



## National Science and Research Priorities, and National Science Statement – IRU Response

IRU appreciates the opportunity to provide input to the first stage of the consultation process on the National Science and Research Priorities, and National Science Statement. The Priorities offer a potential signal-setting tool, giving clarity on the areas that government sees as important for key science and research stakeholders to pursue common goals.

It is entirely legitimate for government to set priorities to guide investment. A healthy research and innovation system should include a mix of strategically-oriented “top-down” initiatives, alongside investigator-led “bottom-up” programs that allow new ideas to emerge through peer-review and research excellence. Therefore, it is reassuring that the Priorities are considered as complementary, part of a broader system of government 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) and the economic growth (e.g. National Reconstruction Fund).

The IRU supports the broad framing of the Priorities, including the 3 identified Priorities that could form part of a refreshed set and the 7 principles guiding the Priorities and Statement. A key challenge for the Priorities will be to maintain a balance between openness to a broad range of disciplines and researchers, versus concentration on more narrow, “bounded” key priorities. The success of the Priorities will also partly depend on investments in workforce training, school and continuing education. The current Priorities are research focused, but innovation often occurs on the “shop floor” and from practitioner-based applied and translational research. The Productivity Commission’s recent five-year report on the changing nature of the Australian economy and innovation finds that the changing nature of the Australian economy will require new kinds of knowledge and skills. Innovation and productivity will not just be driven by STEM skills or high-tech R&D, but will increasingly be driven by the integration of diverse kinds of knowledge.

We understand that consultation on the number of Priorities, their selection, refinement and implementation is part of a later consultation phase. The framing of the Priorities – including the explicit references to how Indigenous and HASS knowledge can make contributions – will be particularly important. How the Priorities will guide government policies and investment in science will be equally as important as the identified Priorities themselves. We welcome the opportunity to participate in the later consultations that cover refinement and implementation.

The Priorities may be successful at aligning collective efforts and investments towards areas of potential benefit of all Australians, but they cannot resolve the growing imbalance in the research system. Australian universities operate under a “dual funding system”, with universities receiving a Research Block Grant to support the indirect costs of research. Over the last twenty years, the ratio of Research Block Grant funding to total research income has been cut in half, spreading the block grant more thinly across more research projects and government initiatives. The ratio is expected to decline further as new governmental programs, such as the Medical Research Future Fund (MRFF), expand. Therefore, any new government investments targeting the Priorities will need to cover the full costs of delivering the research.

## Revitalised national science and research priorities

The Terms of reference identify 3 priorities that could form part of a refreshed set of Australian science priorities:

- Supporting stronger action on climate change, including investments in renewable energy, reducing emissions and transitioning to a net zero world.
- Elevating and investing in First Nations perspectives on science, technology and innovation.
- Harnessing the potential of emerging technologies and scientific research in pursuit of not only economic growth, but improved Australian wellbeing.

The inclusion of First Nations perspectives on science, technology and innovation as a possible Priority, as well as a cross-cutting principle, is particularly encouraging. The reference to improved wellbeing is an important recognition that the pursuit of emerging technologies must also consider their impact and benefit on all Australians. Action on climate change also depends on more than financial investments into technological research, including engagement with social science, humanities, culture and interdisciplinary fields.

## Science Priority Principles

The National Conversation Starter sets out 7 principles designed to guide discussion on the Priorities and the Statement. The Priorities should:

- Be community-informed.
- Be ambitious and purpose-driven.
- Be evidence-based.
- Be enduring and responsive.
- Be relevant.
- Be bounded.
- Inform investments.

The above 7 principles appear to be sound for shaping the Priorities, particularly the first three: community-informed; ambitious and purpose-driven; and evidence-based. Community ownership and consultation are critical for the Priorities to meet the objective of reflecting what the nation values, including an awareness and recognition of First Nations perspectives on science, technology, and innovation. Ambitious and purpose-driven Priorities that align with Australia's advantages are more likely to have meaningful impact. An evidence-base for the Priorities is essential for them to be aligned with the norms of science, capable of being measured and reviewed over time. The principles of relevance and boundedness are self-evident. The priorities must prioritise and can't be exhaustive. Although the current 9 Priorities remain relevant, it is possible that they lacked prioritisation and specificity.

More challenging are the principles of "enduring and responsive" and "inform investments". The revitalisation of Australia's science Priorities and Statement is intended to "shape a long-term vision for the Australian science system". But within less than a decade, the 2015 National Science and Research Priorities and 2017 National Science Statement are now considered redundant. The long-

term vision of the previous Priorities could not foresee a global pandemic, the acceleration of the impacts of climate change, or the emergence of new technologies. However, all nine Priorities remain relevant, and some increasingly so. The global pandemic underlined the importance of the current Priority for “health” and need for better models to improve outcomes and reduce disparities for disadvantaged and vulnerable groups. The acceleration of climate change has not reduced the relevance of the current Priorities for “food”, “soil and water”, “environmental change” or effective low emissions “transport” fuels and systems. “Energy,” “cybersecurity”, “advanced manufacturing” and “resources” also remain vitally important to Australia’s economic and social security, particularly given recent changes to the geopolitical landscape for research and innovation.

It is reassuring that the purpose of the Priorities acknowledges the centrality of the Research Block Grant funding model for funding basic or blue-sky research. The Priorities are not intended to “inform investments” in the research training or research support programs. Nor should the Priorities be used to guide public investments administered through the national competitive grants programs, such as the ARC or NHMRC. Research council funding remains best administered through peer review and on the basis of excellence (see the IRU submission to the 2019 ARC National Science and Research Priorities [here](#)). However, over the last twenty years, the ratio of Research Block Grant funding to total research income has declined (see the IRU Major trends in university research income and expenditure [here](#)). This has spread the block grant more thinly across more research projects, including new government initiatives like the MRFF. Therefore, to ensure that new government investments targeting the Priorities do not undermine the model for funding basic or blue-sky research, they will need to cover the full costs of delivering the research.

Finally, there have been significant shifts in the global landscape for science and research. Our national policy settings that guide decisions about prioritisation in research, technology and innovation policy should be informed by an evidence-based analysis of the world around us (see: IRU submission to 2022 List of Critical Technologies in the National Interest [here](#)). Australian universities conduct research that is high-quality and highly internationalised, with approximately 60% of all Australian academic publications involving international collaborators. An accessible open-source capability that brings together data sets on international research, technology and innovation, would assist university researchers (and businesses) to better see where their capabilities and collaboration fit into the larger system and how they can contribute to national priorities.

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