



GenomeCanada

**Pre-Budget Submission to the
House of Commons
Standing Committee on Finance**

August 12, 2011

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Executive Summary

Genome Canada is pleased to participate in the pre-budget consultation process, and appreciates the opportunity to share with the members of the Standing Committee our thoughts on the future of the Canadian economy.

Genome Canada is a not-for-profit organization established in 2000 with a mandate to develop and implement a national strategy for supporting genomics research for the benefit of all Canadians.

Genome Canada is unique among Canadian research funding organizations in that it supports large-scale research and development projects in the life sciences, and develops the technologies that enable Canadians to maintain leadership in key areas of the genome sciences. Genome Canada's mandate spans five areas of economic interest to Canada: Human Health, Agriculture, Fisheries, Forestry and the Environment.

To date, \$915 million of the investment in genomics by the government of Canada has been more than doubled (to \$2 billion) by Genome Canada through co-funding agreements established with the Provinces, industry, international partners, philanthropists and Canadian institutions. This has been implemented through a unique national and regional model that combines national leadership with an ability to respond to local needs through six regional Genome Centres.

This submission addresses two of the most important issues being considered by the Committee: 1. How to achieve a sustained economic recovery in Canada and 2. How to create quality sustainable jobs? Genome Canada recognizes that in addressing these questions our recommendations will have tax and budget implications that require further financial analysis. At the same time, we believe our recommendations will support the Committee's efforts to identify ways in which to promote continued high quality job growth and attract additional business investment into Canada in order to ensure shared prosperity and a high standard of living for all Canadians.

Our recommendations are:

1. To maintain growth in jobs and increase private sector investment, continued fiscal and policy support for Canadian research should remain a priority for the federal government.
2. Specific strategies aimed at building a knowledge-based economy should focus on combining traditional Canadian strengths in sectors such as agriculture, energy, the environment, fisheries, forestry, mining and human health with new technologies and business models.
3. A greater share of the government's spending on industrial R&D should be directed to project-specific initiatives that bring private sector and public sector teams together in novel public private partnerships.

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Introduction

In its invitation to participate in this pre-budget consultation, the Standing Committee invited comments on “how to attain high levels of job growth and business investment in order to ensure shared prosperity and a high standard of living for all.”

In our view, this is indeed the right *question* to be asking, because finding the right *answers* will define the future of growth and prosperity in this country. It is equally critical that we collectively learn from the lessons of the recent recession, and act now to build a stronger and more competitive economy for the future. And the time to act is now. While returning the country to budget balance is important, it is equally critical that the right national investments be made now to set the table for job creation and prosperity later.

The importance of innovation

Innovation is at the heart of competitiveness in today’s world. It creates new services and products that drive growth. It is the essential foundation for a rising standard of living that will benefit Canadians and enable our country to address national objectives and key priorities. It is the response to the challenge of how a higher-wage economy like Canada’s can survive and thrive against emerging countries that have lower labour costs and lower costs of production.

The Council of Canadian Academies and the Science, Technology and Innovation Council (STIC) are two of a number of organizations to document that Canada continues to lag behind our major trading partners in terms of business investment in R&D. As STIC recently reported in its *State of the Nation 2010* report, “the current level of effort by all performing sectors has not been sufficient to bring Canada’s expenditures in R&D to the G7 average. As a country we have seen our R&D to GDP ratio decline.”

If Canada does not find a way to turn this around, this country will pay a future price in jobs and prosperity. We applaud the significant federal investments in science and technology, as well as the federal initiative—through the Research & Development Review Panel—to search for more effective ways of targeting and re-profiling existing federal dollars devoted to R&D. We very much look forward to seeing the report of the Expert Panel this coming Fall.

Focusing more directly on the question of innovation, it is clear that Canada starts with some enviable advantages, including a strong federal commitment to science and technology, first-rate universities turning out well-trained and talented people, and significant federal and provincial funding for research and development.

At Genome Canada, we know from experience that innovation happens when different bodies of knowledge team up across different disciplines and perspectives and across international boundaries. When this occurs, the positive impacts of technology multiply exponentially.

For example, in the 1990s the Human Genome Project required 10 years and \$2B to sequence one human genome. In 2011, the same process takes days and costs \$7,000. That is the kind of progress that can be made through coordinated international efforts, partnerships among the



public, private and university sectors, and with the leverage of investments that results from these approaches.

In the United States where the majority of the Human Genome was deciphered (before Canada made the significant investments it has made in genomics) it has been estimated that genomics enabled industries employed more than 44,000 people and generated around \$4.9 billion in annual personal income with a genomics industrial output of about \$21.4 billion. (*Battelle Technology Partnership Practice Economic Impact of the Human Genome Project, 2011*)

In this country, Genome Canada's current investments have led to 20 new companies being created or enhanced. This is just the beginning of an important wave of innovative business that will be a significant economic driver in the years to come.

One aspect of the positive impact of the innovation agenda has been – as recently noted by the Prime Minister - that Canada has gone from “brain drain to brain gain.” Going forward, our collective challenge will be to harness and nurture this expertise, which will translate to considerable benefits for Canada and globally. We believe that the following recommendations support these goals.

Considerations

1. Research and innovation are fundamental to future prosperity

According to the OECD, the shape of the future bioeconomy will depend strongly on breakthroughs in fundamental and applied research in the biological sciences, as well as on commercial opportunities and innovations in regulatory and business models. In its report *The Bioeconomy to 2030*, the OECD projects that “biotechnology could contribute up to 2.7% of the GDP of OECD countries in 2030.” Given Canada's profile, this country should be in a position to take a disproportionately large piece of this economic pie.

The technologies underlying the bioeconomy are advancing at incredible speeds and the instruments of investment must target both the cutting edge and the application end of the value chains. Whether these are in forestry, with ambitious programs to reinventing the forestry sector into a provider of new bioproducts, composite materials and high value polymers for wide spread use or in livestock and crops where Canada can lead the world as a modern provider of food for the world.

Recommendation

To maintain growth in jobs and increase private sector investment, continued fiscal and policy support for Canadian research should remain a priority for the federal government.

2. Build on our strengths in new ways

Canada enjoys a number of competitive advantages in sectors that are critical to its economic prosperity. At the same time, the country faces new global threats emerging from global competitors, environmental changes, economic uncertainties, and more. If the country is to continue to hold or advance its standing in the global arena, our traditional sectors must adapt and grow in new ways, in time frames that are increasingly shorter. To do this, new forms of technology and scientific advancements must be married to long-standing strengths in order to generate economic return as quickly as possible.

Doing this will require a sector-by-sector review of strengths, weaknesses, opportunities and threats and coupling this to the identification and adoption of the most promising methods and technologies to “move the yardsticks” quickly. There is a role for the government to facilitate an evolution towards a more sophisticated economy based on the latest knowledge and developments.

Recommendation

Specific strategies aimed at building a knowledge-based economy should focus on combining traditional Canadian strengths in sectors such as agriculture, energy, the environment, fisheries, forestry, mining and human health with new technologies and business models.

3. *Focus government investment on public/private collaborations to make a bigger difference*

One of the issues facing Canada is the relatively poor R&D investment from the private sector. One drawback of this is that it has led to the neglect of a crucial interface in terms of knowledge sharing and multidisciplinary collaboration between public and private sectors.

Increasingly, private sector participation is crucial, particularly in terms of translating research discoveries into new products and services that generate economic benefit for the country. A new way of public-private cooperation and collaboration is essential, one that encourages collaboration, investment, innovation and more.

There are good examples to emulate. For instance, the Genome Canada-funded Structural Genomics Consortium (SGC) (led by Professor Aled Edwards of the University of Toronto) involves four large pharmaceutical companies and public funders from Canada and the UK who together invest in pre-competitive research in collaboration with an international research team involving researchers from Canada, Sweden and the UK.

This effort has led to scientific advancements, industrial investment in Canada, development of new products and services to be distributed by a Contract Research Organization (CRO) recruited to Canada, the creation of three companies and, ultimately, a strong contribution to maintaining the country’s quality of life.

Recommendation

A greater share of the government’s spending on industrial R&D should be directed to project-specific initiatives that bring private sector and public sector teams together in novel public private partnerships.