



ACADEMY OF
THE SOCIAL SCIENCES
IN AUSTRALIA

Academy of the Social Sciences in Australia Response to the Implementation of the National Science and Research Priorities under the Australian Research Council's National Competitive Grants Program Review

24 May 2019

Professor Jane Hall (President)

Professor Glenn Withers (Immediate Past President)

Dylan Clements (Programs Manager)

26 Balmain Crescent, Acton ACT 2601
GPO Box 1956, Canberra ACT 2601
P: +61 2 6249 1788
ABN: 59 957 839 703

www.assa.edu.au

Table of Contents

1.	Summary.....	3
2.	The Distinction Between Articulating and Implementing Priorities	4
3.	Social Science is an Australian Research Strength	6
4.	The National Interest Test.....	10
5.	Appendix A: Correcting Research Priorities Definition Process	12
6.	Appendix B: Funding Options for Social Science Research.....	13
7.	List of References	14

1. SUMMARY

In response to the *Implementation of the National Science and Research Priorities under the Australian Research Council's National Competitive Grants Program Review*, ASSA makes the following four recommendations to enhance the ARC grant allocation processes.

1. That the ARC engage ASSA to undertake a further investigation into the distribution of research funding, and research activity and performance, which encompasses:
 - Research grant patterns across all disciplines.
 - Discipline matching data in peer review.
 - Cost of publication or citation by discipline for ARC grant funded research.
 - Any wider research available in Australia or overseas on matters of conscious and unconscious bias in application and selection systems.
2. That the ARC acknowledge the need for the development of a broader set of metrics that better reflects the public value of innovation in all its forms. ASSA is available to assist in this task.
3. That the ARC develop a protocol for the continued usage of standard impact metrics including the following criteria:
 - Recognition of books and book chapters.
 - Weighting co-authorship of journal articles on a proportional basis.
 - Consideration of the effect on articles in journals which publish at a higher rate proportionally.
 - Introduction of interdisciplinary 'exchange rates' or similar to account for the impact of comparative disadvantages inherent within cross-disciplinary comparisons.
4. That the ARC continue to refine the definition of the National Interest Test, in consultation with the Learned Academies and their expert Fellows.

ASSA would like to reiterate that the current Priorities are predominantly oriented at physical, natural, and medical science concerns. There is evident bias in the formation of the Priorities and Challenges which has led to the present situation in which 80% of research funding goes to STEM disciplines. This submission contains an appendix pointing out how to address this fault. Additionally, it is unclear whether only leading areas of research should be rewarded, or if lagging areas of research should be helped to improve their performance with funding settings. These issues need to be addressed.

2. THE DISTINCTION BETWEEN ARTICULATING AND IMPLEMENTING PRIORITIES

While the articulation of the Challenges and Priorities exhibit a clear STEM bias, this bias is not so strong that it explains the extreme imbalance in STEM and HASS research funding. The cause of this imbalance is in part the implementation and application of these Priorities and Challenges, rather than simply the articulation of the Priorities and Challenges themselves.

It is crucial to distinguish between articulation of principles and their application. The superficially plausible assumption that carefully articulated principles obviates the need for the circumspect and informed application of them is not right. Laws do not eliminate the need for ethics - in fact the laws are merely checks and balances on behaviour which are derivative of the capacity for context-sensitive ethical judgements. We recognise that appealing to the law for moral guidance is putting the cart before the horse, and that the law can provide general guidance under limit conditions.

In the same way, the Priorities and Challenges are derivative of discretionary ideas about important areas for research funding. They provide a check on this discretionary capacity. The Priorities and Challenges by themselves do not provide basis for deciding research funding - they provide a framework which is maximally general. The prospects for applying them mechanically are misconceived, and the task of working out how best to apply them to capture their spirit and intention remains a crucial task in grant application process.

The Priorities and even their more specific Challenges are articulated in ways which could be applied in a manner which yielded better outcomes for social science research. Presently, they are applied in a way which produces lopsided funding patterns. This submission takes three short examples to illustrate more concretely the meaning of this point:

- I. The Priority concerning food and the Challenge pertaining to 'knowledge of the social, economic and other barriers to achieving access to healthy Australian foods' could be interpreted as primarily a social science problem. The intention of this Challenge is to address the food concerns of Australians. These concerns would be best served by investment in social health research. Trends in this research - such as that conducted by Simone Pettrigrew and Heather Yeatman - examine things like fresh food subsidies, the effects of junk food advertising, and the capacity for nutrition education enhancement. This kind of research and its implementation would deliver better food and nutrition outcomes for Australians when compared to straight STEM considerations of nutrition.

- II. The Priority concerning transport and the Challenge of 'improved logistics, modelling and regulation: urban design ... effective pricing, operation, and resource allocation' could also be interpreted as primarily a social science problem. The intention to serve Australian transport needs would be best served by research - such as that of Paul Mees and Pat Troy FASSA - into urban form and urban design, and the conception of public transport required to best satisfy citizen desire and ensure uptake. One also needs serious analysis of how to make the best use of resources already at hand. This is a crucial lesson from the experience of Zurich, which has arguably the most effective public transport system in the world: effective and economical use of resources often means considered use of *older* technology, such as buses, in well-conceived ways. Many of the proximate causes of public transport problems do not reflect outdated or moribund technology, but misconceived efforts to implement resources already at hand. Interpreting it as a technical issue to be resolved by autonomous vehicle usage and sensor technology is to overlook precisely what must be understood.

- III. The Priority of Environmental change could be interpreted as primarily a social science problem as well. Addressing climate change requires research into the prospects of maintaining present forms of life and accounts of how they must adapt in order to be sustainable. We know today that maintaining present consumption levels while alleviating the harms of climate change will not be possible. So research into the nature of desire and its change, and the possibility of changing consumption patterns in ways which do not leave consumers simply worse off, is an important aspect of this. The persistent interpretation of this Priority as a question of producing energy without the same environmental costs we currently incur is one which, once again, assumes as answered precisely what must be researched.

The point is this: in each of these cases, we recognise the contribution that can be made by pure or applied science research. It is obviously appropriate and useful. But the cause of the heavy pure and applied science focus in attempting to address the Priorities and Challenges is not the natural or inevitable result of their articulation. The objectives behind the Priorities and Challenges would often be as well or indeed better addressed by integrating social science research.

The distinction between the articulation and application of the Priorities and Challenges enables clear identification of the process of application as an object for investigation. ASSA is concerned about ARC processes which seem to downplay social sciences. These derive from the narrow interpretation of the Science and Research Priorities in natural scientific and technological ways. How could ARC processes be changed to reflect this? How best can we understand the potential bias and disproportion of funding?

Recommendation One

That the ARC engage ASSA to undertake a further review which encompasses:

- Research grant patterns across all disciplines.
- Discipline matching data in peer review.
- Cost of publication or citation by discipline for ARC grant funded research.
- Any wider research available in Australia or overseas on matters of conscious and unconscious bias in application and selection systems.

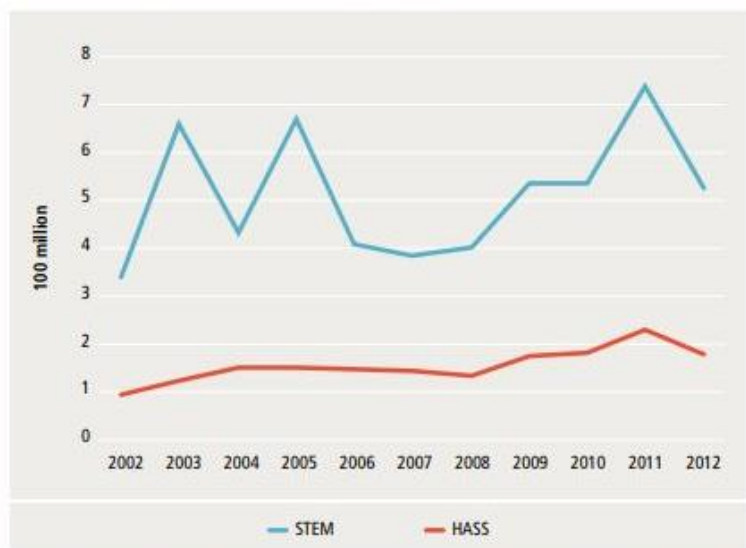
Social science research shows that assertions of ‘merit-based’ selection do deserve further interrogation where objective outcomes are skewed. With the data outlined in Recommendation One, ASSA could better assist the ARC to understand and rebalance the application of the Priorities and Challenges to ensure that the appropriate research approach is undertaken.

3. SOCIAL SCIENCE IS AN AUSTRALIAN RESEARCH STRENGTH

The Review wishes to consider areas in which Australia has actual or potential comparative research strength. The social sciences exhibit this relative strength, despite underfunding caused by systematic underestimation of its impact. The development of proper public value research metrics is necessary to address this imbalance.

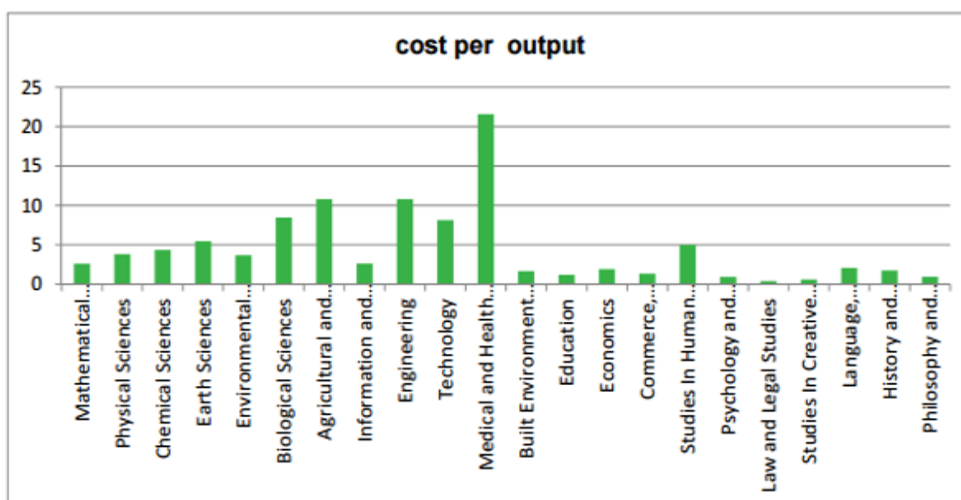
3.1. Australian Social Science Performance

HASS research recently received 16% of Australia’s research income. Yet it produced 34% of university research and contributed 44% of the total research judged by the ARC as worthy of research funding in the form of Units of Evaluationⁱ. More than half of all disciplines in Australia are growing at rates above average, and more than half of these are HASS disciplinesⁱⁱ.



Source: ARC National Competitive Grants Programme Dataset, Research Funding Trend Data, http://www.arc.gov.au/general/searchable_data.htm

Social science fields cost less for each publication and citation than most other areas of university research in Australia:



All in all, the social sciences lead Australian comparative advantage in research, representing over half of the top ten global disciplinary rankings achieved by Australian universitiesⁱⁱⁱ:

Faculty	Subject	Highest Rank	Institution
Life Sciences & Medicine	Pharmacy & Pharmacology	4	Monash University
Social Sciences	Anthropology	7	Australian National University
Social Sciences	Education	7	University of Melbourne
Arts & Humanities	Archaeology	8	Australian National University
Social Sciences	Law	8	University of Melbourne
Social Sciences	Politics and International Studies	8	Australian National University
Social Sciences	Development Studies	8	Australian National University
Life Sciences & Medicine	Veterinary Sciences	9	University of Sydney
Engineering and Technology	Mineral & Mining Engineering	10	University of Queensland

All the indicators show beyond doubt that Australian education and research practices - one of our main exports - are a central comparative advantage. Australia is a stable country generally lacking civil disorder, with incidence of crime and violence, and fear of each, being low. Its research and development performance is strong, and its education and skills are well regarded around the world. All in all, Australia has a high standard of life and favourable conditions to sustain and maintain this good condition.

These good conditions provide a context which explains why Australian social sciences are advanced. Strong social science research does not only reflect these favourable socio-economic conditions - it is also responsible for creating them. Social sciences contribute to the high standard of living in Australia by enhancing economic, social, and cultural life, as well as to environmental sustainability. The underpinnings of advantages in population, health, education, welfare, infrastructure, cities, and regions are all conditioned by social science-informed policies.

Proper investment in social science research can save billions in public wealth and create billions more through increased productivity. ASSA has analysed this on numerous occasions in the past – [The Social Sciences Shape the Nation](#) brings out many examples of this, as do many submissions made in recent times¹.

The overall economic benefit of programs like HECS and Medicare, for instance, are extraordinarily high - certainly the payoff of these programs makes extremely light work of the 7% hurdle rate of the Department of Finance for public investment. We could also mention child support, the immigration points system, compulsory superannuation, skilled migration, APEC, and many more program which form the foundation of modern Australia.

While the importance of the research underpinning the Australian way of life is beyond doubt, the nature of social science impact is more difficult to measure and evaluate than technological innovation. Nonetheless, this measurement is a necessary condition of any well-functioning suite of metrics used in public research administration. It is important to understand the true impact of social innovation in order to produce informed policy and funding arrangements.

3.2. Deficiencies in Research Metrics

The strong performance of the social sciences is significant because it occurs *despite* institutional disadvantages. The metrics which inform public research funding exhibit systematic tendencies to underestimate the impact which social science research has in real terms.

The best policy is formed on the basis of socially innovative research, including analysis of the economic, social, and cultural benefits of different policy options. Good policy and decisions about public investment must comprehend the economic and cultural impact of social innovation. For instance, it would be economically valuable to know how much the development of Medicare, which obviated the need for a healthcare system like that in America, has saved taxpayers - including all this means for health outcomes and the attendant economic advantage this provides.

This kind of evaluation and quantification of the impact of both scientific and policy innovation is one of the important skills of social science, and an area in which there is research and knowledge. The presently used methods of evaluation are not vindicated by the light of academic scrutiny and the best research on evaluation techniques.

The commonly used 'cost-per-cited-reference' metric puts journals which publish issues

¹ <https://www.assa.edu.au/category/submissions/>

containing relatively many articles per year at an advantage over those which do not. These journals tend to be in STEM disciplines^{iv}. The social sciences rely more heavily on books or book chapters than do STEM disciplines. While indexing services like *Web of Science* and *Scopus* reliably measure citations of journal articles, they measure books and book chapters unreliably^v. Researchers who co-author articles are at a further an advantage: being co-author of a paper, which is the orthodoxy in STEM, tends to be weighted as heavily as being sole author of a paper, which is the orthodoxy in the social sciences.

Research metrics exaggerate the impact of STEM research^{vi}, while underestimating the impact of social science research. As York University puts it: 'At the very least, disciplinary particularities do not allow for cross-disciplinary comparisons of impact'^{vii}. This is consistent with the best contemporary social science research into the efficacy of these metrics: research demonstrates certain disciplines are inherently less likely to publish at the same quantum as others. This yields a comparative disadvantage which necessitates a corrective mechanism - for example, interdisciplinary 'exchange rates'^{viii}.

3.3. Enhancing Quantification of the Public Value of Innovation

A properly used, well-developed public value metric would be far more apt than common use of aggregate input metrics such as grants received. Some improvement comes from relating input cost to simple output measures such as cost-per-publication or cost-per-citation metrics, but this too misses the wider complexity of impact beyond academia. Partial measures that look to measure outcomes beyond narrow outputs are a little better still, such as cost-per-patent for related sciences, but this still falls short of the full public value metric ASSA wishes to see used in this area. The concept of public value that we suggest includes economic, environmental, and social dimensions, as well as including distributional impacts.

Expertise about these metrics exists within the Fellowship of this Academy. ASSA emphasises to this Review the need to examine the best methods for showing social and economic benefits of innovation with well-conceived metrics, and to develop a full public value metric of the kind indicated above.

Recommendation Two

That the ARC acknowledge the need for the development of a broader set of metrics that better reflects the public value of innovation in all its forms. ASSA is available to assist in this task.

If the ARC maintains the use of the standards impact metrics, and this will be necessary at least for the period while a public value metric is developed and integrated, ASSA strongly recommends the following:

Recommendation Three

That the ARC develop a protocol for the continued usage of standard impact metrics including the following criteria:

- Recognition of books and book chapters.
- Weighting co-authorship of journal articles on a proportional basis.
- Consideration of the effect on articles in journals which publish at a higher rate proportionally.
- Introduction of interdisciplinary 'exchange rates' or similar to account for the impact of comparative disadvantages inherent within cross-disciplinary comparisons.

ASSA notes here that fully capitalising on Australia's social science research strength would require both the revision of the Priorities and Challenges and proper social science research investment. While these are outside the terms of reference for this Review, this submission includes short appendices dealing with the revision of the Priorities and Challenges (Appendix A) and possible funding options (Appendix B) for the record.

4. THE NATIONAL INTEREST TEST

The final issue which ASSA wishes to bring to the attention of the Review is that of the National Interest Test. ASSA has substantial concerns about the National Interest provisions for the ARC. They draw on technological and scientific perspectives, and so they should. However, there is no clear and distinct counterpart incorporation of HASS perspectives. Thus, even if it is not the intention of the policy to consolidate the HASS underfunding problem, we fear this may be an adverse unintended consequence of it.

ASSA's Fellowship contains extensive experience in the definition of provisions like the National Interest Test. This includes experience in the implementation of them in formal legislative, regulatory, and expenditure review for government in ways which anticipate and alleviate unintended adverse consequences - precisely like those which result from present use of research impact metrics.

Recommendation Four

That the ARC continue to refine the definition of the National Interest Test, in consultation with the Learned Academies and their expert Fellows.

Finally, ASSA notes the definition of areas for ARC grant support does not account for other government support for priority driven research. This means priority driven research which is resourced and supported outside ARC grants is considered within the ARC as though it has not had this support. This is effectively a form of double dipping. Surely this is an oversight, and if so, it must be corrected.

ASSA welcomes the opportunity to formally contribute to the discussion of the application of Priorities and Challenges and the other matters raised in this submission. We are available at any time to provide assistance to the ARC in this and future tasks.

5. APPENDIX A: CORRECTING RESEARCH PRIORITIES DEFINITION PROCESS

Defining the Research Priorities can be assisted by standard best practice methodology. This task is well-established in public policy and public administration and involves not simply projecting technology and funding the more interesting or consequential pathways. This is what is presently done in 'horizon scanning', whereby social consequences are added as an afterthought. While useful, this is too narrow. Rather, the following sequence is best practice:

- conduct STEEPP analysis projections, where technology projection is accompanied by social, economic, environmental, population and polity projection
- blend the STEEPP projections into futures scenarios that develop the national narratives as to how the projection possibilities can come together
- contrast the futures analysis with national SWOT evaluation, to assess how well the nation is positioned to take advantage of opportunities and face problems
- define the policy options needed for these future needs and address their effective implementation.

This approach is neutral across academic research disciplines and encompasses the full range of national concerns. Naturally, dedicated research funding for particular areas, whether agriculture, meteorology, defence science and more, can continue to utilise area specific projection and prioritisation. But for the one generic research funding agency, the ARC, a holistic approach to priorities does seem valuable and is here recommended.

ASSA recommends a broader and more structured approach to specification of national research priorities for the ARC and offers support and expertise in the development of a best-practice development scope.

ASSA would be pleased to elaborate its views, and this proposed approach so as to assist the ARC in moving to best practice determination of national research priorities, including for the social science and humanities as well as the natural and physical sciences. Correspondingly, the priorities might then be more usefully titled simply National Research Priorities, just as the ARC is titled the Australian Research Council.

6. APPENDIX B: FUNDING OPTIONS FOR SOCIAL SCIENCE RESEARCH

This submissions has already outlined the comparative advantage in social science research strength, but there are still further ways in which it could be enhanced.

For example, Australia invests 1.88% of its GDP in research and development. By contrast, the OECD average is 2.4%, and the OECD best practice frontier is 3%. An increase of research funding to the OECD average of 2.4% of GDP or the OECD best practice frontier is 3% of GDP would support innovation across research disciplines.

In times of budgetary constraint, two further policies could be implemented:

1. Use of income-contingent loans to fund university-industry collaborative research

Income-contingent loans to fund research and development conducted by start-ups working with partner universities should be implemented. This scheme has the advantage of guaranteeing revenue flow back to the Australian Government through loan repayments - on top of revenue generated by general economic benefit of research and development. This scheme is similar to how the highly successful HECS system investigated earlier works. This scheme could impose a heavy social science quota, which would address the anti-social science bias mentioned above. More information can be found in an article Prof Glenn Withers and Prof Bruce Chapman published on the same, at:

<https://www.assa.edu.au/wp-content/uploads/2018/09/Chapman-Withers-Research-and-Development-Tax-Incentive-Review-submission.pdf>^{ix}

2. Use of the EIF to fund HASS infrastructure

The Education Investment Fund - not at the exclusion of new endowment funding - should be used to fund social science research infrastructure. This would redress the absence of genuine commitment to the development of this infrastructure in other funding areas. The allocation of this funding to social science research and infrastructure would provide for social needs. It could thus be used with good rationale, as allocation of this funding for research retains the budgeting principle of using endowments for investment rather than recurrent purposes. Targeting funding to high priority social and health research - backed by investment in a new national data archive - would be consistent with the best intent of those suggesting diversion of funds to areas such as NDIS: currently NDIS has budget allocated in excess of outlays being made, and it will benefit substantially from health social science research.

7. LIST OF REFERENCES

- ⁱ Turner G & Brass K, *Mapping the Humanities, Arts and Social Sciences in Australia*, p. 2
- ⁱⁱ Turner G & Brass K, *Mapping the Humanities, Arts and Social Sciences in Australia*, p. 2
- ⁱⁱⁱ QS World University Rankings by Discipline: Australian universities within Top Ten Discipline Rankings, 2016 < <http://www.topuniversities.com/qs-world-university-rankings> >
- ^{iv} Kilb M, Martin V, & Minchew T, 'Time to Take New Measures: Developing a Cost-Per-Reference-Cited Metric for the Assessment of E-Journal Collections', *Roll With the Times, or the Times Will Roll Over You*, eds. Bernhardt B, Hinds L, & Strauch K, 2016 pp. 116-18, p. 116
- ^v 'Limitations of Bibliometrics', *York University Libraries*, York University, < <https://www.library.yorku.ca/web/research-metrics/issues/> > retrieved 31-05-18
- ^{vi} Kilb M, Martin V, & Minchew T, 'Time to Take New Measures', p. 116
- ^{vii} 'Limitations of Bibliometrics', *York University Libraries*, York University, < <https://www.library.yorku.ca/web/research-metrics/issues/> > retrieved 31-05-18
- ^{viii} Korkeamäki T, Sihvonen J, Vähämaa S, 'Evaluating Publications across Business Disciplines: Inferring Interdisciplinary 'Exchange Rates from Intradisciplinary Author Rankings', *Journal of Business Research*, Vol. 84, Mar 2018, pp. 220-32; c.f. Severinson P, 'Approaches to Assessing Impacts in the Humanities and Social Sciences', *Federation for the Humanities and Social Sciences*, 2017, < <http://apo.org.au/system/files/173006/apo-nid173006-775301.pdf> > retrieved 27-06-18, pp. 19-28
- ^{ix} Chapman B & Withers G, 'Innovation Financing and the R&D Scheme: Different Ways of Thinking About University Research and Industry Linkages', 2016, < <https://www.business.gov.au/Assistance/Research-and-Development-Tax-Incentive/Review-of-the-RandDTax-Incentive/Previous-submissions> >