Innovative Research Universities

Australia's draft National Science and Research Priorities – IRU Response

The Innovative Research Universities (IRU) supports the development and refinement of Australia's draft National Science and Research Priorities (the "Priorities") and the National Science Statement. The draft Priorities aim to embed First Nations knowledge systems into research areas of national importance, and leverage Australia's research strengths towards areas of critical need. The Priorities serve a legitimate purpose for guiding new public investment, when paired with a strong system of investigator-led "bottom-up" programs guided by peer-review.

The draft Priorities cut across traditional discipline and sector boundaries, and effectively set out the "what" and "why" for Australia's science and research efforts over the next decade. However, the Priorities are less clear regarding "how" they will be implemented, how they will engage with First Nations and interdisciplinary knowledge, and how they will complement the broader system of government support for research. The contribution of Humanities and Social Sciences (HASS), particularly towards enacting behavioural change, could be strengthened. The foundational role of the school and continuing education sectors could also be better emphasised.

The IRU response outlines six main areas for refining the Priorities:

1. Emphasising how the Priorities will achieve behavioural change and community acceptance;
2. Promoting science at all levels of education to ensure all Australians understand and support the Priorities;
3. Better supporting Indigenous (and non-Indigenous) academics to engage with Indigenous communities and share the workload of embedding First Nations knowledge systems into the Priorities;
4. Collaboratively developing critical research questions to guide immediate action in the Priorities' critical research areas;
5. Considering mission-based compacts (or similar) to guide new public investments in Priorities;
6. Re-stating the purposes of the Priorities and ongoing support for basic research in the National Science Statement.

IRU feedback on each of the consultation questions is outlined in detail below.

IRU Response to the Consultation Questions

1. **The draft priorities intend identify specific challenges facing the country that will require multidisciplinary and multisector efforts to address. Do they achieve this objective? How can we improve them?**

The four draft Priorities balance the need for openness to a broad range of disciplines and researchers (e.g. healthy communities; innovative economy; a resilient nation) versus concentration on more narrow, "bounded" key priorities (e.g. net zero future and biodiversity). The draft Priorities align with IRU feedback on the key challenges of climate change, sustainable food and agriculture, preventive health, and environmental and community resilience.

Partly as necessitated by limiting the number of priorities, some challenges facing the country are absent or limited. Not enough attention is paid to the care sector in the draft Priorities, and also other areas such as cybersecurity, artificial intelligence, and the impacts of digital technology on everyday life. The Priorities also only partially address the development of the service industries that underpin economic and social wellbeing (e.g. education and social services; the role of the caring professions; responsible development and use of data in health and care), advanced manufacturing and the circular economy. Although these challenges may not warrant stand-alone Priorities, they could be incorporated under the critical research areas within the Priorities.

There are two further areas where the Priorities could be strengthened:

1. How the Priorities will achieve behavioural change and community acceptance; and
2. The foundational role of the school and continuing education sectors for ensuring all Australians understand and can contribute to the Priorities.

Improvements in science and technology will be far more effective if they have community acceptance. “Priority 1: Ensuring a net zero future and protecting Australia’s biodiversity” is a clear example where scientific and technological solutions will only be successful if they are accepted and acted upon through behavioural change. “Priority 3: Enabling a productive and innovative economy” focuses on lowering energy emissions and decreasing carbonisation through technology, but does not explicitly consider how behavioural change will contribute to this outcome. Likewise, the challenge of increasing business engagement in research and development and improving productivity also contain inherently humanistic dimensions.

Humanities and Social Sciences (HASS) research plays a vital role in understanding the research translation process and contribution to skills critical for productivity growth. The Productivity Commission’s 2023 *5-year Productivity Inquiry: From learning to growth* outlined how interpersonal, general and foundational skills will underpin future labour productivity in newly created jobs. As routine tasks are automated, interpersonal skills and critical thinking will become more important. For the draft Priorities to be most effective, engagement with HASS will need to be strengthened, possibly with explicit and dedicated critical research areas, rather than only implicit inclusion.

Having a diverse range of people engaged and onboard necessitates a widespread understanding of how science can positively contribute to social and environmental solutions. It is also important to build acceptance of possible unintended consequences. The Priorities need to consider how school, vocational and continuing education sectors can contribute to ensuring that all Australians can actively participate the Priorities and equitably benefit from their realisation. The 2023 NAPLAN results indicated that less than two thirds (64%) of year 9 students met or exceeded the “challenging but reasonable expectations” of proficiency in numeracy. Just over half (58%) were proficient in writing. Many less prepared students will be entering higher education over the coming decade, alongside further growth in the vocational education and informal training. The university sector typically engages with better prepared school leavers, but promoting science at all levels of education will help ensure all Australians are encouraged to develop the basic knowledge be informed, and ideally participate, in the Priorities.

2. How might governments and the science and research sector best work with First Nations people to achieve this objective?

First Nations knowledges are embedded within the Priorities, rather than as a stand-alone priority. We understand that this reflects feedback from Aboriginal and Torres Strait Islander peoples. However, we do not consider the two approaches – First Nations knowledges as a stand-alone

Priority and embedded across the Priorities – to be mutually exclusive. By only embedding First Nations knowledges within the Priorities, there is a risk that the Priorities will lack transparency around how Indigenous knowledges practically inform this work. The IRU strongly supports the intention for further discussion with Indigenous communities to ensure their expertise is integrated respectfully and where appropriate.

Irrespective of the approach taken, an even bigger challenge will be how to manage the workloads of Indigenous peoples and adequately resource the implementation of the Priorities. In 2021 there were 534 Indigenous persons in academic roles, roughly 1% of the total academic workforce of 54,000. These 534 Indigenous academics cannot achieve the ambitions of the Priorities on their own. Indigenous academics are already expected to contribute towards the advancement of Indigenous knowledges, disciplinary knowledges, and their integration. Additionally, by placing "First Nations at the heart of Australia's higher education system" as part of the Australian Universities Accord, Indigenous academics will be contributing towards increasing Indigenous participation, reform of teaching and curriculum, and university governance. These are all very important goals, but they will require both an expansion in the number of Indigenous academics and a sharing of the workload.

In addition to the rhetorical support for integrating First Nations knowledge into the Priorities, the IRU recommends that the government consider the following approaches for implementation:

- A target of at least 5% of total National Competitive Grants Programs (e.g. ARC, NHMRC and MRFF) funding going to Indigenous-led research. This would match the target set for the Medical Research Endowment Account and align with recommendations from the ARC Review, agreed to by the Minister for Education.
- Strategies and funding for involving Indigenous communities as partners in the research process. This also aligns with recommendations from the ARC Review, agreed to by the Minister for Education, for expanding the ARC Linkage Programs.
- Strategies for involving non-Indigenous researchers, including specific training for non-Indigenous researchers to work with Indigenous communities and to help supervise Indigenous research and researchers.

3. The draft priorities provide a range of critical research paths. How could we refine these research paths, for example, to address immediate challenges?

As outlined above, Priorities 1 and 3 could be strengthened by making explicit references to how HASS research can inform and support behavioural change. Additionally, some of the critical research areas involving HASS research have the potential to cut across multiple Priorities. For example, "Priority 4: Building a stronger, more resilient nation" seeks to understand the cognitive and social causes of engagement with information (and mis/dis-information) and tools to support community engagement with information. Where there are cross-cutting critical research paths, these could be made more explicit.

To increase immediacy, critical research areas could be refined to include critical research questions to guide the research sector. For example, the critical research area of "Causes of Australia's slow productivity growth and strategies to address them" (Priority 3) could be broken down into key research questions. Questions could include: What is the role of higher education and training as a contributor to Australia's productivity growth? What are the key barriers face be small-medium sized enterprise (SME) when engaging in or with R&D?; How can Australian SMEs increase their absorptive capacity for R&D? The framing of the research questions could be developed by the Australian

Government in consultation with the Chief Scientist, learned academies and expert groups, with associated funding for inter-disciplinary research teams.

4. **How would you implement the priorities in your organisation or setting? What mechanisms would support implementation?**

One mechanism to support implementation in universities is mission-based compacts (or similar) to guide new public investments in research of national significance. The Australian Universities Accord Interim Report considers how such agreements could enable institutions to specialise and align their missions around local, regional and national priorities. A Tertiary Education Commission may be established to guide negotiations of mission-based compacts, considering the role each institution can play within the national system.

The Australian system currently lacks a systematic evidence-based approach for analysing Australian research strengths and how they align (or don't) with national priorities. Any analysis of the Australian system must also be informed by evidence on how we compare with and fit into the international system. A Tertiary Education Commission may be well placed to contribute to both, identifying Australia's unique research strengths and how, though the Priorities, they fit within an international research and innovation system. This system-level analysis using publicly available data could also contribute to the evaluation of progress against the Priorities (and their enduring relevance) over a short (e.g. 2 years), medium (e.g. 5 years) and longer timeframe (e.g. 10 years).

5. **The National Science Statement will explain the role our science systems will play in delivering the priorities and maximising the benefits from science for Australia. How can the following best support the priorities:**
    a. **Science agencies**
    b. **Science infrastructure**
    c. **Australian government science programs**
    d. **Domestic and international science relationships**

A key principle for the National Science Statement should be to reiterate the purpose of the Priorities, which are to guide new public investment around areas of research strength and national importance. The Priorities will not replace or weaken support for the broader science system that has been the foundation for Australia's research excellence and impact. Implementation must be complementary to ongoing support for discovery and curiosity driven research (e.g. the National Competitive Grants Program and Research Block Grants), industry collaboration and commercialisation (e.g. University Research Commercialisation Action Plan), research training (e.g. the Research Training Program) and economic growth (e.g. National Reconstruction Fund). The continued support for basic research assessed through peer-review will be critical to the development of sustainable technologies and future Priorities.