



Review of the Council of Canadian Academies

Report from the External Evaluation Panel 2010

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THE COUNCIL OF CANADIAN ACADEMIES

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NOTICE: The project that is the subject of this report was undertaken with the approval of the Board of Governors of the Council of Canadian Academies. Board members are drawn from the RSC: The Academies of Arts, Humanities and Sciences of Canada, the Canadian Academy of Engineering (CAE) and the Canadian Academy of Health Sciences (CAHS), as well as from the general public. The members of the panel responsible for the report were selected by the Council for their special competences and with regard for appropriate balance.

This report was prepared for the Government of Canada. The opinions, findings, conclusions and recommendations expressed in this publication are those of the authors – the External Evaluation Panel.

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INTRODUCTION

The Council of Canadian Academies (the Council) was established in 2005,¹ to provide Canada with a standing capacity to bring together panels of experts to conduct assessments as to what is known, and also what is not known, about the science² that is relevant to important public issues. As required in its funding agreement with the Government of Canada, the Council is undertaking an evaluation of its first five years of operations to determine whether it has delivered on its vision and whether it has provided added value in informing public debate and decision making in Canada.

In the fall of 2009, the Council of Canadian Academies appointed an External Evaluation Panel (the Panel) to assess the performance of the Council (see Annex 1: Terms of reference and membership). The Panel met in person for two days and held several teleconferences. Its deliberations were informed by extensive and detailed documentation (see Annex 2), and by interviews with key respondents (list of respondents in Annex 3).

This report provides the External Evaluation Panel's assessment of the extent to which the Council of Canadian Academies has, to date, fulfilled its mission. The report also identifies key opportunities for the Council's continued development in the future.

BACKGROUND

The Council is an independent, not-for-profit corporation supported initially by a \$30 million grant from the Government of Canada to finance its core operations from April 2005 until March 2015. The Council became operational in February 2006 and received its first assessment request in May 2006.

The Council's objectives are to provide Canadians with an independent, highly respected voice on the science underlying pressing issues of public interest, including key public policy questions, by:

- undertaking expert scientific assessments that identify scientifically sound evidence with the objective of informing deliberative processes;
- making such assessments available to the public in a timely manner and in both official languages; and
- in furtherance of its objectives, exchanging scientific knowledge with other national Academies around the world.

The founding documents of the Council include, as a further objective, to "provide the Canadian scientific and academic community with an expert voice on matters relating to scientific research." The Council's three Member Academies – the RSC: The Academies of Arts, Humanities and Sciences of Canada, the Canadian Academy of Engineering, and the Canadian Academy of Health Sciences – were of the view that the "expert voice in matters relating to scientific research" was more properly a mandate of the Academies themselves, rather than of the Council. The Council's board agreed to hold the "voice" objective in abeyance and to focus the Council's efforts exclusively on the support of expert panel assessments and matters relating directly thereto, including in the Council's international engagements.

By March 31, 2010, the Council has completed eight assessments, has four more underway, and expects to launch more shortly (see Annex 4). A "typical" assessment involves five or more face-to-face panel meetings over 12 to 16 months, plus time for printing and translation. Reports are provided in both French and English and range from 100 to 250 pages, depending on the scope of an assessment. The Council's operational processes are flexible, however, allowing for shorter assessments with smaller reports.

¹ The Council was incorporated in 2002 as the Canadian Academies of Science; however, it remained a shell corporation until it received a founding grant from the federal government through the 2005 federal budget.

² The Council has interpreted "science" to encompass the natural, social and health sciences, engineering, and the humanities.

The Council of Canadian Academies appointed an External Evaluation Panel to assess the performance of the Council as a whole. The evaluation addressed the following overarching questions:

1. Is the Council delivering on the objectives as outlined in its founding documents and also as incorporated in the Funding Agreement?
2. Has the Council added value in informing public debate and decision making in Canada?

The Panel unhesitatingly answers “yes” to both these questions.

The Board of Governors (the Board) of the Council also sought an authoritative objective assessment of the four pillars of the Council’s Evaluation Framework:

- Organizational excellence and productivity
- Awareness and reputation
- Participation and stakeholder relationships
- Impact

In addition, the Board sought the Panel’s assessment of its communications activities, as well as any unmet opportunities which the External Evaluation Panel might identify during the evaluation.

Sound public policy development requires access to independent sources of high-quality science advice, and Canada has been viewed by its peers as lagging behind in developing this important capacity. The Council of Canadian Academies is making a notable contribution by providing independent scientific assessments relevant to major public policy issues. In the relatively short time since its creation, the Council has done an excellent job of producing high-quality reports that are being used by decision makers to provide Canadians with better evidence-based public policy. The Council thus brings significant strengths to addressing the next steps in its evolution.

Organizational excellence in the development of science advice

The Council has high standards of excellence for its panels, processes, and staff, and these are resulting in high-quality reports. The Council, as a result, is already viewed as highly credible within the federal government, as well as among broader stakeholders and users of its reports. This high level of organizational excellence will serve the Council well as it moves through the short-term challenge of its current leadership transition. The Council’s high standards will also provide it with a strong foundation as it continues the longer-term process of evolving its focus from the operational needs of a start-up organization towards the longer-term strategic needs of a mature organization.

Relationship with the Member Academies

The Council has been structured to bring its own capacities together with those of its three Member Academies; this relationship, however, has not been as productive as it could be. If the assets of these four organizations are combined in a synergistic way to create a shared and collective vision, the result will be a powerful voice able to encourage enhanced use of science advice in Canadian public policy making. The Panel believes the Council should work with its Member Academies to make a commitment to focus on the future, and to forge a productive and mutually beneficial relationship.

The Council and its Member Academies have much to offer each other, and should work towards building a relationship similar to that between the U.S. National Research Council and its member Academies, in which the Council supports the work of the Academies, and the Academies, in turn, are strengthened and better able to support the work of the Council.

Diversifying sources of topics and assessment mechanisms

A core group of federal departments have supplied the Council with an excellent range of topics to date. As assessment questions address all areas of science, however, including natural, social and health sciences, engineering, and the humanities, they have relevance to all federal departments. The Council should therefore try to engage a broader base of federal departments in the future. Furthermore, the Panel believes that policy discourse would benefit from having topics suggested by a more diverse range of organizations, such as other kinds of public sector bodies, including provincial and municipal bodies, as well as universities, non-governmental organizations (NGOs), and Canada's Academies.

The Council should explore with the federal government the use of a portion of its core funding for questions deriving from sources other than federal departments.

Finally, the Panel believes that the Council should continue to further diversify its assessment mechanisms, in order to meet a range of needs for science advice of different scope, depth, and timeliness.

Stakeholder engagement, communications and outreach

The Council has the opportunity to increase the engagement of key stakeholders in enhancing its assessments and, especially, in increasing their impact on decision makers. For example, more structured and ongoing interactions with sponsors and key decision makers will enhance the uptake of assessment findings, while stronger links with key channels to scientific expertise will assist in continuing to attract high-quality panel members. The Member Academies could become key partners in disseminating findings. The Panel believes the Board should lead the development of a new communications strategy that builds on the Council's considerable assets: its reputation, quality product, enthusiastic panellists and scientific advisors, and its key partners, the Academies. Working with this broadened voice, the Council can considerably expand its ability to reach out to key stakeholders who could be identifying assessment topics and/or making use of their findings.

Establishing sustainable funding

The Council has an urgent need to establish sustainable funding over the long term and should develop a request for renewed federal funding in the next two years. At the same time, the Council should look to diversifying its support base (which will also contribute to diversifying sources of topics for assessments). Dedicated development staff should begin the process of raising new sources of funding, while seeking organizations who may wish to gain access to the Council's expertise and credibility by using its capacity on a fee-for-service basis.

DEVELOPING SCIENCE ADVICE IN CANADA

The Council has done an excellent job negotiating the many challenges of a busy start-up organization. It is already viewed as highly credible within the federal government, as well as among broader stakeholders and users of its reports. To maintain this reputation, the Council will need to ensure that it continues to develop high-quality panels and reports, and work to enhance their uptake by key decision makers. By diversifying its sources of topics and funding over time, the Council will reinforce its reputation as credible and independent from government, and show that it can address the most important issues to Canadians, even – or perhaps especially – when these issues are controversial.

The Council is now making the transition from start-up to established organization, and has been examining the opportunities and challenges it might face in the future (see Annex 5: Council analyses). The Council's proven track record provides it with an excellent foundation to address its next phase of development. The Panel thus offers the following suggestions for how the Council can best build on its current strengths to achieve its future goals.

Quality of science assessments

The Panel concurs with the widespread judgment that the Council brings together high-quality panels and is producing high-quality reports. The Council is able to attract the best panellists, and its panels comprise a good mix of expertise and an appropriate balance of Canadian and international members.

The Council's productivity has been good for a start-up organization, and it has ambitious plans to undertake a large number of assessments over the next few years. The Council has faced many start-up challenges in undertaking its first set of assessments, but has demonstrated that it learns quickly from its experiences and has continually improved and enhanced its assessment processes. As a result, the Council has developed robust systems that should ensure it maintains its high standards in the future.

Impact of the Council's assessments

The Council's assessments, although only recently produced, have already had significant impact in federal departments and, to some extent, more broadly. Annex 6 provides an externally-commissioned assessment of the impacts of the eight reports the Council has produced to date.

The Panel views these results as preliminary. The Council's assessments will generate impacts over the next five, or even 10 to 15 years. As such, while an initial analysis provides useful baseline information, it cannot capture the influence of the reports on the long-term evolution of strategic directions and policy. It will thus be important to follow the impact of the reports over time, and not just the once.

Now that the Council has established its credibility and track record, it has the opportunity to undertake more active dissemination of its reports to help ensure they continue to be useful and relevant within ongoing public policy debate. International experience has shown that there are two major requirements for achieving high impact with science advice:

- 1) undertaking sustained dialogue over time with user audiences; and
- 2) thinking about the impact from the start, by establishing the right question that is most helpful to the public debate at this time.

Dissemination beyond the primary sponsors can be a large and daunting job. However, it is not one the Council needs to undertake alone. The Council should seek out appropriate partners and key champions to lead and assist its efforts to engage users in dialogue around its findings. In particular, the Council has significant opportunities to engage its three Member Academies as partners in dissemination.

Investing in expanded efforts to bring its work to the attention of key users will help the Council be better able to demonstrate its impact when seeking new funding and new sources of funding. The Council may also wish to consider addressing some topics which are narrower and have greater potential to lead to shorter-term and more readily identifiable impacts.

Diversifying topics

The Panel believes there are a number of key steps the Council should take to expand and enhance its ability to attract high-quality questions and ensure that it is undertaking scientific assessments relevant to the most important public policy issues for Canadians.

Some federal departments, particularly Industry Canada and Natural Resources Canada (NRCan), have engaged extensively with the Council and are making significant use of its resources. At NRCan, for example, the Council's assessments are informing program development at the operational level, as well as strategic planning at the executive level of the department. However, as assessment questions address all areas of science, including natural, social and health sciences, engineering, and the humanities, they have relevance to all federal departments. The Panel believes that Canada would benefit if all federal departments were able to take advantage of the Council's services in the robust way being modelled by NRCan. It is thus important that the Council continue and even expand its efforts to attract and encourage topic generation and assessment use by the full range of federal departments.

The federal government is one key source of policy-relevant scientific questions of importance to Canadians. The Panel believes that policy discourse would benefit if the Council actively sought out additional sources of topics, such as Canada's Academies and universities, the Science, Technology and Innovation Council (STIC), provinces, and even Parliament's standing committees. While a variety of mechanisms might be used to solicit and discuss potential topics, the final choice would always, as now, remain with the Council's Board of Governors. Expanding its

sources of assessment questions will both increase the Council's independence, and enhance its responsiveness and utility to Canada's broader public policy needs. Diversifying funding sources, as discussed in more detail below, will also be an important route to eliciting more diversified sources of topics.

To date, both the Council and the government have acted as though the \$30 million provided by the federal government can only be invested in questions generated by federal departments, although such a limitation is not explicit in the funding agreement.³ As the Council has proven itself a responsible and productive investor of public funds, the Panel believes it is time for it to seek agreement from the Government of Canada to use a portion of the \$30 million to support policy-relevant scientific questions of major interest to Canadians, but generated from outside federal departments. This expansion of topics should benefit Canada's federal departments as well.

Providing other kinds of science advice

The Council has identified a risk in the growing disconnect between policy makers' need for rapid advice, and the Council's model of a large expert panel, deliberating over 12-16 months and producing a large and carefully documented volume of findings. The Panel agrees that, in the future, these in-depth reviews will need to be increasingly supplemented with other mechanisms to provide advice on cutting-edge issues quickly and in response to specific needs.

The Council has, in fact, already taken a first step in this direction with its *Vision for the Canadian Arctic Research Initiative*, a report developed in three months and involving a single panel meeting. There are many mechanisms the Council might use to provide valuable scientific input into key policy discussions; the U.S. National Research Council, for example, develops "letter reports", and creates roundtables that bring together a mix of scientific experts and policy makers for a day to discuss critical issues.

³ The Council's funding agreement with the Government of Canada states in section 6.1. that "CCA shall conduct Assessments of the state of scientific knowledge on issues of interest to Canadians and Canada". The funding agreement further states in section 6.3 that "Canada may propose that CCA carry out Assessments on scientific topics for the purpose of informing the Canadian public on the state of scientific knowledge related to each topic proposed. CCA shall make best efforts to carry out five such Assessments in each year of this Agreement."

RECOMMENDATIONS

1. The Council should place high priority on maintaining the standards of excellence of its panels, processes, and staff, which are resulting in high-quality reports.
2. The Council should undertake more active and sustained dissemination of its findings, working with key partners, especially the Member Academies.
3. The Council should increasingly incorporate strategies for enhancing the impact of an assessment into its early planning stages, including shaping the initial question to be addressed.
4. The Council should expand its efforts to encourage and enable a broader base of federal departments to actively engage with the Council and make effective use of scientific evidence in policy development.
5. The Council should diversify its sources of high-quality topics by seeking federal government agreement to use a portion of its core funding for questions deriving from sources other than federal departments, for example, Canada's Academies; the Science, Technology and Innovation Council (STIC); or Parliament's standing committees. Seeking additional sources of funding would also result in some further diversification of sources of topics (see Recommendation 19).
6. The Council has begun to explore new kinds of assessment reports and processes; it should continue to diversify its approaches to meet a range of needs for science advice of different scope, depth, and timeliness.

RELATIONSHIP WITH THE ACADEMIES

The Council was created to benefit Canada and Canadians by providing a credible, independent source of expert knowledge of the science underlying key public policy issues.

Recognizing that a great deal of Canada's intellectual capital lies within the country's three Academies – the RSC: The Academies of Arts, Humanities and Sciences of Canada, the Canadian Academy of Engineering, and the Canadian Academy of Health Sciences – these organizations were designated the founding members of the Council. The relationship between the Council and its three Member Academies, however, has not been as productive or cooperative as it could be.

Since the three Academies play the lead role in the governance of the Council, together appointing a majority (8 of 12 members) of the Council's Board, the Board has a particular leadership role and responsibility in bringing about a more effective relationship between the four organizations. For Canadians to receive the fullest return on their investment, the intellectual assets of the Academies need to be combined effectively with the Council's resources and proven track record of organizing and supporting assessments.

Next steps

More formal structures are required to build a mutually-beneficial relationship in which there is real and tangible value provided to all parties. At the operational level, interactions need to be established, institution-to-institution, that are consistent, frequent, and ongoing. At the strategic level, Board members must be able to bring forward the goals, needs and perspectives of the Member Academies, and ensure that the Council can support the goals of its members while those members support the goals of the Council.

The Panel suggests starting with well-defined steps and collaborative activities, and building on those successes to develop the structures and trust needed to achieve larger and more complex goals, such as a joint assessment. Some approaches that could be explored include:

- undertaking an annual full-day meeting that brings together the executive committees of all four Boards to discuss a shared vision and strategic needs;
- establishing formal structures, such as a Committee of Presidents, with a specific mandate, regular meetings, and well-defined goals to develop concrete plans for joint activities;
- identifying shared interests outside of assessments – for example, attracting students to science careers or raising science literacy – and develop shared projects in these areas;
- recognizing that the Academies are undertaking assessments of their own, establish agreements and protocols that make it possible for the Academies, when they so desire, to use the Council's capacity to develop their own assessments, incorporating Academy branding with a coordinated Academy-Council communications strategy (such efforts are already underway);
- supporting the Academies' efforts to increase their capacity to interact with their memberships, thereby enhancing the ability of their members to engage in the Council's activities;
- co-locating to further mutual understanding and working towards shared goals; and
- contracting with the Academies to undertake activities in support of the assessment process, such as dissemination.

Consideration could be given to the U.S. example, in which some National Research Council (NRC) funding goes to the Academies to support their own members, on the assumption that the vibrancy of the Academies is the key to the success of the NRC's assessment processes. The Council should work with the Academies and the government towards a funding model that would similarly enhance the capacity of the assessment process to support public policy.

Vision for the future

In the United States, President Obama has emphasized the importance of quality science advice in government. Other major countries, such as the U.K., Germany, and Japan, have significantly strengthened their structures for the development and provision of science advice in the last five years. Canada has

been weak in this capacity, but the Council has taken a large step forward. Its success opens an opportunity to further strengthen the science voice in Canada in a broad and sustainable way.

Canada is a small country, and its science advice community must speak with a coherent voice to realize this opportunity. If the assets of the Council and its three Member Academies are brought together in a synergistic way to create a shared and collective vision, the result will be a powerful voice able to encourage enhanced use of science advice in public policy making. The Academies, the Council, and all Canadians stand to benefit greatly from this collaboration.

RECOMMENDATIONS

7. The Council should work with its three Member Academies to make a commitment to focus on the future, and on forging a productive and mutually-beneficial relationship.
8. The Board should work with the Academies to chart a shared vision as to how they can work together in a synergistic way to make the greatest possible contribution to the well-being of Canadians; these discussions could be launched with a one-day meeting of the four Boards' Executive Committees.
9. The Council should establish a range of formal structures to ensure regular and ongoing institutional interactions among the four organizations.
10. The Board should identify specific projects and activities that will allow the Council and the three Academies to support each others' activities in mutually-beneficial ways, and to enhance each others' capacity to achieve their goals.

STAKEHOLDER ENGAGEMENT

Scientific experts

The Council depends on its continued ability to attract the best experts to its panels. It is timely to look for ways to enhance and formalize the Council's relationships with key channels to scientific expertise, including the Academies, universities, and other groups such as the Canada Research Chairs (CRCs), the Networks of Centres of Excellence (NCEs), and the Canadian Institute for Advanced Research (CIFAR).

In addition, given that these experts contribute to the Council's panels on a volunteer basis, it is important to keep this relationship strong and rewarding for both parties. Some form of recognition or other approaches to express the Council's appreciation may be helpful.

Science-advice community

The Council is one contributor to Canada's science-advice capacity, and needs to work effectively with all players in that community. The Council should seek out other science-advisory bodies, and establish ongoing communications channels to share information

and maximize synergies. For example, it would be timely for the Council to clarify its interactions with the Science, Technology and Innovation Council (STIC), to better understand how each can contribute to the other's mandate when appropriate to do so. If the Council undertook a second science and technology report, for instance, collaboration with STIC might enhance the development and impact of the assessment.

Users of science advice

There is also an opportunity to begin to develop more structured and consistent interactions with all of the Council's sponsors, as well as reaching out more regularly to other key decision makers in provinces and municipalities. Universities and research institutes, NGOs and industry are also key users of the Council's scientific assessments. Ongoing discussions with major users of the Council's reports serve a number of important needs, including enhancing the uptake of the Council findings at executive as well as operational levels within organizations, spurring the generation of new relevant and high-quality topics, and helping the Council monitor its impact over time.

RECOMMENDATIONS

11. The Council should expand and formalize its channels to reach expert communities, and may wish to seek enhanced means to recognize the contributions those experts make to its work.
12. The Board should reach out to key stakeholders in the science advice community, to identify the types of formal liaison that are possible and most helpful to each other.
13. The Council should develop more structured and ongoing interactions with sponsors and key decision makers to enhance the uptake of its findings, and to help monitor impact over time.

COMMUNICATIONS AND OUTREACH

The Council, in its few short years of existence, has already developed an enviable reputation for excellence in knowledgeable circles. There is a fair bit of awareness of individual reports among those communities that have been affected by a Council assessment, and the Council's active and well-known former President has increased its overall profile. Broader understanding of the Council and its mission is slowly increasing beyond those who have had direct interactions with it.

The Council has had some impact on the broader public and business community and the media, particularly with its most recent report on Innovation. Although its profile could be higher, the general media is not the primary audience for most of the Council's reports, and it thus makes sense to first focus communications efforts on marketing to, and engaging directly with, key users. Over time, the Council needs to expand its capacity to work with the media as a channel to communicating with its various stakeholders.

Expanding the Council's voice

To date, the Council has focused on developing a portfolio of high-quality assessments and establishing its credibility as a source of independent science advice. Having successfully done so, the Panel believes it is time for the Council to take on a more active role in communications and outreach and expand the voices speaking on its behalf. The Council has considerable assets – realized and potential – to draw upon, including high-quality and enthusiastic panellists, Board and Scientific Advisory Committee (SAC) members, and the members of the Academies.

The Board should identify the most effective ways to engage those major assets in dissemination, awareness and reputation building. This diversified community, speaking to the importance of science advice in policy, will provide important champions to increase uptake of the Council's reports, as well as contribute towards building a sustainable funding strategy.

The Council may also wish to expand its ability to speak to and for the expert communities who support it. The Panel believes that it would be timely for the Council to revisit, with its three Member Academies, the Council's fourth objective, currently held in abeyance: "to provide the Canadian scientific and academic community with an expert voice on matters relating to scientific research."

Reaching out to key stakeholders

Outreach should focus on those key audiences who are, or should be, taking up the Council's findings into their decision making, as well as those that could be sources of new public policy topics for scientific assessment. Important stakeholders include the Academies, provinces and municipalities (probably through the Federation of Canadian Municipalities), universities and industry (largely through business and industry associations).

International collaboration

The Council should continue to seek opportunities to work with its Member Academies to increasingly contribute to bodies such as the Inter-Academy Panel on International Issues (IAP) and the International Council for Science (ICSU), and support a unified Canadian voice in international science policy.

RECOMMENDATIONS

14. The Board should lead the development of a new communications strategy that builds on the Council's considerable assets: its reputation, quality product, enthusiastic panellists and scientific advisors, and its key partners, the Academies.
15. The Council should empower and support this broadened scope of voices to engage with a wide range of key stakeholders who could be identifying topics and/or making use of their findings.
16. The Council should continue to seek opportunities to work with the Academies to contribute to international science advisory bodies.

ORGANIZATIONAL EXCELLENCE

Although the Council is very young, it has developed an enviable reputation for organizational excellence. The high quality of its staff is lauded by panellists; the External Evaluation Panel saw this quality reflected in its own experience with the Council, and in the high quality and extensive scope of the materials provided to inform its deliberations. The Panel also appreciated the thoughtfulness and insight in the high-quality analyses provided by the Council's Board, Scientific Advisory Committee and management.

Leadership transition

The Council's inaugural President stepped down as of January 1, 2010, while its Vice-President, there on secondment, completed her term and returned to her home organization on February 15, 2010. The Chair of the Council's Scientific Advisory Committee, an individual with extensive senior management experience, has been appointed as Interim President until the new CEO is identified.

There are significant risks associated with any transition in staff leadership. The Council is a young and rapidly evolving organization, and may be without a permanent President and Vice-President

for some time. The Council's current staff has proven itself highly capable; nonetheless, the executive transition comes at a time when the Council's workload is significantly expanding. This transition period will place a particular onus on the Board to provide strengthened leadership and support to both the Interim President and to staff as they address the challenge of maintaining and building upon the Council's organizational excellence throughout this transition.

Board development

We commend the Board for successfully leading the Council through a challenging start-up phase and establishing robust assessment processes that are resulting in high-quality reports. Now that the Council is maturing, it is timely for the Board to evolve its focus from establishing start-up operations, to addressing longer-term strategic and overarching issues in science and public policy.

RECOMMENDATIONS

17. The Council should maintain its high levels of organizational excellence, and take particular care during its current period of leadership transition.
18. The Board should continue the process of evolving its focus from start-up needs towards longer-term strategic planning.

SUSTAINABLE FUNDING

The Panel sees an urgent need for the Board to develop a long-term strategy for sustainable funding which addresses:

1. Renewed federal funding
2. A diversified funding base

The Council needs to know, by year eight of its current funding agreement (2013), whether it has the resources to continue operations. If new funding commitments are not clearly secured, the Council will be increasingly unable to attract or accept any new assessments after that time and may start to lose key staff. The Council's request for renewed federal funding thus needs to be completed and submitted in the next two years. The Panel believes the Council is providing a high-quality and valuable service to Canada, and encourages the federal government to respond positively to a robust funding-renewal request at that time.

It is equally important for both the Council's sustainability and its growing reputation that it develop a more diversified support base that supplements federal funding with other sources of income. The Council needs dedicated development staff in place to begin

the process of raising new sources of funding. The private sector and foundations, and possibly some provincial governments, may be key investors. As it expands its funding base, the Council will need to ensure it maintains its independence, and the perception of its independence, by developing robust policy ensuring that all assessments remain free of any suggestion that their sources of funds might influence their outcome.

In addition, the Council should focus on building relationships with other organizations who currently do their own scientific assessments of various kinds, but might at times find more value in utilizing the Council's expertise and credibility on a fee-for-service basis.

Effectively engaging and mobilizing a wide range of champions and voices, as discussed in the section on Communications and Outreach, will support the successful implementation of the Council's sustainable funding strategy. Sponsors and other users of the Council's assessments, able to speak to their relevance, utility, and impact, will be an important part of that voice.

RECOMMENDATIONS

19. The Board should move forward very quickly to develop a long-term funding strategy that addresses both renewed federal funding and diversifying the Council's funding base.

RECOMMENDATIONS OF THE EXTERNAL EVALUATION PANEL

Recommendations that are directed to the Council should be addressed as a joint effort of Council's Board, Scientific Advisory Committee and staff. Recommendations directed explicitly to the Board imply a particularly high need for active Board leadership, in addition to broader Council involvement in their implementation.

1. The Council should place high priority on maintaining the standards of excellence of its panels, processes, and staff, which are resulting in high-quality reports.
2. The Council should undertake more active and sustained dissemination of its findings, working with key partners, especially the Member Academies.
3. The Council should increasingly incorporate strategies for enhancing the impact of an assessment into its early planning stages, including shaping the initial question to be addressed.
4. The Council should expand its efforts to encourage and enable a broader base of federal departments to actively engage with the Council and make effective use of scientific evidence in policy development.
5. The Council should diversify its sources of high-quality topics by seeking federal government agreement to use a portion of its core funding for questions deriving from sources other than federal departments, for example, Canada's Academies; the Science, Technology and Innovation Council (STIC); or Parliament's standing committees. The Council can also diversify its sources of topics by seeking additional sources of funding (see Recommendation 19).
6. The Council has begun to explore new kinds of assessment reports and processes; it should continue to diversify its activities to meet a range of needs for science advice of different scope, depth, and timeliness.
7. The Council should work with its three Member Academies to make a commitment to focus on the future, and on forging a productive and mutually-beneficial relationship.
8. The Board should work with the Academies to chart a shared vision as to how they can work together in a synergistic way to make the greatest possible contribution to the well-being of Canadians; these discussions could be launched with a one-day meeting of the four Boards' Executive Committees.
9. The Council should establish a range of formal structures to ensure regular and ongoing institutional interactions among the four organizations.
10. The Board should identify specific projects and activities that will allow the Council and the three Academies to support each others' activities in mutually-beneficial ways, and enhance each others' capacity to achieve their goals.
11. The Council should expand and formalize its channels to reach expert communities, and may wish to seek enhanced means to express appreciation for the contributions those experts make to its work.
12. The Board should reach out to key stakeholders in the science advice community, to identify the types of formal liaison that are possible and most helpful to each other.
13. The Council should develop more structured and ongoing interactions with sponsors and key decision makers to enhance the uptake of its findings, and to help monitor impact over time.
14. The Board should lead the development of a new communications strategy that builds on the Council's considerable assets: its reputation, quality product, enthusiastic panellists and scientific advisors, and its key partners, the Academies.

15. The Council should empower and support this broadened scope of voices to engage with a wide range of key stakeholders who could be identifying topics and/or making use of their findings.
16. The Council should continue to seek opportunities to work with the Academies to contribute to international science advisory bodies.
17. The Council should maintain its high levels of organizational excellence, and take particular care during its current period of leadership transition.
18. The Board should continue the process of evolving its focus from start-up needs towards longer-term strategic planning.
19. The Board should move forward very quickly to develop a long-term funding strategy that addresses both renewed federal funding and diversifying the Council's funding base.

ANNEX 1: EXTERNAL EVALUATION PANEL TERMS OF REFERENCE AND MEMBERSHIP

1. Introduction

The Council of Canadian Academies was established in 2005 to provide a standing capacity within Canada to manage the conduct of assessments by panels of experts as to what is known, and also what is not known, about the science that is relevant to important public issues. As the Council completes its first five years, it is important to determine whether it has delivered on the vision, and whether it has provided added value in informing public debate and decision making in Canada.

The purpose of this document is to provide Terms of Reference for a five-year, independent, third-party review of the Council to address this important question. The review will be undertaken by an External Evaluation Panel appointed by the Council's Board of Governors.

2. Background

The Council is an independent, not-for-profit corporation supported initially by a \$30 million grant from the Government of Canada (Budget 2005) to finance the Council's core operations through March 2015. The Council became operational in February 2006 and received its first assessment request in May 2006. The founding grant includes a formal Funding Agreement between the Council and the Government of Canada.

The External Evaluation Panel will assess the extent to which the Council of Canadian Academies has, to date, fulfilled its mission. Drawing on the founding documents (Letters Patent and By-laws), the Council has sought to:

Provide Canadians with an independent, highly respected voice on the science underlying pressing issues and matters of public interest, including key public policy questions, by:

- *undertaking expert scientific assessments which identify scientifically sound evidence with the objective of informing deliberative processes;*
- *making such assessments available to the public in a timely manner and in both official languages; and*

- *in furtherance of its objectives, exchanging scientific knowledge with other national Academies around the world.*

The founding documents of the Council include, as a further objective, to "provide the Canadian scientific and academic community with an expert voice on matters relating to scientific research." The Council's three Member Academies – the Royal Society of Canada, the Canadian Academy of Engineering, and the Canadian Academy of Health Sciences – were of the view that the "expert voice in matters relating to scientific research" was more properly a mandate of the Academies themselves, rather than of the Council. The Council's Board agreed to hold the "voice" objective in abeyance and to focus the Council's efforts exclusively on the support of expert panel assessments and matters relating directly thereto, including in the Council's international engagements.

Goals for the five-year third-party independent evaluation

The evaluation, which is to assess the performance of the Council as a whole, will address the following overarching questions:

- Is the Council delivering on the objectives as outlined in its founding documents and also as incorporated in the Funding Agreement?
- Has the Council added value in informing public debate and decision making in Canada?

Without limiting the external evaluation process, the Board of Governors of the Council seeks an authoritative objective assessment of the four pillars of the Council's Evaluation Framework:

- Organizational excellence and productivity
- Awareness and reputation
- Participation and stakeholder relationships
- Impact

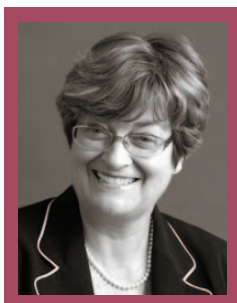
In order to help the Council chart its future evolution, the Board of Governors seeks an assessment and recommendations in relation to these four pillars as well as any unmet opportunities the External Evaluation Panel might identify during the evaluation.

Requirements for the External Evaluation Panel

An independent panel of experts will be established to conduct the evaluation. The panel will have a minimum of three members, including a chair. The panel will:

- comprise of highly respected professionals;
- include at least one member based outside of Canada;
- be knowledgeable with respect to international peer organizations; and
- be independent of the current management and governance of the Council.

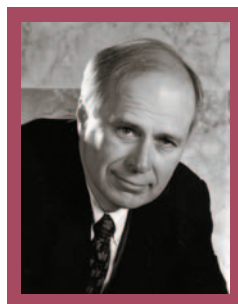
Membership of the External Evaluation Panel



Margaret Bloodworth, Chair
Former senior public servant, including most recently, Associate Secretary to Cabinet and National Security Advisor to the Prime Minister Ottawa, Ontario

Margaret Bloodworth entered the Public Service in 1972 as a compensation officer with Canada Post while continuing to study law at the University of Ottawa. She earned her law degree in 1977. After being called to the Bar in 1979, she became Counsel with the former Canadian Transport Commission (CTC). Over the following two decades, she applied her competence, skills and leadership ability to an expanding set of responsibilities, becoming General Counsel at the CTC, Director General for the Dispute Resolution Branch at the National Transportation Agency and Deputy Clerk of the Privy Council, among other roles. She went to Transport Canada in 1996 as the Associate Deputy Minister and became its Deputy Minister in 1997.

In 2002, Mrs. Bloodworth became Deputy Minister of National Defence. She advanced key security policy files and pursued a closer and more comprehensive defence and security relationship with the United States. Later, as Deputy Minister for Public Safety, she spearheaded the Cross-Cultural Roundtable on Security, the Government Operations Centre and the National Emergency Response System. Most recently, Mrs. Bloodworth held the positions of Associate Secretary to Cabinet and National Security Advisor.



E. William Colglazier
*Executive Officer
National Academy of Sciences
Washington, D.C.*

E. William Colglazier is Executive Officer of the National Academy of Sciences (NAS) and Chief Operating Officer of the National Research Council (NRC).

Dr. Colglazier was executive director of the Office of International Affairs of the NRC from 1991 to 1994. From 1983 to 1991, he was professor of physics and director of the Energy, Environment, and Resources Center at the University of Tennessee. He worked at the Stanford Linear Accelerator Center, the Institute for Advanced Study in Princeton, and the Kennedy School of Government at Harvard prior to 1983. While at Harvard, Dr. Colglazier also served as associate director of the Program in Science, Technology, and Humanism of the Aspen Institute. In 1976-77, he was an AAAS Congressional Science Fellow working for Congressman George Brown. He is past chair of the Forum on Physics and Society of the American Physical Society and a fellow of the American Association for the Advancement of Science and the American Physical Society. Dr. Colglazier received his Ph.D. in theoretical physics from the California Institute of Technology in 1971.



Luc Vinet
Rector
Université de Montréal
Montréal, QC

Luc Vinet holds a doctorate (3rd cycle) from the Université Pierre et Marie Curie and a Ph.D. from the Université de Montréal, both in theoretical physics.

After two years as Research Associate at MIT, he was appointed in the early 1980s as faculty member in the Physics Department at the Université de Montréal. He has held a number of visiting professorships at distinguished universities. He is a sought-after speaker and the author or co-author of ten books and more than one hundred scientific papers. A world-renowned theoretical physicist, his research areas include gauge field theories, supersymmetry, quantum algebras, integrable systems and combinatorics.

At the Université de Montréal, Dr. Vinet distinguished himself as, among other things, director of the Centre de recherches mathématiques (CRM) – one of Canada’s national mathematical sciences institutes – from 1993 to 1999, and president of the Network for Computing and Mathematical Modeling (NCM2) from 1996 to 1999. In 1999, Luc Vinet joined McGill University as Provost.

In June 2005, Luc Vinet was appointed rector of the Université de Montréal, Quebec’s foremost teaching and research institution by virtue not only of the number of students but also of its teaching staff and the volume of its research activities. Among the many initiatives he realized are the development of a new campus and science pavilion project at the Outremont rail yards acquired in 2006, the creation of the School of Public Health, the establishment of the Cité du Savoir in Laval and the founding of the International Forum of Public Universities.

Dr. Vinet sits on the boards of many organizations, including Montréal International, the Board of Trade of Metropolitan Montreal, the Conférence des recteurs et des principaux des universités du Québec and the Fulbright Foundation. He holds an honorary doctorate from the Université Claude Bernard, Lyon, and was awarded the rank of Officer of the Ordre des Palmes académiques by the French government.



James Wilsdon
Director
Science Policy Centre
The Royal Society
London, England

James Wilsdon is Director of the Science Policy Centre at the Royal Society, the UK’s national academy of science.

From 2004 to 2008, Dr. Wilsdon was Head of Science and Innovation at the think tank Demos, and Director of the ‘Atlas of Ideas’ project, which explored the new geography of science and innovation in Asia, Africa, Latin America and the Middle East. He has researched and published widely on science and innovation policy, sustainable development, emerging technologies, and the globalization of science.

Prior to 2004, Dr. Wilsdon spent three years as Head of Strategy at Demos, and from 1997 to 2001, he was Senior Policy Adviser at the sustainability charity Forum for the Future. His writing has been featured in the *Financial Times*, *Guardian*, *Times Higher Education*, *SEED*, *China Daily*, *OpenDemocracy*, *Renewal* and *Green Futures*.

Dr. Wilsdon has a first-class degree in philosophy and theology from Oxford University and a doctorate in technology policy from Middlesex University. He remains an Associate of Demos and Forum for the Future. He is also an Honorary Senior Research Fellow of the Institute for Advanced Studies at Lancaster University, a Fellow of the Royal Society for the Arts and a Trustee of People and Planet.

ANNEX 2: DOCUMENTATION PROVIDED TO THE PANEL

	Description
Council Products	Evaluation Terms of Reference, including Proposed Evaluation Framework
	<p>8 Expert Panel Reports and Reports in Focus (or Report Summaries) – English and French</p> <ul style="list-style-type: none"> • <i>The State of Science and Technology in Canada</i> • <i>Influenza and the Role of Personal Protective Respiratory Equipment: An Assessment of the Evidence</i> • <i>Small is Different: A Science Perspective on the Regulatory Challenges of the Nanoscale</i> • <i>Energy from Gas Hydrates: Assessing the Opportunities and Challenges for Canada</i> • <i>Vision for the Canadian Arctic Research Initiative: Assessing the Opportunities</i> • <i>Innovation and Business Strategy: Why Canada Falls Short</i> • <i>The Sustainable Management of Groundwater in Canada</i> • <i>Better Research for Better Business</i>
Marketing Products	Assessments-in-Brief Brochure
	Council Brochure
Council Corporate Reports	<p>Annual Reports – English and French</p> <ul style="list-style-type: none"> • Annual Report, 2004/05 • Annual Report, 2005/06 • Annual Report, 2006/07 • Annual Report, 2007/08 • Annual Report, 2008/09
	<p>Corporate Plans – English and French</p> <ul style="list-style-type: none"> • Corporate Plan, 2008-09 • Corporate Plan, 2009-10

	Description
Report Impact	Impacts of Council Reports 2006-2009 – Full Report
	Impacts of Council Reports 2006-2009 – Update
	Media Monitoring – Report of Activity for all Completed Assessments
	Evidence of Council Impact <i>(Government stakeholder official correspondence)</i>
Survey Reports	Panel Survey Summary Report
	Board Of Governors Questionnaire Summary Report
	Scientific Advisory Committee Questionnaire Summary Report
Organizational and Management's Evaluation Reports	Management's Statement of Strategic Objectives
	Management's Self-Assessment
	Report on Council Assessment Process and Activities
	Report on Council Operations
	Report on Council Outreach and Participation
Communications	Communications Briefing Note <i>(Prepared by the Director of Communications)</i>
	Corporate Communications Strategy <i>(PowerPoint Deck)</i>
	Media Perception Audit <i>(Conducted by Hill & Knowlton)</i>
	Director of Communications Role Profile

	Description
Governance	Council of Canadian Academies Funding Agreement
	By-Laws
	Letters Patent
	Governance Terms of Reference <ul style="list-style-type: none"> • Board of Governors • Executive Committee • Audit and Finance Committee • Investment Committee • Human Resources and Compensation Committee • Nominations, Selection and Governance Committee • Scientific Advisory Committee
	List of Governance Meetings To Date <ul style="list-style-type: none"> • Board (including most recent meeting agendas) • Executive Committee; and • Scientific Advisory Committee
	Board Strategy Session Presentation

	Description
Assessment Process	8th Joint Call for Proposals (<i>Process and Template</i>)
	List of Topics Considered at Each Round
	Example Expert Panel Compositional Guidelines (<i>Groundwater</i>)
	Panel Member Confidentiality and Conflict of Interest Forms
	Report Review Policy
	Council Assessment Lifecycle Methodology (CALM)
	Assessment Planning & Tracking
	Assessment Plan Template
	Example Assessment Plan (<i>Animal Health</i>)
	Assessment Budget Template
	Assessment Status Report Template
	Assessment Milestone Report Template
	Assessment Project Management Guide

	Description
Operations	Operational Plan (<i>Fiscal Year 2009/10</i>)
	Draft Performance, Evaluation and Risk Framework (<i>including Outcomes Map</i>)
	Budget Primer
	Council Budget Overview (<i>Fiscal Year 2009/10</i>)
	Auditors' Reports <ul style="list-style-type: none"> • March 2006 • March 2007 • March 2008 • March 2009
	Statement of Investment Policy (<i>part of Annex 4 of 2008/09 Annual Report</i>)
	Internal Controls and Policies <ul style="list-style-type: none"> • BlackBerry Usage • Credit Card Guidelines • Hospitality Policy • Leave Provisions • Overtime • Parental Leave • Procurement Policy – Goods and Services • Travel Policy

	Description
General	Council Overview
	History of the Creation of the Council of Canadian Academies
	Visual Timeline of All Completed and Current Assessments
	Stakeholder Interviews Background Information
	Council Presentation for the Opening of the Panel Meeting
	Sampling of Outreach Activities

ANNEX 3: KEY RESPONDENTS INTERVIEWED BY THE PANEL

Name	Relationship with the Council
Howard Alper (In-person)	<ul style="list-style-type: none"> • Inaugural Chair of the Council’s Board of Governors • Chair of the Science, Technology, and Innovation Council (STIC) at Industry Canada • Fellow and former President of the Royal Society of Canada (RSC)
James (Jim) Bruce (phone)	<ul style="list-style-type: none"> • Chair of the Expert Panel on Groundwater • Fellow of the Royal Society of Canada (RSC)
Elizabeth (Liz) Dowdeswell (In-person)	<ul style="list-style-type: none"> • Chair of Council’s Scientific Advisory Committee (SAC) • Chair of two Expert Panels: The State of Science and Technology in Canada and Vision for the Canadian Arctic Research Initiative
John Leggat (In-person)	<ul style="list-style-type: none"> • Interim President of the Council during its infancy in late 2005/early 2006 • Incoming member of Council’s Board of Governors • Outgoing President and Fellow of the Canadian Academy of Engineering
Roderick A. Macdonald (In-person)	<ul style="list-style-type: none"> • President-elect and Fellow of the RSC • F.R. Scott Professor of Constitutional and Public Law, McGill University, Montréal, QC
Geoff Munro (In-person)	<ul style="list-style-type: none"> • Chief Scientist and Assistant Deputy Minister, Innovation and Energy Technology Sector (IETS), Natural Resources Canada • Main contact from the Assessment Sponsor for the Gas Hydrates assessment
Elizabeth (Liz) Parr-Johnston (phone)	<ul style="list-style-type: none"> • Chair of Council’s Board of Governors
Pekka Sinervo (phone)	<ul style="list-style-type: none"> • Chair of the Expert Panel on Nanotechnology • Fellow of the Royal Society of Canada (RSC)
Iain Stewart (phone)	<ul style="list-style-type: none"> • Former Associate Assistant Deputy Minister (Industry Canada, Science and Innovation Sector) — accountable for the Funding Agreement between the Council and the government (through August 2009) • Assessment Sponsor (Business Innovation report)
Danial Wayner (In-person)	<ul style="list-style-type: none"> • Member of Council’s Board of Governors • Fellow of and member of governance of the Royal Society of Canada (RSC)
Catharine Whiteside (phone)	<ul style="list-style-type: none"> • Member of Council’s Board of Governors • Fellow of and President of the Canadian Academy of Health Sciences (CAHS)

ANNEX 4: LIST OF THE COUNCIL'S ASSESSMENTS

Assessment Title	Sponsor	Request/ Sponsor Agreement	Report Release (an- ticipated in italics)
1. The State of Science & Technology in Canada	Industry Canada	June 20, 2006	September 12, 2006
2. Influenza and the Role of Personal Protective Respiratory Equipment: An Assessment of the Evidence	Public Health Agency of Canada	May 28, 2007	December 19, 2007
3. Energy from Gas Hydrates: Assessing the Opportunities and Challenges for Canada	Natural Resources Canada	September 27, 2006	July 7, 2008
4. Small is Different: A Science Perspective on the Regulatory Challenges of the Nanoscale	Health Canada	February 1, 2007	July 10, 2008
5. Vision for the Canadian Arctic Research Initiative: Assessing the Opportunities	Indian and Northern Affairs Canada	June 20, 2008	November 5, 2008
6. Innovation and Business Strategy: Why Canada Falls Short	Industry Canada	May 28, 2007	April 29, 2009
7. The Sustainable Management of Groundwater in Canada	Natural Resources Canada	September 1, 2006	May 11, 2009
8. Better Research for Better Business	The Social Sciences and Humanities Research Council of Canada	November 16, 2007	May 25, 2009
9. Understanding Research Integrity in the Canadian Context	Industry Canada	September 2009	<i>Summer 2010</i>
10. The State and Trends of Biodiversity Science in Canada	Canadian Heritage, on behalf of the Canadian Museum of Nature	May 2009	<i>Winter 2010</i>
11. Approaches to Animal Health Risk Assessment	Agriculture and Agri-Food Canada	March 2009	<i>Spring 2011</i>
12. Integrated Testing of Pesticides	Health Canada	April 2009	<i>Spring 2011</i>

ANNEX 5: SUMMARY OF COUNCIL SELF-ASSESSMENTS

Strategic issues

This statement of strategic objectives has been developed by Council management and addresses roughly the five-year period through March 2015 when the current funding agreement with the federal government concludes. The objectives have been discussed at various times with the Board of Governors. They are:

1. Advance the mandate of the Council – to be a source of independent, expert assessments of the science underlying pressing issues and matters of public interest – through the conduct of topical, relevant and high-impact assessments that serve both the immediate and long-term needs of the Canadian public.
2. Elevate the Council’s profile and promote the Council’s vision, mandate and priorities through the development and execution of a Council communications strategy.
3. Strengthen the foundation for a long-term, co-operative relationship with the Council’s Member Academies through development of an action plan for enhanced engagement
4. Broaden the base of support for the Council by attracting sponsors outside the funding agreement.
5. Evolve the model of “expert panel assessments” to ensure continued relevance and impact as the tempo of decision making increases and broader public engagement (usually web-based) is expected.

Strengths/ Weaknesses/ Opportunities/ Threats (SWOT)

Strengths	Weaknesses
<ul style="list-style-type: none"> • Unique new capability in Canada • Institutional momentum • Ample supply of topics • Strong, supportive Board and SAC • Growing support networks • Web of international relationships • Agile, motivated, equipped • Strong finances; room to grow 	<ul style="list-style-type: none"> • Little visibility beyond stakeholders • Communications capability underdeveloped • Relations with Member Academies challenging • Exclusive dependence on government clients • Small size limits expertise coverage • Current panel-support staff lack experience

Opportunities	Threats
<ul style="list-style-type: none"> • More ambitious, proactive communication • Build an Academy-Council partnership • Broaden base of assessment sponsors • Develop own source of revenue/endowment • Create a spectrum of assessment models • Develop more effective public engagement • Create procedures to fill temporary skills gaps • Leadership transition 	<ul style="list-style-type: none"> • Underdeveloped Member Academy relationships • Failure to attract good questions • “Business model” loses relevance • Government funding not renewed • Executive leadership vacuum

Summary risk analysis

Four risk categories and 14 risks have been identified and assessed qualitatively with respect to *likelihood* of each risk occurring and the level of *impact* should a risk materialize. The four categories are:

- Adaptability
- Dependency
- Capacity
- Credibility

The following table presents a summary of the 14 risks:

Risk Category	Risk Event
<p>Adaptability</p> <p><i>Adaptability</i> refers to the risks associated with the inability of the Council to effectively adjust to changes in the internal and external environment.</p>	<p>1. Changes in Council leadership</p> <p>There is a risk that transition to new executive leadership will create instability in existing relationships and processes.</p> <p>2. Transition within the Board of Governors and SAC</p> <p>There is a risk of fatigue or vacancies on the Board of Governors and SAC due to delays in replacement nominations as terms expire.</p> <p>3. Sustainable funding sources</p> <p>There is a risk that the Council will not be able to renew the Funding Agreement or establish and/or maintain permanent or other funding to support operations beyond March 31, 2015.</p>
<p>Dependency</p> <p><i>Dependency</i> refers to the risks associated with the Council's reliance on other parties to meet strategic and operational objectives.</p>	<p>4. Expert Panels – Panel Chair and members</p> <p>There is a risk that the contributions of the panel chairs and members to the expert panels will be ineffective and will not result in high-quality assessment reports.</p> <p>5. Relationships with the volunteer community</p> <p>There is a risk that the Council will not be able to effectively manage or maintain relationships with the volunteer expert community.</p> <p>6. Relationship with Industry Canada</p> <p>There is a risk that, should the relationship between the Council and Industry Canada become strained, the Council's liaison within the federal government will weaken.</p> <p>7. Assessment questions</p> <p>There is a risk that the Council will not receive a sufficient number of high-quality assessment questions to achieve a desired level of impact.</p> <p>8. Member Academy relations</p> <p>There is a risk that there will be overlapping mandates between the Council and the Member Academies and that consequently there will be a lack of common understanding with respect to roles and responsibilities.</p>

Risk Category	Risk Event
<p>Capacity</p> <p><i>Capacity</i> refers to the risks associated with a lack of internal capability.</p>	<p>9. Assessment continuity</p> <p>There is a risk that staff turnover in key roles will lead to material disruptions in assessment activity, such as delays or loss of corporate knowledge.</p> <p>10. Aptitude and skill requirement</p> <p>There is a risk that the Council will not be able to attract or retain employees with adequate competence and skills to undertake assessment activities or manage corporate affairs.</p> <p>11. Knowledge requirements</p> <p>There is a risk that the Council will be unable to maintain adequate breadth and depth of knowledge required to support the assessment programs.</p>
<p>Credibility</p> <p><i>Credibility</i> refers to the risks associated with the reputation and relevance of the Council.</p>	<p>12. Strategic communications capacity</p> <p>There is a risk that the Council will be unable to increase visibility and awareness of the organization or effectively communicate assessment results due to insufficient development and maintenance of strategic communications capacity.</p> <p>13. Perceptions of objectivity and intellectual independence</p> <p>There is a risk that the Council will be seen to lack objectivity and independence from its political and bureaucratic sponsors.</p> <p>14. Maintaining relevance in light of more compressed timeframes</p> <p>There is a risk that the Council will be unable to effectively accommodate the balance between the integrity of the assessment process and the demand for more immediate advisory products.</p>

ANNEX 6: REPORT ON IMPACTS OF COUNCIL REPORTS, 2006-2009

CASE STUDY SUMMARIES PREPARED FOR THE EXTERNAL EVALUATION PANEL

BY: MICHELLE CAMPBELL
JANUARY 2010

Case Study 1: Science & Technology

Report: *The State of Science and Technology in Canada*

Sponsor: Industry Canada

Published: September 2006

Impact on sponsor

In 2006, Industry Canada was leading the development of Canada's new federal Science & Technology (S&T) Strategy,⁴ the first such major strategy in more than a decade. Many in the department felt it would be critical for effective future investments for the new strategy to identify specific research priorities. However, Industry Canada lacked the needed information on Canada's research strengths and weaknesses to make such choices. Nor did it know the effect of previous investments: "After a decade of very significant re-investment in science, it was time to see if we had been successful...and where we should invest more."

If the federal S&T Strategy did select specific research priorities, those priorities would shape federal investments for years to come. The data supporting the selection of priorities thus had to be high-quality and trusted by all stakeholders. While there were many organizations willing to provide their views on Canada's research capacity, none had adequate independence to provide a sufficiently credible and non-partisan analysis. In the midst of this debate, the Council of Canadian Academies was launched, and, seeming purpose-built for the task, was almost immediately asked to take on this challenge – and to deliver the assessment within three months.

For Industry Canada, the Council's assessment findings were substantive enough to justify identifying Canadian science priorities based on the analysis provided. The four broad areas of strength

identified in the report became the four areas of concentration for future federal investment; they now permeate all government science planning and priorities. The sponsor notes that, "As public officials, when people came to see us asking us to do things, we raised the report findings. We would ask them 'why should we put more money into this? The report says we're not doing well. Do you have a turn-around strategy? What are you going to do differently?'"

The sponsor valued the work enough to ask, through the S&T Strategy when it was completed, for the Council to repeat the assessment on a periodic basis.

Impact on other users

The federal S&T Strategy is a government-wide strategy, and therefore the prime policy mover for all science-based federal departments and agencies. It is difficult to identify specific impacts of the Council assessment as distinct from the federal Strategy. However, the Department of Foreign Affairs and International Trade (DFAIT), for example, found the report particularly useful in providing evidence of Canada's science capacity that could inform the development of science-based partnerships internationally. The policy community across Canada is reported to have found the report useful. It is not clear to what extent, if any, the report was useful to or influential in strategic planning in the academic sector.

Potential future impacts

The S&T Strategy continues to frame federal science policy and investments, and these draw upon the more detailed analysis of the Council assessment as needed. While the one-time report was limited in its impact outside the federal government, a predictable series of re-assessment could have significant impact on research investments in academia and, perhaps, industry as well.

⁴ Government of Canada. *Mobilizing Science and Technology to Canada's Advantage*. 2007.
[http://www.ic.gc.ca/eic/site/ic1.nsf/vwapi/S&Tstrategy.pdf/\\$file/S&Tstrategy.pdf](http://www.ic.gc.ca/eic/site/ic1.nsf/vwapi/S&Tstrategy.pdf/$file/S&Tstrategy.pdf)

Case Study 2: Influenza

Report: *Influenza Transmission and the Role of Personal Protective Respiratory Equipment: An Assessment of the Evidence*

Sponsor: Public Health Agency of Canada (PHAC)

Published: December 2007

Impact on sponsor

The Public Health Agency of Canada (PHAC), evolving the Canadian Pandemic Influenza Plan, faced significant controversy over what PHAC and the provinces should recommend in its “Annex F – Preventing the Transmission of Pandemic Influenza in Healthcare Settings”. While some health-care-provider groups believe respirators should be used in the care of all patients with any respiratory virus, PHAC’s external advisors were consistently recommending that respirators were only necessary when performing an aerosol-generating medical procedure on a person with a suspected respiratory virus.

One of the reasons PHAC was so challenged in finalizing its policy was that, as one panellist noted, “it’s a murky area with little research and strong opinions.” With such a dearth of strong evidence, each side of the debate brings a different set of values to the risk-benefit equation, and comes up with a different answer.

Ultimately, PHAC did not believe that the Council assessment provided sufficient evidence to change its draft policy and did not cite it in the Canadian Pandemic Influenza Plan.

Impact on other users

The report has generally remained low key, except when highlighted in a controversial *Canadian Medical Association Journal* article⁵ in the midst of the H1N1 outbreak.

Several respondents noted that, because the report does not dismiss concerns, but also did not find unequivocal evidence to spur policy action, it has been used equally to insist both that action is required and that present policy is adequate.

Potential future impacts

Several respondents suggested that producing a peer-reviewed publication of the report’s finding would increase the ability of users to find and access it when the debate re-surfaces in the future.

As the issue of the use of masks vs. respirators to protect health-care workers from the flu remains unresolved, it is likely that, as

more evidence is developed, the Council’s baseline assessment of the research to date could be a useful contribution to the evidence base.

Case Study 3: Nanomaterials

Report: *Small is Different: A Science Perspective on the Regulatory Challenges of the Nanoscale*

Sponsor: Health Canada

Published: July 2008

Impact on sponsor

The considerable uncertainties associated with nano-based materials have challenged Health Canada’s development of a regulatory workplan. The department had to make – and be able to robustly defend – several key decisions where public confidence and trust in those decisions was both critical and potentially difficult to obtain. For one, did nanomaterials need to be explicitly regulated? Could they be regulated using existing frameworks? What science was needed to develop and enforce the regulations, and does that capacity exist?

The Council assessment was thus sought to confirm that the department’s proposals to move forward were evidence-based, and credible to both senior management and broader stakeholders.

Many respondents were concerned that Health Canada has made no response to, or use of, this report. However, Health Canada respondents were highly enthusiastic about the assessment and the ways in which it is being used to inform the department’s many – albeit still entirely internal – regulatory development activities: “We’ve all read it and used it. The fact that we haven’t responded to the outside is actually a reflection of how busy we’ve been responding to the file on the inside!”

The report has been particularly valuable in providing a framework to bring together Health Canada’s five – very different – regulatory regimes to identify a common approach and priorities. The sponsor believes the report’s findings have been well-incorporated into its draft working definition of nanomaterials, its work with Canadian and international standards agencies, its development of a regulatory framework to address shorter- and longer-term needs, and its creation of a research agenda to aid the development of the science needed to underpin the regulation of nanomaterials in Canada.

⁵ Brown Carolyn and Wayne Kondro. “Conflict emerges over value of handwashing as a preventive flu transmission measure”. DOI:10.1503/cmaj.109-3066, viewed at http://www.cmaj.ca/earlyreleases/1oct09_conflict_handwashing.shtml, posted October 1, 2009.

Impact on other users

Other federal departments have found the assessment equally valuable. It has been taken up by Environment Canada, which shares significant responsibility for regulating nanomaterials with Health Canada, to address issues similar to those being pursued in Health Canada. Research organizations and funding agencies are seeking opportunities to support Health Canada's nanomaterials research agenda.

Where known, the report is well-regarded by non-government organizations, academia and industry, though several respondents note that few are aware of it. A few respondents suggested the assessment process could benefit from more open and interactive discussions with key stakeholders and users.

Potential future impacts

The Council report is one of a large number of nanotechnology reports produced around the world in recent years. It is viewed as a high-quality and well-written synthesis of the issues, and will, therefore, be a useful, if not unique, reference for academics and stakeholders in the future. It is not expected to generate novel discussion or research directions, but with its regulatory focus, does provide a different and helpful framing of the issues, as well as a comprehensive overview.

Case Study 4: Gas Hydrates

Report: Energy from Gas Hydrates: Assessing the Opportunities and Challenges for Canada

Sponsor: Natural Resources Canada (NRCan)

Published: November 2008

Impact on sponsor

Gas hydrates (essentially natural gas in a "frozen" state) have the potential to be an important energy resource in Canada's future, but huge unknowns made it difficult for Natural Resources Canada (NRCan) to decide how to prioritize investment in this area. Its overall goal was to obtain insights into the viability of gas hydrates as part of the long-term fuel mix.

The sponsor found the report effectively addressed the key issues; important findings included: the feasibility of gas hydrates as an energy source; the ability to use conventional technologies to extract it; the environmental nature and manageability of the primary risks; and the considerable nature of resources in the North. "The report really focused our next step after the production

test: resource estimates, and how do we define them and map them? This was not easy with existing tools, to identify the quantity, concentration and geographic distribution."

As a result of the report, NRCan is now supporting two programs for funding gas-hydrates research: 1) the Earth Sciences Sector Gas Hydrate program;⁶ and 2) Gas Hydrates as a Canadian Energy Alternative, in the Energy Sector, Office for Energy Research and Development, Gas Hydrate.⁷ "These programs took the Council's report, and its suggestions for future research priorities, as foundational to their establishment."

NRCan has now worked with the Council on a number of assessments, and finds the reports "very credible [and] scientifically sound." According to NRCan, the Council's "stellar panels" and credibility put science and science advice at a very senior level in the government, and "that's excellent".

Impact on other users

NRCan has worked with the Council to make other federal departments, industry and academia aware of the assessment, while panel members have presented the report in a wide range of fora. As a result, the report is almost universally known in the academic and industrial gas-hydrate communities, both within Canada and internationally.

As a result of cross-linkages among expert panels, the report has been carefully considered in both the planning of, and the review of, the U.S. Department of Energy Methane Hydrate Research and Development Program. Panel members have also been informed through international colleagues that the Japanese, Korean and German governments have all used the assessment internally in their own energy planning.

Potential future impacts

The report is not causing radical shifts in the research agenda, but it has thoroughly permeated gas-hydrate science in Canada and elsewhere. It is becoming the first point of reference in the field for both researchers and students: "I've heard around that it's considered good, useful information. Grad students are using it for introductory material to prep for their theses." By placing specific research issues in the much broader context of environmental, economic, and other issues, the report is expanding the perspectives and approaches being brought to gas-hydrate research, and spurring new connections across research disciplines.

⁶ http://gsc.nrcan.gc.ca/gashydrates/index_e.php

⁷ <http://www.nrcan.gc.ca/eneene/science/oilpet/fropio-eng.php>

There is a sense among respondents that this report will have a long shelf life as the definitive reference document in the gas-hydrate community.

Case Study 5: Arctic Research

Report: Vision for the Canadian Arctic Research Initiative: Assessing the Opportunities

Sponsor: Indian and Northern Affairs Canada (INAC)

Published: November 2008

Impact on sponsor

While each report has broken new ground for the Council in some way, the arctic research report stands out as unique in both purpose and process. It was needed to feed into a very specific policy decision in a pre-determined way and at a very specific time, only a few months away. The panel met only once, for two days, in Helsinki, Finland, and focused its efforts on reacting to a specific document provided by the sponsor rather than developing a novel assessment of the issues. Furthermore, this assessment was the first, and to date the only, initiative to be funded outside the Council's founding grant: it was financed via a contract with the sponsor, and was delivered on time and on budget.

Indian and Northern Affairs Canada (INAC) needed to make a submission to Cabinet in fall 2008 to outline the mechanisms needed to deliver on the government's commitment "to build a world-class arctic research station." INAC's goal was to validate, with an unimpeachable source, the findings of its Visioning Workshop: in particular, the importance of focusing on a network rather than a single building.

INAC believes that it has received "the value [it] sought." The resulting Cabinet submission was accepted and resulted in \$2 million in the next federal budget to undertake a feasibility study for the arctic research station, expected to be built in about ten years.⁸ Furthermore, with Cabinet approval in principle of the directions supported by the Council report, INAC was then able to make a successful case to use economic stimulus funds to improve existing structures in the shorter term, resulting in \$85 million⁹ to revitalize 20 existing arctic research stations across Canada, enhancing collaboration and integration across stations.

Impact on other users

The process of planning for and developing the report has helped strengthen international relationships, in particular between the Council and Finnish Academy of Science and Letters, which hosted the Arctic panel. The Finnish Academy is now "making efforts to strengthen its role in science policy in Finland. The report, 'Vision for the Canadian Arctic Initiative', and the workshop in Helsinki at which it was initially prepared, is serving as a model for our Academy."

Panellists thought it likely that the exercise has increased Canada's international visibility and reputation in the area of arctic research, and they found it useful and very rewarding to exchange ideas with colleagues from Canada and other polar countries around the world. Many panellists wished the dialogue could be extended beyond the single meeting, feeling they "could have been much more useful."

Potential future impacts

This assessment was the Council's first foray in producing a different kind of assessment: short, fast, and meeting a specific and immediate policy need. The report served its intended purpose effectively, but has had limited impact beyond its sponsor. Some panellists suggested that ongoing, longer-term interactions with the panel members around the world could significantly enhance that impact, especially as international interest centres more around lessons to be learned from how the arctic research strategy is implemented, than around the Canada-specific "Vision" itself.

Case Study 6: Innovation

Report: Innovation and Business Strategy: Why Canada Falls Short

Sponsor: Industry Canada

Published: April 2009

Impact on sponsor

According to Industry Canada, "everybody in the policy community and government and the S&T system agrees that Canada has strong academic R&D but weak business innovation." Diagnostics, while readily available, tended to come from groups also advocating a specific solution in their interest. The Council, however, was a "third-party source with a dispassionate view and yet the qualifications for the job." Furthermore, "the perception was the problem was in the private sector, but that the solution – or the

⁸ See press release "Canada Follows Through on Major Commitments to Arctic Research" February 2009:

<http://www.aic-inac.gc.ca/ai/mr/nrj-a2009/nr000000196-eng.asp>

⁹ See Canada's Economic Action Plan: <http://www.actionplan.gc.ca/initiatives/eng/index.asp?initiativeID=108&mode=3>

blame – lay in the public sector,” underlining the need for independent analysis if government wished to shift the onus of addressing the innovation gap towards the private sector.

While the sponsor was concerned at the outset about the length of time required to produce the report, it is supportive of the results: “the quality of Council reports is fantastic; the panels are beyond reproach...they help us with really difficult policy development processes.” The Innovation report is “comprehensive, substantive, even original. It has become a mainstay of public policy work.” The next steps, however, are still not clear: given the complexity of the problem, “the government is not quite sure what to do with this,” or how to encourage the business sector to take ownership of the issue.

Impact on other users

The Innovation report is the first of Council’s reports to be widely and proactively disseminated, and “there’s been a positive reaction from think tanks, business, government, media and other audiences.” The sponsor notes that “everybody I know has been to a presentation that [former President] Peter [Nicholson] has led, and that sparked a dialogue as well.” Another respondent concurs: “People from all over Canada spent the whole day discussing the report. You could feel they think this is important.” This report highlights the importance of tailoring information to audience: business leaders – and, in fact, most audiences – respond well to focused key highlights presented in interactive fora.

The report is diagnostic, not prescriptive, and therefore more likely to permeate thinking than to directly influence decision making. Nonetheless, the Industry Canada respondents are confident that uptake has been substantial: “It’s not a big policy community in Canada – I know it has made use of the report.” Other respondents agree, citing examples of Board discussions and strategy sessions that have taken on new directions inspired by dialogues around the Innovation report.

Potential future impacts

Respondents note that ultimately, the impact of the Innovation assessment would need to be evaluated through changes in individual companies’ confidential business strategies, but “what they intend to do among themselves they don’t necessarily tell us.” Nonetheless, anecdotal evidence suggests that when the report is taken up by key users, it can have real impact. For example, one CEO states that “Yes, it has changed thinking: seeing innovation as a central part of business strategy is a key insight.

It explains the failure of Nortel and the disappointment of BCE and reinforces the success of companies like RIM...” When asked if the report may have spurred changes in thinking amongst the organization’s own management, the respondent noted, “Yes – we will try to penetrate the business strategy at the board and CEO level, rather than the VP Research or Chief Technology Officer level.”

Case Study 7: Groundwater

Report: [The Sustainable Management of Groundwater in Canada](#)

Sponsor: Natural Resources Canada (NRCan)

Published: May 2009

Impact on sponsor

Many agencies at every jurisdictional level have some responsibilities related to groundwater. Natural Resources Canada (NRCan) thus saw the need for an independent and cross-cutting document, providing the kind of integrated response difficult for any one jurisdiction to accomplish.

The report clearly identifies resource mapping as a first priority, “and at our current pace, they estimated that would take us some 25 years to get there.” So NRCan’s first focus is to seek new strategies and technologies to reduce these timelines. The report’s second major finding is the need for a solid understanding of the interdependencies of water from all sources, including groundwater. NRCan has thus prioritized integrative activities: internally, it has begun to look at water “as its own goal”, and not merely as a side product of mining, forestry, or other activities. Externally, it is emphasizing the importance of finding the connections between its work and that of Environment Canada – which has jurisdiction over surface water – as well as with the vast array of other federal, provincial and municipal organizations responsible for aspects of the water system. The importance of data access and sharing is becoming widely recognized, and the report’s promotion of NRCan’s Groundwater Information Network (GIN) has prompted expressions of interest from many jurisdictions, and even the U.S. government, in pursuing data sharing through GIN.

At NRCan, “the report is having a large impact on our thinking.” However, because mapping must happen before anything else can, “the report hasn’t yet translated into new programs and investments like gas hydrates, (though) I would expect to see announcements like that as early as next fiscal year.”

Impact on other users

Panel members have been extremely active getting the report messages out and it has been well-incorporated into key water-policy debates. With the provinces' lead role in groundwater, the Council of Canadian Ministers of the Environment (CCME) Groundwater Subgroup is of special importance, and the Chair for the report briefed this group in May 2009. The report was one of the two key documents feeding into the CCME group's national action plan for groundwater. Environment Canada, with the mandate to establish a federal water agenda, found the report "well written, useful and effective", though it would have liked more involvement in its creation. The National Roundtable on the Environment and the Economy (NRTEE) just finished a major two-year review of water issues, which incorporated frequent discussion of the assessment.

Potential future impacts

The report has catalyzed powerful information exchange across the country, driven by the panellists themselves. Panellists are actively transferring the report into the willing hands of water specialists and policy analysts who form a large receptor group ready and eager to take up this report, as it provides the credible and coherent evidence they have long needed to have an impact on priority setting and resource allocation. The focus and framework around sustainability have provided a simple yet powerful new conceptualization, spurring new ideas about how to address groundwater management. The report has combined a clear to-do list with compelling reasons to do it, and presented water specialists and policy analysts with the credibility and influence of a non-partisan body. Respondents expect the report to become an increasingly important long-term planning document in many jurisdictions.

Case Study 8: Management, Business, and Finance Research

Report: Better Research for Better Business

Sponsor: Social Sciences & Humanities Research Council (SSHRC)

Published: May 2009

Impact on sponsor

The Social Sciences & Humanities Research Council (SSHRC) was allocated an additional \$11 million per year in the 2007 federal budget for research in management, business, and finance (MBF). SSHRC is seeking to build a long-term strategy for supporting research, training, and knowledge mobilization in these areas and, to inform that strategy, sought an independent assessment

of the strengths and weaknesses of management, business, and finance research in Canada. SSHRC sought independent, arms-length advice as it wanted to "position the new funds well, to show that [it] had invested that money based on a real need and a real issue, on areas of importance, and not on business as is."

SSHRC feels the report was useful as "a good report-card in general on our business schools," which will help with its long-term MBF strategy. The sponsor expects to "respond and endorse the recommendations to build bridges between the scholarly community and practitioners." The sponsor was concerned, however, that the report misses some of the work going on outside traditional business departments: "interdisciplinary fields, like green business or ecotourism – the things that are emerging, but not yet there, that are a lot more leading edge – the real upcoming opportunities." The report thus offered little guidance in identifying niche opportunities on the leading edge of research.

Impact on other users

The report was well-received at a large academia-industry forum; participants emphasized the need to discuss its findings in the same kinds of joint academic/practitioner environments called for in the report. The report was also appreciated by the deans of Canada's business schools, where it generated a fair bit of discussion upon release: "most deans would probably agree with the overall diagnosis."

Overall, the existence of the report has helped the MBF research community engage better with SSHRC on issues of interest, even though it is not the report findings themselves that are being discussed. Deans generally felt the report "took a wide definition of MBF" that did not miss any significant areas of endeavour, though one agreed with the sponsor that "it misses the new emerging fields that don't fit in the old silos, fields which are addressing issues in more holistic and integrated ways."

Potential future impacts

Respondents felt that, with this report, "the challenge is to get it read, to bring it to life in dialogues with the people who can act on it." The Canadian Federation for Humanities and Social Sciences noted that the report was somewhat side-swiped by circumstances beyond the Council's control (i.e., major concerns about the federal targeting of research funding into specific and limited areas such as MBF). Significant effort will be required to engage research and business leaders in real discussion around the report's findings, and how to collaboratively draw a path forward to enhance MBF research in Canada.

BEST PRACTICES AND LESSONS LEARNED

- Council reports are consistently lauded in all sectors as extremely high quality, well written and thoughtful.
- The Council is viewed in all sectors as highly credible, independent and unbiased, and with first-class panels.
- Six of the eight reports have had substantive impact on the sponsor's strategic thinking, priorities, program development and/or resource allocation (science and technology, nanotechnology, groundwater, gas hydrates, Arctic research, and innovation).
- The primary drivers of report dissemination/uptake are panel members, drawing on personal networks. This critical role might be supported in a more structured way, and explicitly considered in panel selection.
- Panellists are very invested in these reports. Feedback from the sponsors is essential to demonstrate to panels the value and utility of the work they have undertaken, and attract high-quality panels in the future.
- The Council has actively engaged key users in discussions of the Innovation report. Respondents laud these efforts, and virtually all urged the Council to engage more strongly with key users of all its reports.
- Respondents link the Council's continued credibility to ensuring its reports are both high quality and used.
- Key champions and users respond best to interactive discussions around reports, rather than documents. Shorter, more focused and targeted materials are useful in broader outreach efforts.
- Where reports have reached key users, they have been well-received. Reports have often provided direct impetus for action or else the credible evidence needed to make a case for action; most provide a good summary of, and reference document about, what is known but has not been effectively synthesized.
- Panellists have brought Council reports into international agencies, where they add to the available body of literature. The groundwater and gas hydrates reports may influence key resourcing decisions in the United States.
- The Council has an opportunity to continue increasing both the innovative nature and uptake of its reports through greater engagement of user communities in report development, for example through:
 - » more interactions between the panel and sponsors, and potentially other key users, to brainstorm: a) best possible questions; b) research strategies; and c) plans for dissemination and use;
 - » increased opportunities for dialogue between the panel and other experts and key decision makers, including those within the sponsoring departments where appropriate; and
 - » incorporating more policy and user expertise on the panels.
- Respondents encourage the Council to keep panels smaller and more functional but to continue increasing the range of report contributors and the variety of mechanisms through which a panel can engage in substantive dialogue with academia, users, sponsors, opinion leaders and other major stakeholders.