a more culturally diverse science workforce.

When prioritising investment in research, the Government should be focused on:

- Impact of the issue for New Zealand.
- The gap between current and desired state for key metrics.
- Unique questions in the New Zealand context.

By adopting a mission-led focus and bringing together stronger, more impact-driven teams, we can leverage our small science system to be more effective and better connected both domestically and internationally.

Question Set 2: Public Research Organisations

4. What is the role of public research organisations such as Crown Research Institutes (CRIs) in the New Zealand context?

As noted in Question Set 1, we consider there should be fewer CRIs to reduce duplication and overheads. There should also be a shift, led by funding, to a more collaborative mindset. Research governance structures should be focused on delivery and impact, with a much reduced need to focus on profit and cashflow.

To the question of whether public research organisations should be public good facing or private good facing, we consider they should span both. There are many examples where the same research has both public and private benefits, e.g. soil and water research.

These publicly funded entities should also always aim to utilise IP. Sometimes this requires patents to provide a business case to invest in product development. At other times, sharing and publication is the route to impact. This requires skilled practitioners with close links to business.

5. Does New Zealand need an advanced technology organisation doing applied and developmental research? If so, how would it be structured, governed, and organised? How would the private sector be engaged?

No specific views to share.

Question Set 3: The Innovation System

6. Does New Zealand have appropriate mechanisms to develop the innovation pipeline, attract global partners and funding?

New Zealand has made gains in some specific areas, for example the recent creation of AgriZero to bolster the innovation pipeline for agricultural greenhouse gas mitigation technologies. However, more is needed for productivity to lift and New Zealand producers – both agricultural and elsewhere in the economy – to remain internationally competitive. This includes improving the pace at which technologies progress through the pipeline, including addressing regulatory hurdles and other barriers to market. Maintaining the ability of the private sector to attract co-funding from government will also be important to this pipeline if greater proportions of funding are allocated directly to CRIs (or their replacements).

Question Set 4: Contestable Research

7. What is an optimal structure for managing mission-led and contestable research?

We agree that science policy should be separate from funding decisions. The latter requires a government agency that has a long-term strategic investment mindset.

We also agree that New Zealand needs to rationalise its research funding mechanisms – there are currently too many, often addressing the same research area or issue.

To the question of the level that prioritisation of research and research investment should occur, we suggest a multi-layered, sequential prioritisation process under the oversight of a single entity:

- i. Split of funding between local government, central government (departmental) and external government investment. (We note that local and central government has been able to cut their research budgets without challenge).
- ii. Split of external investment by explicit topics or missions. Funding levels might be informed by the gap between desired and current states of key outcomes (e.g. water quality, economic diversity) and whether the topic is amenable to research.
 - a. With a lead organisation, with a best teams/collaborative mandate but an outcome focus (i.e. collaboration is the means to the end).
 - b. These lead organisations will not always be CRIs or universities.
- iii. Split of investment across horizons/quadrants guided by a road map for each topic or mission.
- iv. Separate funding mechanisms (e.g. Marsden) for early career development and investigator-led research. This might partially prioritise investment into research aligned with the key topics or missions.

Expertise should be developed relevant to the priority topics. The priorities should be sufficiently long-term to guide capability building. Broader (but smaller) capability can then be built in universities and through investigator-led funding.

Effective leadership and a culture of collaboration will be required to ensure the system better coordinates research across priority areas, rather than the competitive, siloed approach that is often found in the current system.

Structured input and review from scientific peers and end users should remain a focus for any new system in ensuring effective and efficient science.

Question Set 5: Government Research Needs

8. How should the government's own research needs be identified and addressed? How should such research be quality assured?

Government research needs should be identified, addressed and quality assured in the same way as other science needs – via an effective and transparent prioritisation process and rigorous review (see also our response to question 7).

Thank you again for the opportunity to share our high-level views. Please do not hesitate to contact DairyNZ if you have any questions (laura.kearney@dairynz.co.nz). More information can also be found in our [2022 submission to Te Ara Paerangi](#).

Nāku noa, nā,



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