

# Investing in Canada: The report of the Advisory Panel on Federal Support for Fundamental Science

## Briefing note for members of the Federation for the Humanities and Social Sciences

April 20, 2017

### I. Overview

- The report of the independent Advisory Panel on Federal Support for Fundamental Science, chaired by Dr. David Naylor, former President of the University of Toronto, was tabled in mid-April 2017, following extensive consultations. The panel was commissioned by Science Minister Kirsty Duncan in June 2016 to review Canada's federally funded research system.
- The report's release is a landmark moment for the Canadian research community, providing a unique opportunity to advance the cause of research, knowledge and understanding in Canada.
- The panel has underscored that balance and diversity are fundamental to the success of our research system. The report includes an unprecedented recognition of the contributions made by the humanities and social sciences (HSS), and has been strongly welcomed by the Federation.
- The Federation's 2016 submission to the panel is cited numerous times, and much of the language from the Federation brief and its recommendations are reflected in the panel's report.
- Overall, the panel's report includes many recommendations that align with those provided by the Federation, including issues of overall funding for investigator-led research, with attention to the balance for humanities and social sciences, issues of diversity and inclusion in the academy, calls for greater coordination and collaboration across the granting councils, and the need for more targeted support for multidisciplinary and international research collaboration.
- The Federation received valuable input for its brief from advisory taskforces of its members (listed in the Appendix), with leadership from members of the Federation Board of Directors.
- As a central message, the panel's report sets out that Canada has both the resources and moral responsibility to be a major global contributor to the advancement of knowledge. It calls for transformative investments in fundamental research to keep Canada competitive, with the first priority being substantially increased investments — a total of \$485 million over the next four years — in independent, investigator-led research across all disciplines. This is the largest component of the panel's four-year, \$1.3-billion plan for increased research funding.
- The report makes the case that Canada and the world face multifaceted challenges that require multidisciplinary approaches. It notes that the contribution of Canadian research and scholarship is central to making headway not just on evidenced-based solutions, but to maintain a spirit of open inquiry, an ethos of pluralism and as "an expression of humanity's innate interest in understanding our world." (Page 21<sup>1</sup>)
- The Panel's report will be widely discussed in the research community in the months ahead. The Federation will engage in the dialogue and is interested to hear member views.

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<sup>1</sup> Page numbers are provided for all direct quotes taken from the Panel's *Investing in Canada* report.

## II. A comparison of recommendations in the Report from the Fundamental Science Review and the Federation’s Science Review submission terms

The following table provides a comparison of how the Federation’s recommendations to the Science Review panel compare with the panel’s recommendations. Please note that, in the interest of space, these recommendations have been paraphrased. Each recommendation is marked with a number indicating the section in which it can be found in each report. We encourage readers to refer to those documents for the full wording of the recommendations and accompanying discussions.

<b>Federation recommendations</b> <a href="http://www.ideas-idees.ca/issues/research-and-innovation-policy">http://www.ideas-idees.ca/issues/research-and-innovation-policy</a>	<b>Science Review panel recommendations</b> <a href="http://www.sciencereview.ca/eic/site/059.nsf/eng/home">http://www.sciencereview.ca/eic/site/059.nsf/eng/home</a>
1 Retain Canada’s overall research architecture, avoiding such measures as merging councils.	The report dismisses the option to merge granting councils, opting instead for a new oversight body.
1.1 Increase SSHRC's share of total research funding	5.1 NACRI to review the current allocation of funding across the granting councils, with particular attention to the humanities and social sciences.
1.2 Ensure collaboration among research agencies on overlapping challenges, monitored by the Chief Science Officer.	4.1 Create a new National Advisory Council on Research and Innovation to provide broad oversight of the federal research and innovation ecosystems, 4.4 with the CSA serving as Vice Chair. 4.10 Create a formal coordinating board for CFI, CIHR, SSHRC, and NSERC, chaired by the CSA.
1.2 Ensure programs are in place to support multidisciplinary research.	6.5 Develop strategies to support multidisciplinary research.
1.2 Create a new Multidisciplinary Challenges Fund designed to also support international research collaboration.	6.4 Develop multi-agency strategies to support international research collaborations. 6.6 Support high risk research with the potential for high impact. 6.7 Support rapid response to fast-breaking issues.
1.3 Strengthen the governance role of the granting agencies’ governing councils.	4.11 Undertake a review to modernize and harmonize the legislation for the four research agencies to clarify accountabilities and promote good governance.
1.4 Support dedicated funding and development programs for Indigenous researchers in each of the funding agencies.	5.7 Tri councils should collaborate to develop a comprehensive plan for long-term support for Indigenous research.
1.5 Maintain a funding environment that supports a full career of scholarship.	5.2 Develop and harmonize funding strategies using an approach that balances the needs of researchers at different stages of their careers. 5.6 Augment support for early career researchers across disciplines.
1.6 Augment the capacity of universities to support relatively low-cost and/or short-timeline research activities.	6.11 Mandate and fund CFI to meet the special operating needs of researchers with small capital awards. Principle: Ensure balance of support for large and small grants.

Federation recommendations	Science Review panel recommendations
1.7 Review the CERC and NCE programs. Replace the STIC list of objectives.	4.2 The Science, Technology and Innovation Council should be wound down as NACRI is established. 6.2 Amend the terms of the NCE program to include strength in collaborative basic research in all disciplines. 6.3 Evaluate the CFREF program to determine whether to launch or defer the program's third round.
2.1 Preserve CFI's overall structure.	The report recommends preserving CFI's structure.
2.1 Provide CFI with greater flexibility around joint-funding requirements for projects that fulfill national or international research objectives.	6.10 Increase CFI's share of the matching ratio for national-scale major research facilities from 40 to 60 per cent. 5.9 Matching funds should be used sparingly and in a coordinated and targeted manner.
2.2 Provide CFI with sustained and predictable multi-year funding to enable more effective long-term planning.	6.8 Provide CFI with a stable annual budget scaled at minimum to its recent annual outlays.
2.2 Enhance CFI funding for operations and maintenance (O&M) expenses.	
2.2 Increase the Research Support Fund to 40 per cent of the value of total research grants.	7.3 Gradually increase funding to the RSF until the reimbursement rate is 40 per cent for all institutions with more than \$7 million per year of eligible funding.
3.1 Review Canada's digital-support needs, assessing the mandates of Canada's digital-support agencies to address gaps or overlaps.	6.9 Consolidate the organizations that provide digital research infrastructure, starting with a merger of Compute Canada and CANARIE.
3.2 Improve SSHRC's ability to evaluate research involving digital tools or methods.	
	1.1 Undertake a wide-ranging and multi-departmental review of innovation-related programming.
	5.3 Harmonize peer review practices across the three councils and CFI.
	5.4 Develop policies to achieve better equity and diversity outcomes.
	5.5 Consider hard equity targets and quotas where persistent and unacceptable disparities exist.
	5.8 NACRI should review and assess third-party research organizations that receive federal support, and advise on their continuation, modification or termination.
	6.1 Increase investment in independent investigator-led research.
	7.1 Harmonize scholarship and fellowship programs, and optimize their use to attract international talent.
	7.2 Renew the CRC program to restore funding to 2012 levels.

### III. Terms

CSA	Chief Science Advisor
CERC	Canada Excellence Research Chairs Program
CFREF	Canada First Research Excellence Fund
CRC	Canada Research Chairs Program
FACB	Four Agency Coordinating Board (introduced in report)
ISED	Innovation, Science and Economic Development Canada (federal ministry)
NACRI	National Advisory Council on Research and Innovation (introduced in report)
NCE	Networks of Centres of Excellence
OECD	Organisation for Economic Co-operation and Development
STIC	Science, Technology and Innovation Council

### IV. Report highlights

#### 1. Key principles to guide a research system

The Advisory Panel laid out key principles it says should be central to the federally-funded research system to ensure excellence and global competitiveness. These include:

- *Meritocratic*: a rigorous process of adjudication drawing on international peer review.
- *Independent yet accountable*: autonomous to avoid politicization of research, but accountable for successful outcomes and integrity of process.
- *Coordinated*: coordination across agencies, programs and jurisdictions to enhance administrative efficiencies, accommodate cross-disciplinary research, and ensure oversight of major science initiatives across their life cycle.
- *Balanced*: with respect to investigator-led versus targeted programming, as well as across disciplines, between smaller and large scale grants, between transdisciplinary funds and those supporting “deep disciplinary dives,” between mainstream and high-risk research, and within other administrative considerations such as across operating, capital and personnel costs.
- *Responsive*: Capacity to accommodate shifts in scientific thinking and respond to crises.
- *Talent-focused*: Focused on development and retention of outstanding students, young researchers and global talent.
- *Diverse and equitable*: Excellence and diversity as mutually reinforcing goals.
- *Efficient*: Limit waste (time and resources), focus on simplicity for programs and competitions.
- *Outward-facing*: Supportive of public outreach; engaging of citizens and a new generation of scholars by conveying the excitement of science and research.

#### 2. Canadian research performance and funding levels

##### International comparisons

- The panel argues compellingly that stagnating federal funding for independent research risks making Canada uncompetitive globally, noting the following about our global performance:
  - Canadian spending on R&D as a proportion of GDP has declined slowly over the past 15 years, while growing among other key countries.
  - In terms of R&D spending in the higher education sector as a proportion of GDP, Canada ranked fourth among OECD nations in 2007, but had fallen to seventh by 2014.

- Canada retains strong citation profiles, but we are seeing erosion in our relative performance in several fields.
- The report concludes that, "[W]e believe that these measures point to the need for bold federal leadership and a significant renewal of funding for independent, investigator-led research." (page 48)

**Per capita research funding: Independent versus priority-driven research**

- The report describes how the funding environment has changed significantly in recent years from the perspective of Canadian researchers, drawing on data for per capita research funding levels (illustrated on page 113 in the report). Points include:
  - Council funding per full-time-equivalent researcher peaked in 2007-08 and has declined steadily since 2009-10, falling by over 30 per cent by 2015-16.
  - Between 2007-08 and 2015-16 there has also been a noticeable shift away from independent investigator-led research (three per cent decline) in favour of priority-driven research (35 per cent increase).
  - Overall, there has been a per capita drop in available funding in the order of 35 per cent.
- The rise in priority-driven research funding is linked in part to the establishment and growth of the NCE, CERC and CFREF programs. The panel notes the sub-optimal treatment for HSS research under many of these programs to date, their tendency to geographically concentrate resources, and a concern regarding dwindling rates of collaboration among Canadian researchers. The report makes several recommendations for reforms to these programs such as:
  - Amending the terms of the NCE program in order to support collaborative "multi-centre" strength in basic research across all disciplines. **(Recommendation 6.2)**
  - Increasing the diversity of NCEs by introducing various funding scales.
  - Citing concerns that CFREF may be concentrating funding in an inefficient fashion, the panel recommends an interim evaluation of the program to determine whether a third round of funding should proceed. **(Recommendation 6.3)**
- The panel recounts how changes in the funding environment have taken a human toll on researchers, notably through declining success rates, reduced grant amounts, wasted time writing multiple applications, pressure created to produce "safe" applications, and difficulty to become established for those early in their careers.
- "Continuing the current imbalance between investigator-led and priority-driven research would leave Canada's research ecosystem increasingly dependent on discoveries and ideas generated by other countries, even as Canada's researchers become less integrated with the global research enterprise." (page 113)

### Research funding recommendations

- The panel recommends significant research funding increases, favouring investigator-led research, suggesting a funding increase of \$485 million over four years, equivalent to 6.6 per cent growth per year. (**Recommendation 6.1** – See Exhibit 7.5 on page 154 for more details.)
- Through **Recommendations 6.4-6.7** the panel also calls on the granting councils to develop specific strategies to better fund four kinds of research: (See section 6 below for more details)
  - International research collaboration
  - Multidisciplinary research
  - High-risk research with the potential for high impact
  - Research that is able to respond rapidly to new opportunities
- The panel notes its dismay at the diminishing real value of the CRC awards, and the concurrent loss of their relevance and effectiveness at retaining and attracting top talent. Noting concerns that only 20 per cent of CRCs are allocated to SSHRC disciplines, the panel encourages a review of this distribution, as well as broader investigation into the relative cost-benefit of the CERC versus the CRC programs. **Recommendation 7.2** calls for staged injections of new funding to the CRC program that would total an additional \$140 million per year to annual base budgets:
  - \$35 million to augment the number of CRCs, pending a plan by the granting councils to prioritize Tier-2 CRCs to support early-career researchers.
  - \$105 million to reverse 17 years of eroded real-dollar funding, once a plan is approved for granting councils to work with universities and CFI to cap Tier 1 chairs renewals and reinvigorate international recruitment.

### 3. The importance of HSS in Canada’s research landscape

- The report addresses the importance of HSS research, citing the Federation’s submission to the panel at several points. The following are specific references in the panel’s report relating to HSS:
  - “[N]o extramural research ecosystem can thrive unless it starts from a strong foundation in basic research cutting across all disciplines.” (page 12)
  - “From the social sciences and humanities, contributions range from deeper understanding of the complexity of human nature and social structures to grace in self-expression and excellence and beauty in the creative and performing arts.” (page 5)
  - “Postsecondary education enriched by exposure to basic research provides citizens with an outlook and intellectual tools that are extraordinarily well-suited to technological and social innovation. Indeed, countless authors of abstract graduate theses have gone on to lives of deep and productive engagement with practical problems, bringing with them perspectives that reflect an inquiring and critical mind.” (page 5)
- The report also describes HSS relevance to current complex challenges such as climate change, reconciliation, food security, political instability, poverty, income inequality, aging of population. “Successfully tackling these issues will require efforts that cut across a range of disciplines. ... Canadian society—and the world around us—faces multifaceted challenges that require multidisciplinary approaches to arrive at effective solutions.” (page 20)

### Funding for HSS research

- In its assessment of the balance in research funding in Canada, the panel finds evidence to support the claim that SSHRC is underfunded. Its points include:
  - SSHRC has the largest community of scholars among the three councils.
  - SSHRC also serves the largest community of graduate students (and yet receives the same amount of Vanier graduate scholarships as other councils).
  - SSHRC has been excluded from much of the funding through the CERC and CFREF programs as a result of eligibility constraints resulting from STIC priorities that do not reflect HSS research areas.
- Based on these observations, and the importance of HSS research to Canada's future, the panel recommends that the government ask NACRI to review the allocation of funding across disciplines with particular attention to the adverse effects recent program changes have had on HSS researchers. **(Recommendation 5.1)**

## 4. Changes to governance and oversight – NACRI

### Oversight – NACRI

- One of the major recommendations by the panel is to enact new legislation to create a new oversight body for the four principal funding agencies. The panel cites international precedent for such an arrangement, the need to address long-standing oversight and coordination challenges, and the need to match the new funding requested from government for independent research with new means of reporting and assessment. **(Recommendation 4.1)**
- Challenges identified in the consultations include:
  - Poor coordination across the four agencies
  - Inconsistencies in program architecture
  - Uneven decision-making on facilities
  - Uneven success rates
  - Unclear accountabilities
  - Proliferation of unconnected entities arising from opportunistic decisions
- The panel considered several possible remedies, including consolidation of major funding agencies. It concluded however that the risks of such a move outweighed potential benefits and instead recommend the creation of NACRI, writing: "We think that there is simply no way to create a coherent research and innovation policy unless there is broader oversight of not only extramural but also intramural science and research spending." (page 60)
- NACRI responsibilities would be varied:
  - Provide advice to the Prime Minister and Cabinet on federal spending as well as on goals and priorities for research and innovation.
  - Provide a foresight function to government on research and innovation issues.
  - Advise on the effectiveness of the research system, in collaboration with the CSA.
  - Improve coordination and strategic alignment of federal research and innovation support.
  - Advice on large-scale infrastructure projects and requests outside of CFI's mandate.

- Evaluate performance of the ‘extramural research enterprise.’
- Perform public reporting and outreach.
- Liaise with parallel bodies in provinces and other countries.
- NACRI membership
  - 12 to 15 members, appointed through Order in Council for three-year terms.
  - Chief Science Adviser serving as Vice-Chair.
  - Members primarily external to government – scientists, scholars, innovators from business and civil society.
  - Reflecting Canadian regional diversity.
  - Inclusion of small number of international, expatriate members.
- Structure
  - NACRI and the CSA both to be located within the Ministry of Innovation, Science and Economic Development.
  - The panel recommends that STIC should be wound down as NACRI is established.

#### **Agency governance**

- Regarding governance of the granting councils, the panel identified significant areas for improvement, citing the recent turbulence at CIHR as evidence that governance issues need to be addressed. Problems noted include unclear responsibilities of governing councils and unclear lines of accountability between governing councils, council presidents and ministers.
- The report notes that while the executives and governing councils of various agencies have attempted to rectify governance issues over the years, their efforts have been limited by constraints present in legislation.
- **Recommendation 4.11** urges the government to review the legislation governing the four primary research agencies. The goals of this review include: addressing the composition of the governing councils and establishing clear mandates around program assessments.

## **5. Coordination and collaboration issues**

- To promote coordination between the four major funding agencies, the panel recommends the creation of a new Four Agency Coordinating Board (FACB), reporting to the Ministers of Health and Science and collaborating with NACRI and the CSA. **(Recommendation 5.2)** The main objectives of the FACB would be to:
  - Improve overall coordination between agencies
  - Address concerns over equity, diversity and systemic bias
  - Improve support for multidisciplinary research
  - Better aligning capital and operating support
  - Address the needs of research disciplines that do not have a clear funding “home”
  - Consolidate, where possible, back-office functions
  - Coordinate public outreach
- A few select areas identified as needing coordination are discussed below and in the following sections of this overview.



### Select areas identified for coordination – Peer review and success rates

- The process of peer review was identified as an area needing greater coordination, with the panel recommending new mechanisms for harmonization and oversight in order to achieve the following: **(Recommendation 5.3)**
  - Common values and guidelines for peer review.
  - Mechanisms to more effectively evaluate multidisciplinary research.
  - Improvements to the application-submission process, including ease of use of the Canadian Common CV.
  - Support for experimentation of different peer review practices (including iterative reviews) including effective assessment.
- Granting program success rates are another area where the panel identified a need for alignment. The panel finds that rates of between 20 and 40 per cent are common internationally. Low success rates may produce the following risks:
  - Causing inefficiencies by incentivizing the submission of multiple applications.
  - Reducing the ambition of research proposals by incentivizing “safe” applications.
  - Disproportionately affecting researchers from disadvantaged groups.
  - Hampering the ability of early-career researchers to become established.

## 6. Priorities: International, multidisciplinary, high-impact and fast-response

- In its recommendations for increased funding for investigator-led research, the panel highlights four priority areas, as noted above. (Note: the executive summary calls for “earmarked funding” for these areas.)
- International research collaboration:
  - The panel finds that while Canadian researchers and research agencies are engaged in international collaboration, Canada lacks strategic organization. Funding for international collaboration, for instance, has been inconsistent or diluted, and there is a gap in funding for international collaboration focused on basic research
  - The panel recommends the main research agencies (working through the FACB) develop strategies to support international research collaboration. This should include dedicated funding for international research, improved data collection and reporting on such projects, and coordinated efforts to engage international partners and create opportunities for Canadian researchers. **(Recommendation 6.4)**
- Multidisciplinary research:
  - The panel notes that the rising prevalence of research that crosses traditional disciplinary silos is creating challenges for the Canadian research system in such areas as training and peer review.
  - While the panel recognizes that the granting councils have taken many worthwhile steps to facilitate multidisciplinary research, it finds that significant problems remain, with too many researchers finding that their work is not accommodated in existing program

criteria or council mandates. This is found to be particularly the case for individual researchers and small teams.

- The panel recommends that the four agencies implement strategies to encourage, facilitate, evaluate and support multidisciplinary research, with a focus on adjudication systems, projects that span council mandates, restrictions on the use of grant money, cross-council responsibility for researchers on disciplinary margins, and support for large-scale multidisciplinary projects. **(Recommendation 6.5)**
- High risk research with the potential for high impact:
  - The panel identified the incentive to produce “safe” research proposals as a negative consequence of a constrained funding environment. The panel calls for renewed funding to support researchers pursuing potentially high-risk and high-reward projects.
  - The panel finds that a lack of high-risk research limits the potential social benefits of research, the ability of researchers to excel in their fields and the opportunities for young researchers to engage their creativity and curiosity.
  - The panel recommends that the granting councils encourage and better support high risk research with the potential for high impact, potentially including making this an explicit part of each council’s mission, adjust funding criteria to encourage a better proportion of “risky” projects, and pursue training for peer reviewers to minimize risk aversion in the assessment process. **(Recommendation 6.6)**
- Mechanisms to allow for rapid response to emerging issues.
  - The panel notes that the potential impact of research is partly related to the ability to react to emerging discoveries, events or social shifts. This kind of rapid-response research is not necessarily well served by existing funding programs operating on regular calendars with few yearly windows.
  - The panel recommends that the councils develop a joint mechanism to fund rapid reviews and responses to breaking issues. **(Recommendation 6.7)**

## 7. Equity and diversity

- The report makes significant effort to underscore that research excellence, equity and diversity are mutually reinforcing goals. While noting that scholarly merit must be the foundation for allocation of research grants, the panel argues that “merit and equity alike are compromised if success rates fall too low or vary radically across disciplines.” (page 12)
- The report notes how Canada’s international competitors’ research systems make clear efforts to address gender balance and diversity and have specific competitions for younger scholars and capacity building programs for underrepresented groups. Equity and diversity are particularly important considerations for Canada, it is argued, given the critical need to cultivate talent in a research system and our small population base.
- The report notes that the dearth of data in Canada prevents an accurate assessment of equity and diversity issues in the research landscape, and points to the lack of a consistent accountability framework for this information across the granting councils.
- **Recommendation 5.4** calls for the Four Agency Coordinating Board to develop consistent and coordinated policies to improve equity outcomes in the allocation of funding while maintaining merit based standard, including through diversity in peer review, better data collection, and continual evaluation.

- **Recommendation 5.5** suggests the government should consider hard equity targets and quotas for agencies and programs where unacceptable disparities persist.
- Progress toward greater gender equity in higher education generally is noted, while flagging that continued challenges remain on gender equality and also with regard to disability, Indigenous peoples, and racialized communities.

#### **Early Career researchers and scholars across the age spectrum**

- A focus on the challenges facing early career researchers (ECRs) was flagged as an early priority by the panel in its deliberations. The panel's report includes **Recommendation 5.6** calling on the granting agencies to examine best practices in supporting ECRs and for agencies to track and report publically on the outcomes.
- The report notes that the panel heard not only about challenges at the ECR level but of the "valley of death" that opens between early career and established researchers.
- The overall thrust of the report is to emphasize the need for granting agencies to work more concertedly together to take a "lifecycle approach" to ensure effective support for researchers at the different stages of their careers. This includes better alignment and coordination of approaches to definitions and eligibilities as well as addressing the diverse realities of researchers whose career cycles can have very different patterns given issues including child care, elder care, illness and mature entrants.

#### **Support for Indigenous research**

- The panel's report has a substantive section dedicated to issues of Indigenous research, noting at the outset the culture and tradition of colonization, which has shaped the research system from its early days and resulted in a legacy of mistrust, exclusion and discrimination.
- The report notes the recommendations of the Truth and Reconciliation Commission regarding closing the educational and employment gaps, as well as calls to embrace and support Indigenous knowledge, healing practices and world views in educational and other systems.
- The panel noted progress in Canada's federal research system in awareness of ethical obligations, and increasing patterns to support research by and with Indigenous communities but that often research priorities still "...do not sufficiently recognize Indigenous leadership, governance, decision-making, institutions and knowledge systems." (page 99) The Panel also noted the strength of efforts undertaken in Australia to build capacity for Indigenous research leadership linked to the targeting of significant levels of investment in pursuit of this goals
- The granting councils are called on in **Recommendation 5.7** to work together for a comprehensive strategic plan to promote and provide long term support for Indigenous research, with a focus on research undertaken by and with Indigenous communities.

## **8. Research infrastructure**

#### **CFI funding**

- The panel finds that CFI has been effective in carrying out its mandate and recommends no changes to the agency's structure or programs. In **Recommendation 6.8**, the panel calls for the government to end the practice of funding CFI on an ad-hoc basis.
- The panel recommends the government set a target for infrastructure investment of 12 per cent of overall federal research spending, a level that is consistent with average historic spending in Canada and funding levels for research infrastructure in other countries.

- The panel recommends that, once ongoing funding for CFI is established, attention be placed on addressing gaps in CFI funding, particularly for projects that require relatively small funding amounts. This was recognized as having implications for the balance of funding between disciplines. (The Federation’s submission noted that this was a concern for HSS researchers.)
- The panel recognized that the requirements for matching funding in certain CFI programs was causing significant inefficiencies, including clients struggling to find matching funding to cover operating expenses. While the panel supports the existing fund-matching requirements for the vast majority of CFI projects, it finds that it is an impediment for projects that are clearly national or international in focus. The panel recommends that CFI’s stake in future projects increase from 40 per cent to 60 per cent. **(Recommendation 6.10)**

#### **Digital research infrastructure**

- The report notes that the rising demand for digital research infrastructure across all disciplines was raised extensively during consultations, and the panel concludes that Canada’s digital research infrastructure is not growing quickly enough to keep pace with rising demand.
- The panel observes that the digital research support system has developed in a gradual fashion in recent decades through the establishment of a number of service providers, resulting in a system that is “divided among uncoordinated and, at times, competing stakeholders.”
- The panel finds that the current digital support system does not encourage effective leadership and that there is a need to reorganize. In particular, the panel finds that separate CANARIE and Compute Canada structures are an inefficient arrangement that hinders progress on digital infrastructure issues. The panel recommends that these organizations be merged, as part of a process to consolidate Canada’s varied digital research support services. **(Recommendation 6.9)**
- Throughout its analysis of Canada’s digital infrastructure needs, the panel also recognizes the contributions of the Leadership Council for Digital Infrastructure (LCDI), which was separately commissioned by Minister Duncan, and welcomes its upcoming recommendations.

#### **Full costs of research**

- The rate at which universities are compensated for the costs they incur when their faculty members receive research grants featured prominently in the consultations. The panel heard reports that the actual costs incurred by institutions can range from 40 to 60 per cent of the value of the research funding, while the costs recovered through the Research Support Fund amount to between 17 to 20 per cent. (The panel also notes there is widespread misunderstanding about how the RSF formula works.)
- The panel concludes that concerns over the indirect costs incurred by institutions are valid and that the rate at which these costs are covered by federal funding should be increased. The panel also recognizes that its recommendations to significantly increase funding for independent research would result in a proportional increase to indirect costs to institutions.
- The panel recommends that the reimbursement rate of the RSF be gradually increased to 40 per cent for all institutions with more than \$7 million per year of eligible funding. Total funding for the RSF program should be increased in proportion to the increase in eligible research funding to maintain the 40 per cent ratio. **(Recommendation 7.3)**

The Federation for the Humanities and Social Sciences promotes research and teaching for the advancement of an inclusive, democratic and prosperous society. With a membership now comprising over 160 universities, colleges and scholarly associations, the Federation represents a diverse community of 91,000 researchers and graduate students across Canada.

The Federation:

- Organizes Canada's largest annual gathering of academic researchers, the Congress of the Humanities and Social Sciences
- Brings leading scholars to Parliament Hill to discuss public policy and public relevance in our *Big Thinking* lecture series
- Supports the publication and sharing of new ideas through its Awards to Scholarly Publications Program

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## APPENDIX

# Working groups advising the Federation's Fundamental Science Review submission

The Federation's September 2016 submission to the Fundamental Science Review was informed by the work of three working groups comprised of Federation members and Board representatives, as well as from comments and feedback from the membership at large during an open comment period in September 2016. These groups provided valuable insight to support the development of the Federation's submission; however, the Federation alone takes responsibilities for these recommendations.

The Federation thanks the following individuals for their contributions to our working groups:

- Susan Brown, Professor of English, University of Guelph
- Carmen Charette, Vice-President of External Relations, University of Victoria (Federation Board Member and working group chair)
- Lesley Cormack, Dean, Faculty of Arts, University of Alberta
- Anne-Marie Fortier, Professor of Literature, Université Laval
- Matthew Herder, Associate Professor of Medicine, Dalhousie University
- Marianne Ignace, Professor of Linguistics, Simon Fraser University
- Vincent Larivière, Associate Professor of Information Science, Université de Montréal
- Susan McDaniel, Professor of Sociology, University of Lethbridge
- Lisa Philipps, Professor of Law, York University (Federation Board Member and working group chair)
- Michael Eberle Sinatra, Professor of English, Université de Montréal (Federation Board Member and working group chair)
- Chris Southcott, Professor of Sociology, Lakehead University
- Julia Wright, Professor of English, Dalhousie University (Federation Board Member)