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Policy Review of the National Competitive Grants Program – IRU Response

The IRU welcomes the opportunity to provide input to the Policy Review of the National Competitive Grants Program (NCGP) by the Australian Research Council (ARC) and supports its overall intent.

The NCGP serves a unique purpose within Australia's research system and is critically important for supporting excellent pure basic, strategic basic and applied research across all non-medical fields. The NCGP has a very strong international reputation for its peer review processes and NCGP funding has delivered economic, social, environmental, and cultural benefits for all Australians.

In the absence of a commitment to increase the quantum of NCGP funding, the focus of the NCGP review should be to protect its strength in funding excellence-based research, improve efficiency in peer review and administrative processes, and consider how the NCGP can support a greater equity and diversity across institutions, disciplines and researchers. The unequal disbursement of NCGP by institution, gender and seniority is well recognised, but typically justified by the excellence-based principle of the NCGP. Roughly two thirds of all NCGP funding is awarded to the Group of Eight universities, two thirds of all grants are awarded to associate or full professors, and one third of all grants are to academics with more than 20 years experience since their PhDs. NCGP funding is also skewed by discipline. Only 20% of NCGP funding supports research in Humanities and Social Sciences (HASS). The limited research support for HASS and the larger teaching loads in these fields risks the ambition for the NCGP to support research capacity, diversity and inter-disciplinary research.

Recommendations

1. The primary and overarching objective of the NCGP is to support excellent pure basic, strategic basic and applied research across all non-medical fields.
2. The NCGP can support additional objectives beyond research excellence through specific schemes (i.e. Research Impact; Research Collaboration; Research Translation; Research Capacity; and Research Alignment) with dedicated (additional) funding.
3. NCGP schemes could better support project teams to plan for and evaluate engagement and impact through the life of the project.
4. The ARC should take steps to improve transparency and efficiency in selection processes across the NCGP.
5. Investigate the 80:20 disbursement ratio of NCGP funding towards STEM:HASS for effects on equity, diversity and inter-disciplinary research collaboration.
6. Commit to a target of 5% of NCGP funding for Indigenous-led research.
7. The NCGP should not explicitly use alignment with national research priorities as a selection criterion.

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Future-focused objectives of the NCGP

1. What are the best guiding objectives for the NCGP to support excellent pure basic, strategic basic and applied research that will enable it to deliver economic, social, environmental, and cultural benefits for Australia?

The Review proposes six complementary, overarching and guiding objectives for the NCGP: Research Excellence; Research Impact; Research Collaboration; Research Translation; Research Capacity; and Research Alignment. The six objectives are all relevant, but while not intended to be listed in order of priority, research excellence must be the primary objective and embedded across all NCGP programs.

The NCGP is unique in Australia's research system as the primary (and for many disciplines, the only) external funder of disinterested research. The NCGP actively shapes the university research landscape and must align with the recommendations of the *Trusting Australia's Ability: Review of the Australian Research Council Act 2001*. The Australian Government agreed (or agreed in principle) to all 10 recommendations, including the NCGP's role in promoting excellence, equity, and diversity in Australian universities. Greater equity and diversity, through dedicated schemes for research capacity building and collaboration, will improve the ability of the NCGP to support research excellence and deliver broad outcomes for Australia.

The NCGP has an international reputation for funding excellence-based research, through expert peer review, primarily for the advancement of knowledge. The best guiding objective for the NCGP is to continue to support excellent pure basic, strategic basic and applied research. The other five objectives are relevant for certain schemes and have potential to strengthen Australia's research sector. But supporting these objectives will require additional resourcing to ensure they do not comprise the primary function of research excellence.

Research excellence is the only objective that is truly overarching across NCGP schemes. For example, not all ARC Discovery research is funded with research impact predetermined. There will be potential long term benefits to society, culture, the economy and the environment, but these will not always be direct or readily identifiable at the grant assessment stage. Research collaboration will also differ considerably across and within NCGP schemes. ARC Linkage Projects will inherently involve research collaboration between universities and industry, and may involve research translation, but Discovery Projects will more likely involve collaboration across researchers and research sectors (including internationally). Investigator driven ARC programs targeting and supporting the salaries of early and mid-career researchers (i.e. DECRA and Future Fellowships) are more aligned with research capacity building than Laureate projects that target the most eminent researchers within their fields.

The overwhelming success of the NCGP to support excellent research has led some to ask how the NCGP could better contribute to innovation, impact, translation and addressing national and strategic policy challenges. There is no doubt that the NCGP has great potential and capacity to contribute to these goals, but they should not come at the cost of supporting research excellence. Recently released 2022 higher education research and development expenditure (HERD) data shows a decline in basic research relative to applied research, and in the case of pure basic research, a decline in aggregate expenditure. Applied research comprised 56% of all HERD in 2022, up from 53% in 2020 and around 42% in the early 2000s. Since 2022, Australian Government investment in university research has continued to focus on research commercialisation, solutions-oriented research and consumer engagement (such as through the Trailblazer University Program and Medical

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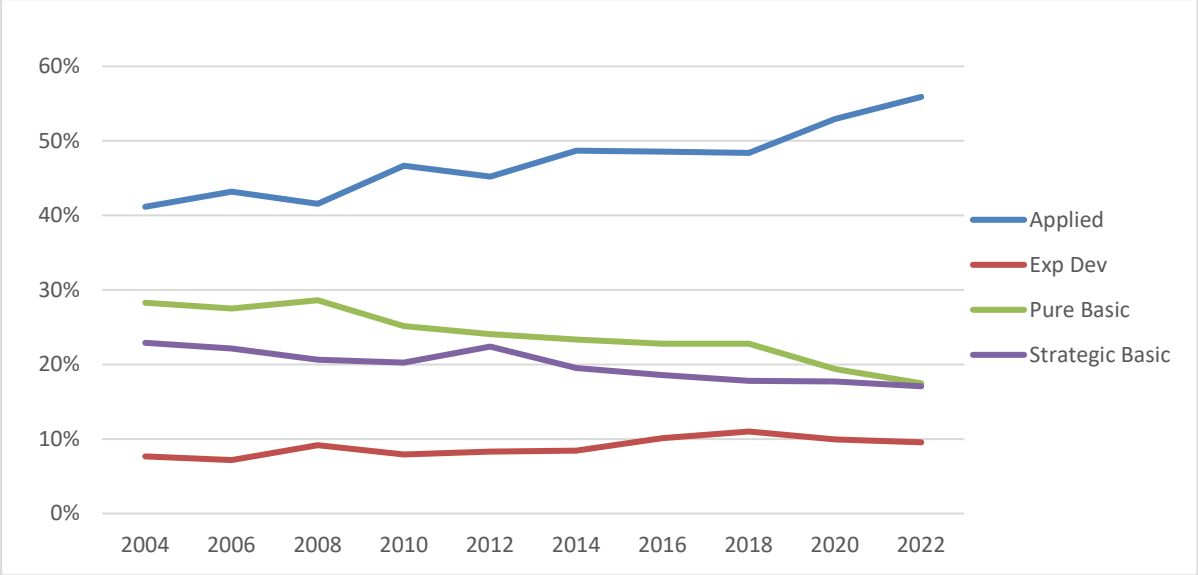
Research Future Fund). These are welcome investments, but greater investment into the NCGP is essential to keep the system in balance and to maintain a stock of new knowledge and highly skilled people. Research excellence must remain the cornerstone of the NCGP, with other objectives leveraging off this strength with additional resourcing and excellence-based programs.

Figure 1. Higher education expenditure on R&D, by type of activity, 2004 to 2022 (% of total)[1]



Recommendations

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2. The NCGP can support additional objectives beyond research excellence through specific schemes (i.e. Research Impact; Research Collaboration; Research Translation; Research Capacity; and Research Alignment) with dedicated (additional) funding.

[1] Australian Bureau of Statistics (2024), *Research and Experimental Development, Higher Education Organisations, Australia*, ABS Website, accessed 3 May 2024.
Australian Government (2022) *Higher education expenditure on R&D by higher education provider*, Department of Education Website, accessed 8 May 2024.

Driving the future impact of the NCGP

2. How can the NCGP further support and encourage:

a. high-calibre research that drives the advancement of knowledge?

b. the utilisation, translation or commercialisation of research to deliver benefits to Australia's society, economy, and community?

3. How can the outcomes, impact and contribution of NCGP funded research be best identified and communicated?

The discussion paper recognises that the NCGP primarily funds the highest quality research. Additional funding is required to utilise, translate or commercialise this research for industry or community benefit (economically, socially, environmentally, commercially or culturally). Sometimes these functions are best supported through staff other than those part of the NCGP funded project. Some of these activities and programs are part of the Research Commercialisation Action Plan, such as the Trailblazer initiative and industry-focused PhDs and fellowships (funded separately by the Australian Government).

Because of the many diverse pathways to impact, evaluating the impact of research is difficult, but there is scope for the ARC and NCGP funded researchers to better plan for and communicate the impact of their research to improve public accountability and recognition of public investment. The ARC is well placed to better support, monitor and communicate this, but a more proactive national approach to research translation and impact could go beyond evaluation and assessment. In the IRU submission to the ARC Review, we recommended a more proactive approach to research impact, with three components led by the ARC. It could encourage and support researchers to consider the broader impacts of their work throughout the research process and encourage partnerships with the broadest range of end-users to facilitate knowledge translation. This could include a new NCGP scheme (or amended existing NCGP schemes) with resourcing for a project team member to focus on the evaluation of engagement and impact through the life of the project, or it could be new grants to support knowledge mobilisation, similar to those provided by the Canadian research funding councils. These relatively small knowledge mobilisation grants enable researchers who have already received another competitive grant for high quality research to focus on the translation of the knowledge developed through the preceding grant for the benefit of partners in the private, public or community sectors.

Recommendation

3. NCGP schemes could better support project teams to plan for and evaluate engagement and impact through the life of the project.

Program structure and design

4. What structure and design of the NCGP would:

a. best support the NCGP's objectives?

b. reduce complexity and deliver grants more efficiently?

c. rebalance risk settings to encourage frontier basic research with potentially transformative outcomes?

d. set the right balance between different scheme types and duration?

e. use peer review in the most effective way?

f. leverage the opportunities and manage the risks of using artificial intelligence?

The integrity of the NCGP depends on high quality peer review and grant administration processes that are efficient, transparent and clear for applicants, assessors and administrators. The recent introductions of Expression of Interest (EOI) stage for Discovery grants and sharing of selection report details with applicants are welcome improvements. However, more can be done to improve the transparency and efficiency of the NCGP.

Make selection report data available to applicants. The value and credibility of the ARC's competitive grants assessments could be enhanced at no administrative cost by providing applicants with all selection report data at each stage of the selection process. Data available under Freedom of Information laws should be made available to applicants immediately. Providing applicants with detailed information on how their applications rank (on each selection criteria and overall) at each selection stage would improve transparency and specificity for the relative strengths and weaknesses of applications. For applications ranked in the bottom half of applications at the time of the rejoinders (i.e. unlikely to be funded), it would provide earlier indication that alternative research funding will likely need to be sought. For highly ranked applications, it would make it clearer when the ARC Selection Advisory Committee disregards the assessments and ranks of the detailed experts in favour of lower ranked projects.

Transparent consultation on assessment criteria. The ARC consults with the university sector on assessment and eligibility criteria, but details are not public. This causes confusion in the community. One example was the lack of public rationale behind the ARC's decision to make pre-print publications an eligibility criteria. Another is incremental changes to criterion weightings. The importance of research track record (or Investigator/Capability) is now inversely related to career stage. For early career grants (DECRA), it has increased from 30% in 2011 (after being proposed as 20% in the ARC Discovery Program Consultation Paper in 2010), to 35% in 2018, 40% in 2019 and 50% since 2021. It now exceeds the weighting for senior researcher grants (Discovery 35%; Laureate 40%). The validity of research track record as a predictor of success is likely weaker for early career researchers, given their lack of prior opportunity. The ARC may have a good rationale for its changes, but these are not always intuitive, communicated or understood by the research community.

Recommendation

4. The ARC should take steps to improve transparency and efficiency in selection processes across the NCGP.

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Promoting more collaboration within and across the sector

5. How can the NCGP best support collaboration between disciplines (between and across HASS and STEM) among researchers (both national and international), across sectors and funding programs?

Australian researchers are highly active international collaborators. In the 2023 Leiden Ranking, 33 out of 34 Australian universities published a majority of their research with international collaborators. All were above the world average. Similarly, between 84% and 93% of all research publications at Australian universities involved a collaborator (including domestic collaboration), with all 34 universities above the world average. Research collaboration is an important NCGP objective because the most excellent research is typically developed through openness and exchange. However, the focus of collaboration will differ across NCGP programs. Linkage Projects should continue to support research collaboration between universities and industry (broadly defined to include public, community and not-for-profit sectors), while Discovery Projects should support collaboration across researchers and research sectors (including internationally).

Innovative, collaborative and inter-disciplinary approaches will be more important than ever – in both education and research – to address future challenges for Australia and the research community. These include energy transition, the emergence of new technologies such as artificial intelligence, and social cohesion and trust. The NCGP can better facilitate inter-disciplinary collaboration and research, but success will depend on Australian universities having research capacity across disciplines. As evident in the ERA exercises some important disciplines within the HASS fields with many domestic students, such as Education and Commerce, have almost no Australian universities rated “well above world standard”. Other disciplines within STEM fields with fewer domestic students, such as Mathematics and Physical Sciences, have a majority of institutions at this rating.

The NCGP is not the primary reason for the growing disparity in research capacity across disciplines, but it is a contributor. As a result of Australian Government policy decision, public funding for research is increasingly detached from domestic university teaching. Base funding for domestic undergraduate teaching (through the Commonwealth Grants Scheme and student contributions) barely covers the direct cost of teaching, leaving little scope for funded research within teaching and research academic role. This increases the importance of the NCGP as a funder for research, with a multiplier effect through Research Block Grants driven by NCGP outcomes, alongside other competitive grant outcomes, higher degree by research (HDR) load and completions, and industry/externally sourced “engagement” research income.

The unequal disbursement of NCGP by institution is well recognised – the Group of Eight universities receive more than two thirds of NCGP funding – but its effects on disciplinary and inter-disciplinary research needs further consideration. The NCGP disbursed 80% of all funding since 2023 to STEM, with the remaining 20% to HASS. The discussion paper notes that research funders have a role in supporting a diverse research sector. The 80:20 disbursement ratio should be examined for its effect on equity, diversity and inter-disciplinary research capacity. This is discussed further below.

Recommendation

5. Investigate the 80:20 disbursement ratio of NCGP funding towards STEM:HASS for effects on equity, diversity and inter-disciplinary research collaboration.

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Supporting a strong and diverse research sector

6. How can the NCGP promote a strong and diverse research sector, including through supporting research training and opportunities for early career researchers, women researchers and other under-represented groups?

The relationship between the NCGP and the RBG is likely to change following the implementation of the Universities Accord Final Report. The Final Report recommended removing government and industry contract research as inputs to the RBG (Recommendation 28), increasing the quantum of the RBG funding, and increasing the ARC's funding capacity to support fundamental research (Recommendation 26). Therefore, it is critical that the NCGP operates in a way that supports diversity within the research system for the benefit of all Australians.

NCGP funds a select group of excellent researchers following a highly rigorous program of peer reviewed assessment. The applicants and assessors are primarily senior researchers who, in the eyes of fellow senior researchers, are superior in terms of their ability, qualities or projects. As noted in the discussion paper, only 28% of grants were to chief investigators (CIs) who were within 10 years of their PhD, while 33% were to CIs with more than 20 years experience since their PhDs. The NCGP also typically supports academics holding the most senior academic ranks. In 2022, Associate and full Professors comprised 29% of all non-casual academic staff (16,000 out of 55,000). In the most recent completed ARC funding rounds for major programs, 62% of all projects (544 out of 876) and 68% of all funding ($356M of $526) had Associate or full Professor CIs. This included:

- 2% of all DECRAs (4 out of 200)
- 51% of all Future Fellows (51 out of 100)
- 100% of Laureate (17 out of 17)
- 85% Discovery (355 out of 421)
- 82% of Linkage grants (114 out of 138)

The concentration of NCGP funding for senior academics has important implications for gender diversity. Females comprise only 38% of all Associate and full Professors in research roles, compared with half of those in lower ranks. The 80:20 split in NCGP funding between STEM and HASS also has gender implications. Excluding health academics (who have access to NHMRC funding), 62% of all academics with teaching roles in 2022 were in HASS fields and 74% of female teaching academics were in HASS (54% of all males are in HASS).

The NCGP employs several mechanisms to support equity in assessment and limitations for bias. It is critical that the NCGP maintains transparency in application and success rates, aiming for population parity. While the rigorous selection process is a strength, the selection process is typically longer than early career academic employment contracts. In 2021, only 57% of early career academics (Levels A and B) had paid research roles, and only 20% had a paid research role and an ongoing contract. Allocating a greater share of NCGP grants towards early/mid-career researchers would help improve population representativeness, but it may require a different approach for grant selection.

Supporting Indigenous Australian research and researchers

7. Are there aspects of the NCGP that could be strengthened or redeveloped to advance support for:

a. Indigenous Australian research, incorporating Indigenous knowledge and knowledge systems (where appropriate)?

Supporting Indigenous Australian research and researchers should be a priority for new investment and the future of the NCGP. The NCGP has supported the research careers of many Indigenous scholars. Further investment into Indigenous-led research and self-determination will create much wider impacts and benefits for Indigenous communities and Australian society. This ambition is consistent recent reviews endorsed by the Australian Government. The Australian Government agreed with the *Review of the Australian Research Council Act 2001* recommendation that the NCGP's purpose should include funding research that may have a positive impact on Indigenous knowledge systems and peoples. This should include collaborative research that expands Indigenous knowledge systems and fellowships to support Indigenous researchers. The Australian Universities Accord Final Report also recommended elevating First Nations knowledge and knowledge systems through the National Science and Research Priorities, First Nations-led research, leadership, capacity building and self-determination.

As the number of Indigenous researchers and PhDs awarded to Indigenous peoples increases, there are immediate opportunities to further target investment towards Indigenous research. Consistent with the IRU submission to the Accord, we recommend that the NCGP provide additional resources to establish new programs and to ensure that 5% of its total funding goes to Indigenous researchers. This could be through new grant schemes (e.g. Indigenous Linkage; Indigenous Future Fellowship; ARC Indigenous Laureate Fellowship) or allocated funding for Indigenous-led research in existing schemes.

Recommendation

6. Commit to a target of 5% of NCGP funding for Indigenous-led research.

Aligning with other government research funding programs

8. In the context of other government funding for research and development:

a. How should the NCGP promote an appropriate balance of basic and applied research?

b. How can the NCGP improve its connectedness to the research ecosystem to help progress the research it funds further along the pipeline towards translation and impact?

The objectives and design of the NCGP must be considered in the context of other government funding programs and the long term decline in basic research as a percentage of higher education research and development expenditure (HERD). Recently released 2022 HERD data shows a further decline in basic research, not just relative to applied research, but in aggregate. Pure basic research

declined in total expenditure by $10M (-0.4%) from 2020 to 2022, while expenditure on applied research increased by $1,113M (17%).[2]

The NCGP is extremely important for supporting basic research, but it is only a small part of the research landscape and typically funds established researchers. The NCGP does not support the secure academic careers necessary for the developing of long-term, disinterested basic research and careers. Over time the funding of university research has shifted away from a primarily public block grant funding model driven by domestic teaching, towards contract research and research supported by full-fee postgraduate places and international student revenue. Contract and engagement-based research typically focuses on application-oriented for end users. International student revenue is unpredictable and does not support secure careers for the academic workforce. The primary objective of the NCGP should continue to be to support excellent research for the advancement of knowledge, irrespective of basic or applied orientation. However, the NCGP cannot be seen as the only basis for supporting or reversing the decline of basic research.

Supporting national priorities

9. How should the NCGP be structured to best support and deliver on national research priorities, as they evolve over time?

The discussion paper recognises that the NCGP has the potential to contribute more to innovation through funding the highest quality research. The current approach does not explicitly use alignment with national research priorities as a selection criterion. Any changes to how the NCGP operates, including closer alignment with national priorities, must consider how these affect the two primary NCGP objectives of: 1) targeting funding towards the highest quality projects and researchers; and 2) being efficient and transparent its allocation of funds. Allocating a specific proportion of funding to national priorities or using a dedicated score for alignment with the priorities, particularly within the Discovery program, would risk both objectives.

Quality of research is unrelated to alignment with the national priorities. Research excellence can be achieved in any field of research, for any socioeconomic objective and purely for the advancement of knowledge. Excellent research can also have unintended and positive impacts beyond its field. Disadvantaging research outside the priority areas clearly contradicts the principle of funding the highest quality projects. Further, it would disincentivise future applications from non-priority research areas, reducing the pool of potential projects to fund and undermining future capability as and when national priorities develop and change. HASS fields are also typically not well aligned with the national priorities and tightening the alignment would further weaken the position of HASS researchers in an already highly competitive research funding system.

The NCGP serves a unique purpose from a relatively modest expenditure of around $900M. This represents around 2% of Australia's gross expenditure on R&D (GERD)[3] and 7% of Australian Government expenditure on R&D.[4] Less than half of this $900M is typically invested into the flagship

[2] Australian Bureau of Statistics (2024), *Research and Experimental Development, Higher Education Organisations, Australia*, ABS Website, accessed 3 May 2024.
[3] Australian Bureau of Statistics (2023), *Research and Experimental Development, Businesses, Australia*, ABS Website, accessed 8 May 2024.
[4] Australian Government (2024) Science, research and innovation (SRI) budget tables, Department of Industry, Science and Resources website, accessed 8 May 2024.

ARC Discovery program for the advancement of knowledge. Placed into context, Australia's gross expenditure on R&D (GERD) was estimated to be $38.8B in 2021-22. Around one third of this R&D is funded by the Australian Government (a projected $12.6B in 2023-24) spread across a range of research programs and sectors for the national benefit. Only one third of Australian Government expenditure on R&D is devoted to the higher education sector ($4.2B in 2023-24). The remaining expenditure is either devoted to the business sector through R&D tax incentives ($3.4B in 2023-24; 27%), the Australian Government's own research institutes ($2.3B in 2023-24; 18%) and multi-sector programs ($2.6B in 2023-24; 21%). The NCGP has potential to contribute more to innovation, but this must come through additional investments rather than redirection of existing budgets, and should be considered as part of a broader examination of how Government programs can best support national priorities and innovation.

Recommendation

7. The NCGP should not explicitly use alignment with national research priorities as a selection criterion.