

**A blueprint for research,
a call for action**

Analysis of the Final Report of the Fundamental Science Review

April 2017

CAUT welcomes the report of the Advisory Panel on Federal Support for Fundamental Science “the Panel”. It is a thoughtful and comprehensive study that correctly diagnoses problems that have plagued basic science for over a decade. The Panel’s recommendations, if implemented, will chart a strong future for science and research in Canada.

CAUT’s submission to the Panel provided clear recommendations on ways to better provide support for and derive the benefits of fundamental research.

We called for changes in three areas:

1. Provide adequate funding levels;
2. Respect the integrity and independence of research and funding decisions; and
3. Ensure that programs are inclusive of all disciplines and researchers.

The Fundamental Science review report largely delivered on these demands. It provides a roadmap to restore the role of publicly-funded fundamental research to help address challenges and improve quality of life. Our collective challenge as a research community is to help make the Panel recommendations realities.

1. Provide adequate funding of fundamental research

What we asked for

The federal government should increase the base funding of the three granting councils to support fundamental research. At a minimum, funding should be restored to 2007-08 levels in real terms.

Specifically, CAUT recommended:

- an investment of \$500 million over three years in non-targeted fundamental research;
- a longer term funding plan to provide sufficient resources to ensure a 40% success rate in SSHRC applications; 40% for CIHR; and 75% for NSERC; and,
- an increase in SSHRC’s share of total base funding to the granting agencies to 20%.

What we got

The Advisory Panel recommends an injection of \$1.308 billion to granting council base funding over four years, with the majority of funds (87%) frontloaded in the first three years. The Panel proposes \$405 million in non-

targeted fundamental research over the next three years and \$80 million in what it calls priority-driven research for international collaborations, multidisciplinary research, high-risk/high-reward research, and research that can be mobilized quickly in response to crises and urgent issues. If the government implements these funding recommendations for Budget 2018 and 2019 council funding would be 15% above 2007-08 levels by the end of the Liberal government’s first mandate.

The Panel also recognizes the imbalance between investigator-led and targeted or fettered research funding. It notes that in 2000, the funding balance was approximately 70:30. By 2015, the ratio was 58:42. The Panel recommends a restoration of the 70:30 funding ratio, a move that would put significantly more resources into investigator-led research and help improve success rates.

Although there is no recommendation to benchmark success rates, the Panel recognizes that the erosion of real funding as well as targeting of funding to a small number of researchers through boutique programs like the Canada Excellence Research Chair Program has had a detrimental effect on success rates. The Panel also calls for measures to boost success rates for early-career researchers and to fix implicit biases in the peer-review process.

The Panel challenges the notion that concentrating research support to a few researchers, a few universities, and a few research areas is beneficial. The Panel rightly calls for a review of the Canada First Research Excellence Fund and the Canada Excellence Research Chairs Program with a view to ensure that research dollars are distributed more broadly, more inclusively, and more equitably among disciplines and researchers.

The Panel also recognizes the relative underfunding of SSHRC: Despite claims that funds are allocated on a 40-40-20 basis across the councils, SSHRC’s share has been under 15% for three decades. It has the largest constituency of faculty-level researchers, but over half of its funding goes to graduate awards. Its share of tri-council funding is likely to fall owing to its minimal participation in the large-scale Canada First Research Excellence Fund (CFREF) launched in 2015.

The Report recommends that the proposed National Advisory Council on Research and Innovation conduct a review of current allocation of funding across councils and pay particular attention to the social sciences and humanities.

What we need to do

The Panel's funding recommendations and the case for them could have been written by CAUT. We need to make sure the government moves quickly to act on what is the single most important recommendation in an overall excellent report – to rapidly increase its investment in independent investigator-led research to restore the 70:30 ratio between basic and priority-driven research.

2. Protect the integrity and independence of fundamental research

What we asked for

- Fundamental research funded through the granting agencies should be subject to peer-review with priorities determined by the research community;
- Federal research programs should provide for robust protections for academic freedom, the free and open exchange of ideas and discoveries, and safeguards against conflicts of interest;
- The three federal granting agencies should be made more arms-length from government and the membership of their boards should include more representation from active researchers; and,
- The federal government should create a Parliamentary Science Officer as an independent officer of the Library of Parliament reporting to the Senate and the House of Commons.

What we got

The government announced a Chief Science Advisor, reporting to Cabinet, earlier this year and committed \$2 million per year to its Secretariat in Budget 2017. Recognizing this commitment, the Panel's major recommendations to address issues related to the integrity and independence of research is to create two new bodies. A National Advisory Council on Research and Innovation (NACRI), created through an Act of Parliament, would replace the current external advisory body, the Science, Technology and Innovation Council

(STIC). The NACRI mandate would include furthering the links between extramural and intramural research and enhance federal-provincial-territorial (FPT) collaboration. NACRI's composition will be from the research, business and civil society community.

An additional coordinating board is also proposed to harmonize the efforts of the three granting councils and the Canada Foundation for Innovation. The coordinating board for the four federal agencies would report to the Ministers of Science and Health, chaired by the Chief Science Advisor and made up of agency heads, department officials, and external experts.

The Panel recognizes that Councils have different processes in place for the selection of board members. It recommends that the government undertake a review to “clarify accountabilities and selection processes for agency governing bodies and presidents”. On the question of active researcher representation, the Panel recommends that it is important to consider “the balance of expertise and need to reflect the diversity of Canada and the research community”.

The Panel does “strongly concur” that all four agencies should operate with a degree of independence from the Government of Canada and that governments must give researchers the support and freedom to pursue their very best ideas.

It also proposes predictable and stable funding for the Canada Foundation for Innovation (CFI). CFI functions as an independent non-profit with the president accountable to a corporate board, and the entire operation subject to a contribution agreement. If CFI moves from intermittent contributions to a regularized A-base budget, as recommended by the Panel, its governance would be revised and its mandate better coordinated to strengthen the research system, including by meeting the special operating needs of individual researchers with small capital awards.

The need for revitalizing peer review is emphasized in the report, and notably absent is the term “merit review” in vogue under the previous government. The Panel acknowledges that “...for all its limitations, review by peers with relevant expertise and experience remains the best means of judging the merit of research proposals.” It

provides a number of recommendations to strengthen peer review processes.

- a common set of guiding principles or values for peer review; including the addition of gender equity;
- mechanisms for more effective adjudication of multidisciplinary research;
- a streamlined process for submitting grants, starting with badly needed improvements to the design and use of the Canadian Common CV; and
- support for experimentation and evaluation to study new approaches to peer review, including use of iterative review processes.

The Panel's call to review government funding of research to third-party organizations is also important. In the past, CAUT was critical of this funding as it represented ways that government was bypassing the research community in deciding upon what projects or research centres were worth funding.

What we need to do

While it is important that the level of new funding requested by the Panel should be accompanied by efforts to enhance stewardship, and the coordinating body for the agencies is long overdue, CAUT believes that this should be complemented with an increased role for Parliamentary oversight. Whether the proposed bodies, which report to government and have competing interests as part of their governance structures, will provide better advice translated into government policy than existing or previous mechanisms remains to be seen. When considering changes to the oversight and governance of the federal granting agencies, it will be critical to ensure that the agencies are independent from government and that there is a majority representation of active researchers on their boards. In setting the NACRI mandate and structure, it will be crucial to ensure that its governance and operations will allow it to make the best decisions to advance science, and not the political choices of the day.

3. Ensure that fundamental research programs are inclusive and respect the diversity of Canada's research community

What we asked for

CAUT made a series of recommendations to ensure that there is no discrimination against women and other equity-seeking groups in federal research programs. Such discrimination deprives the research community and Canadians as a whole of valuable perspectives, experiences, and knowledge. Specifically, CAUT recommended that:

- all federally supported research should be subject to a gender and equity impact analysis;
- the Canada Research Chairs and Canada Excellence Research Chairs in particular should be reviewed to ensure institutions are setting and meeting gender and equity targets;
- federal research programs should be reviewed to identify and rectify any biases against small institutions and regions.
- the federal government should develop a dedicated funding program for Indigenous scholars and research in each of the granting agencies, and adequately fund the Post-Secondary Student Support Program (PSSSP).

What we got

The Panel recognizes biases and makes a number of recommendations to improve equity and diversity in federally funded research programs. It also notes the dearth of data on the subject. It calls for:

- education and training on bias for peer reviewers;
- diversity in peer review panels;
- better data collection and transparency;
- consistent metrics and reporting plans to detect bias;
- tailored peer review mechanisms for specific research groups; and
- constant evaluation for degree of attainment of desired objectives and any unintended adverse consequences.

The Panel also calls for hard equity targets and quotas where persistent and unacceptable disparities exist, and agencies and institutions are clearly not meeting reasonable objectives.

To support greater participation from researchers from smaller institutions, the Panel makes a couple of recommendations, specifically to reduce the requirements for matching funds for independent research and to keep existing thresholds in the research support program.

For Indigenous scholars, the Panel repeats CAUT's recommendation, calling on the three granting councils to collaborate in developing a comprehensive strategic plan to promote and provide long-term support for Indigenous research, with the goal of enhancing research and training by and with Indigenous researchers and communities.

The report recognizes and discusses upstream barriers to equity and diversity, including indigenization of research. It does not make any recommendations related to the PSSSP; however, government funding for this program was increased by \$45 million a year, for two years, in Budget 2017.

Diversifying the academy involves providing more support for equity-seeking graduate students. The report notes that the number of core graduate awards (Canada Graduate Scholarships) has not increased since 2007 despite major increases in graduate enrolments. In addition, the value of graduate awards has not changed since 2003. Its recommendation to increase total base increase by \$140 million per year, phased in over four years, in equal increments of \$35 million per year, is a step in the right direction and should be integrated with equity and diversity goals.

What we need to do

The Panel recommendations need to be acted upon now. The government need not wait for either further funding commitments or the establishment of the oversight and coordinating bodies. We have been asking for hard equity targets and will continue to press the government to set them.

Conclusion

CAUT will be urging the government to act upon the findings and recommendations of the Fundamental Science Review Panel, specifically in regards to adequate funding levels, equity and diversity, and integrity and independence.

The report's recommendations on funding will ensure adequate funding levels and help fix the imbalance that emerged in recent years between investigator-led and priority-driven research and between the disciplines. The recommendation for hard targets on equity and diversity, as well as the other equity-related recommendations, will ensure we are leveraging our greatest strength and ending discrimination. In regards to integrity and independence, we need to stay vigilant to ensure that the research community leads in determining and setting research priorities.

Our job now is to work with the government to implement the report recommendations, while continuing to demonstrate and communicate the impact of our research and science on Canadians, and the world.