CANADA'S NEW GOVERNMENT

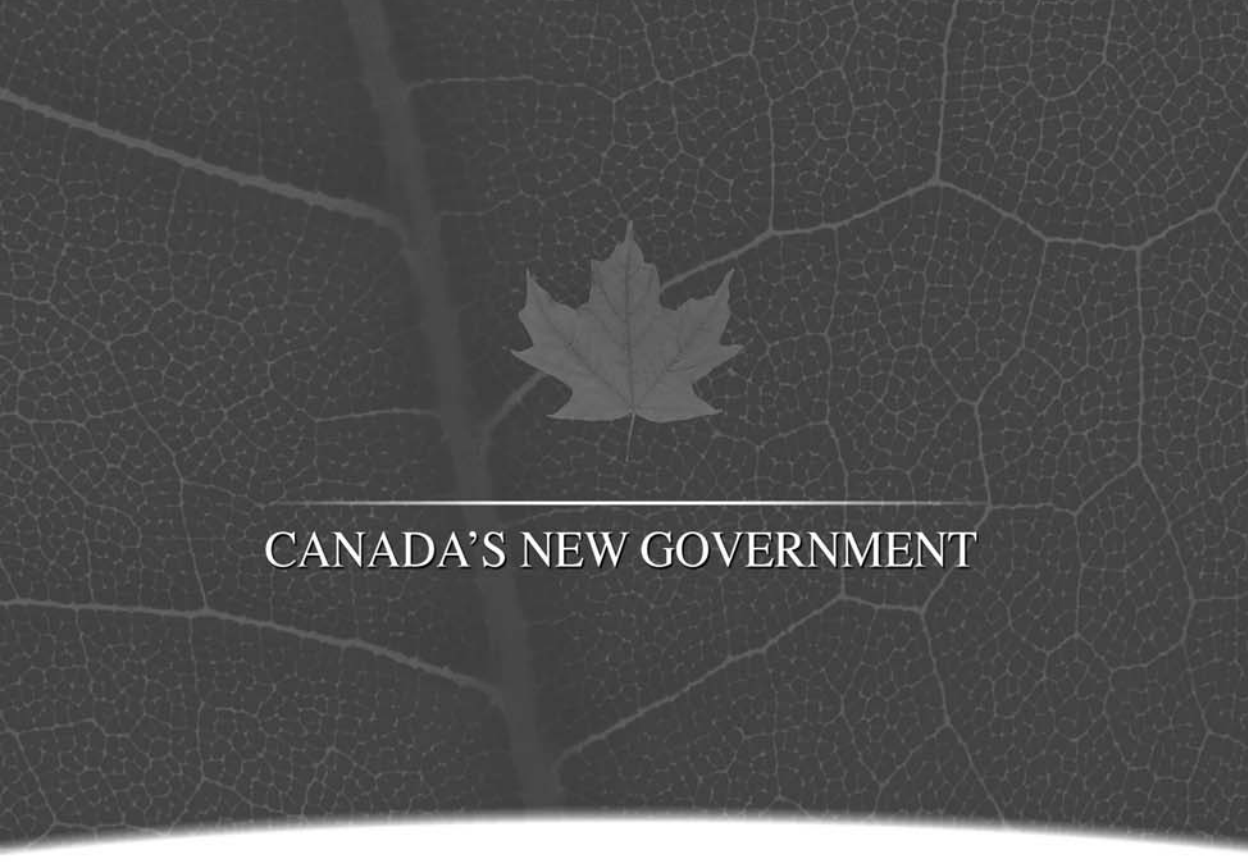
MOBILIZING SCIENCE AND TECHNOLOGY

to Canada's Advantage

SUMMARY

2007

Canada



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Cat. No. Iu4-105/2007-1-PDF
ISBN 978-0-662-45268-3
60183

Executive Summary

Canada has a long and proud history of research excellence and scientific success. From the discovery of insulin, to the design of Research in Motion's BlackBerry, Canadian innovations are making important differences in people's lives and changing the world for the better.

Science and technology comes into almost every aspect of our lives, helping us to solve problems and create opportunities. Scientific discoveries and new technologies provide solutions to many of the issues most important to Canadians, giving us the knowledge and the means to preserve the quality of our environment, protect endangered species, improve our health, enhance public safety and security, and manage our natural and energy resources. Scientific and technological innovations enable modern economies to improve competitiveness and productivity, giving us the means to achieve an even higher standard of living and better quality of life.

In November 2006, Canada's federal government released *Advantage Canada*, an economic plan to make Canada a world leader for current and future generations. *Advantage Canada* is based on the premise that Canada already has tremendous strengths—including the drive and ingenuity of our people, the relative strength of our fiscal position, and our strong research base. It also recognizes that Canada can and must do more to turn our ideas into innovations that provide solutions to environmental, health, and other important social challenges, and to improve our economic competitiveness.

This science and technology (S&T) strategy—*Mobilizing Science and Technology to Canada's Advantage*—is the government's plan to achieve these goals. It sets out a comprehensive, multi-year science and technology agenda. The S&T initiatives announced in the Budget Plan 2007 demonstrate the government's commitment to take early action to implement this agenda.

Building on Our Strengths

Canada stands out among countries with an enviable record of fiscal discipline, price stability, open product markets, and flexible labour markets. We have the eighth-largest economy and the seventh-highest standard of living in the world. And we stand on the best economic footing of any of the Group of Seven (G-7) economies, with the strongest job-creation record over the past decade and the lowest debt-to-gross-domestic-product (GDP) ratio.

We have built a strong research base. Canadian researchers are at the forefront of important scientific developments in many fields of inquiry, ranking first in the G-7 in the number of publications produced on a per-capita basis.

And we have built a skilled workforce. Canada has the highest proportion of post-secondary graduates in our workforce among G-7 countries, and our students show great potential. Canadian students perform exceptionally well, ranking near the top of the Organisation for Economic Co-operation and Development (OECD) in reading, science, and mathematics test results.

Facing Our Challenges

Despite these achievements, we face very real economic and environmental challenges that require a new level of effort and success. Canada's productivity gap relative to our largest trading partner, the United States, is widening. For Canadians to continue to enjoy a high quality of life and standard of living, we must improve our productivity and competitiveness through innovation. At the same time, our economic activity must be sustainable over the long term. Clean air, land, and water are fundamental priorities.

These challenges require a new approach—a new strategy that builds on our strong economic fundamentals, takes advantage of the research capacity that we have built, and more effectively uses science and technology to develop practical applications to address our challenges.

A New Approach

Our S&T Strategy for a more competitive and sustainable economy is built on the following convictions.

Canada needs a strong private-sector commitment to S&T. Firms large and small are bringing innovations into our lives, whether in the form of new technologies to address environmental problems, new products to make our homes, schools, and businesses more comfortable and energy efficient, or new therapies to improve the health and well-being of Canadians. Organizations at the forefront of scientific development and technological achievement create high-quality, knowledge-intensive jobs with high wages. They make our economy more competitive and productive, giving us the means to achieve an even higher standard of living and better quality of life. The private sector in Canada needs to do more of what it alone can do, which is to turn knowledge into the products, services, and production technologies that will improve our wealth, wellness, and well-being.

At a time when Canada's overall productivity gains are below those of other trading nations with whom we compete, the need to encourage greater private-sector S&T investment is a national priority.

Canada must continue to strengthen its knowledge base. S&T capacity is more widely distributed around the world today, with countries such as China and India moving increasingly into higher segments of the value chain based on their cost advantages and considerable number of highly qualified personnel. To succeed in an increasingly competitive global arena, Canadians must be at the leading edge of important developments that generate health, environmental, societal, and economic benefits. Now that we have built a strong research foundation, we must strive for excellence in Canadian science and technology.

World-class research excellence is Canada's standard.

Canada must be a magnet for talent. Our aging population, combined with opportunities for Canadians to work anywhere in the world, challenge us to put in place the right conditions to attract, retain, and develop the talent and ingenuity Canada needs. Having built a skilled and inclusive workforce, the challenge now is to achieve the right skill mix and put it to use. Canada has fewer highly qualified S&T students and workers than many other OECD countries, in large part due to weak demand for these skills by the private sector. Canadian businesses and other organizations need to make better use of the skills, talent, and knowledge of our graduates. This, in turn, will generate more interest among young people in pursuing S&T studies and careers, encouraging a virtuous circle of talent generation and mobilization.

Talented, skilled, creative people are the most critical element of a successful national economy over the long term.

Mobilizing Science and Technology to Canada's Advantage is focused on encouraging a more competitive and sustainable Canadian economy with the help of science and technology. This new, focused Strategy recognizes that the most important role of the Government of Canada is to ensure a competitive marketplace and create an investment climate that encourages the private sector to compete against the world on the basis of their innovative products, services, and technologies. Canada must maximize the freedom of scientists to investigate and of entrepreneurs to innovate.

This Strategy also lays out a framework that will guide intelligent and strategic investments of public funds. Building on our strong foundation, we need to be more strategic, more efficient, more effective, and more accountable for delivering results that make a difference in people's lives.

Fostering S&T Advantages

The Government of Canada will foster three distinct Canadian S&T advantages: an Entrepreneurial Advantage, a Knowledge Advantage, and a People Advantage:

- Canada must translate knowledge into commercial applications that generate wealth for Canadians and support the quality of life we all want in order to create an **Entrepreneurial Advantage**.
- Canadians must be positioned at the leading edge of the important developments that generate health, environmental, societal, and economic benefits in order to create a **Knowledge Advantage**.
- Canada must be a magnet for the highly skilled people we need to thrive in the modern global economy with the best-educated, most-skilled, and most flexible workforce in the world in order to create a **People Advantage**.

These advantages will be supported by the federal policy commitments outlined in this S&T Strategy, described in detail in Chapters 3 to 6. The Strategy and its policy commitments will be guided by four core principles:

Promoting World-Class Excellence. The Government of Canada will ensure that its policies and programs inspire and assist Canadians to perform at world-class levels of scientific and technological excellence. The government will foster an environment of healthy competition to ensure that funding supports the best ideas.

Focusing on Priorities. The Government of Canada will continue to play an important role in supporting basic research across a broad spectrum of science. To enhance our success, we will also be more focused and strategic—targeting more basic and applied research in areas of strength and opportunity.

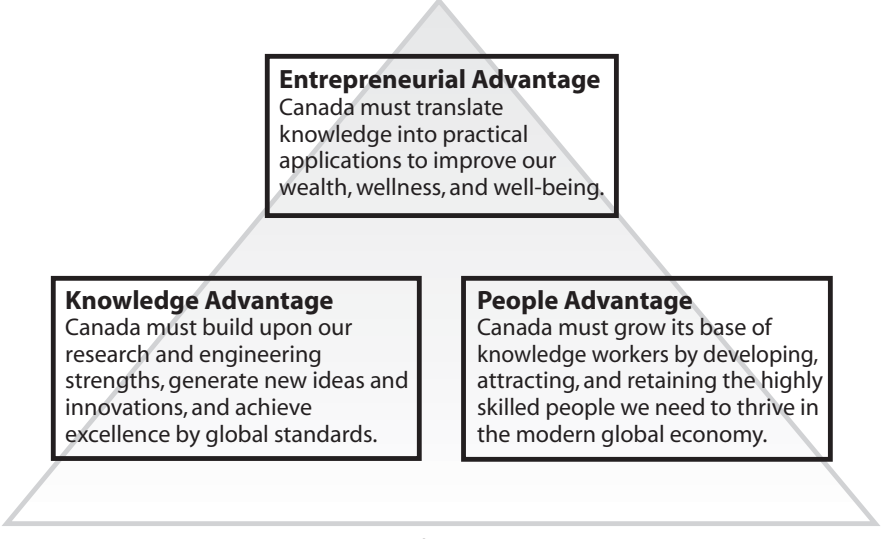
Encouraging Partnerships. The Government of Canada will support S&T collaborations involving the business, academic, and public sectors, at home and abroad. Partnerships are essential to lever Canadian efforts into world-class successes and to accelerate the pace of discovery and commercialization in Canada. Through partnerships, the unique capabilities, interests, and resources of various and varied stakeholders can be brought together to deliver better outcomes.

Enhancing Accountability. The Government of Canada will implement stronger governance and reporting practices to deliver and demonstrate results. Accountability is important because it puts the responsibility on those who are supported by public funds to demonstrate to taxpayers that results are being achieved.

The Science and Technology Framework

Vision: We will build a sustainable national competitive advantage based on science and technology and the skilled workers whose aspirations, ambitions, and talents bring innovations to life.

To achieve this vision, we will create three S&T Advantages for Canada:



Government actions will be guided by four core principles:

- Promoting world-class excellence
- Focusing on priorities
- Encouraging partnerships
- Enhancing accountability

Federal Policy Commitments

To create an Entrepreneurial Advantage: Canada's federal government will foster a competitive and dynamic business environment that encourages S&T investments. We will distinguish Canada by establishing the lowest tax rate on new business investment in the G-7. Through strong and clear environmental laws and regulations that work with market forces, we will also create the conditions for businesses and people to respond to environmental challenges with entrepreneurial innovation.

The private sector will identify and lead new research networks that address their priorities under the Networks of Centres of Excellence Program. In addition, the government will support large-scale research and commercialization centres in areas where Canadians have the potential to achieve world-class excellence, in partnership with other levels of government and the private sector.

The government will increase the impact of its business R&D assistance programs. We will align the programs and activities of existing federal organizations to increase commercialization outcomes, and invite the provinces and territories to work with us in this regard.

To create a Knowledge Advantage: Canada's federal government will focus strategically on research in areas that are in the national interest from a social and economic perspective. We will focus more of our energies and resources in the areas identified below.

- Environmental science and technologies.
- Natural resources and energy.
- Health and related life sciences and technologies.
- Information and communications technologies.

We will periodically review research priorities to ensure that we are achieving world-class leadership in these fields and providing opportunities for Canadians. Basic and applied science across all disciplines, including natural sciences and engineering, social sciences and humanities, and health sciences, will be mobilized to support these priorities.

We will maintain our G-7 leadership in public R&D performance by making new investments in R&D; ensuring that higher-education institutions have the leading-edge research equipment and facilities required to compete with the best in the world; and supporting domestic and international research and networks in areas of strategic importance to Canada.

We will enhance value for money, accountability, and the responsiveness of Canada's three granting councils by strengthening their governance and consolidating, integrating, and aligning their programs that support academic research.

The federal government undertakes R&D and related scientific activity to uphold regulatory, public policy, and operational mandates in important areas such as health care, food safety, and environmental protection. We will focus our activities in areas where government is best able to deliver results, and consider alternative management arrangements for non-regulatory federal laboratories. Our objective is to increase the impact of federal investments, lever university and private-sector strengths, create better learning opportunities for students, and foster research excellence.

To create a People Advantage: Canada's federal government will continue to reduce personal income tax to ensure Canada attracts and retains the highly skilled workers necessary to foster innovation and growth. We will enhance the immigration and temporary foreign workers systems so that they provide Canadian firms with improved access to people with the skills our modern economy needs. We will work with provinces and territories to foster excellence in, and improved access to, post-secondary education. We will increase opportunities for all to participate in the workforce by modernizing labour market programming and reducing barriers to labour mobility and credentials recognition.

The government will help students demonstrate their value by sponsoring hands-on research internships and, through scholarships, help increase the supply of the highly qualified and globally connected S&T graduates that businesses need to succeed in today's economy.

We will also seek to increase the number of Canadians pursuing education and careers in S&T by bringing Canadians involved in science promotion together to coordinate our efforts and increase our impact.

A Modern Approach to S&T Management

Canada must be connected to the global supply of ideas, talent, and technologies. We will explore opportunities to strengthen these ties.

A more streamlined external advisory system, with a broad and clear mandate, is required to strengthen the voice of external science advice and help the government address complex S&T issues. In order to achieve these objectives, the federal government will consolidate the roles and responsibilities of the Advisory Council on Science and Technology, the Council of Science and Technology Advisors, and the Canadian Biotechnology Advisory Committee into a single new council. The new Science, Technology and Innovation Council will provide policy advice to the government on S&T and innovation issues and benchmark Canada's S&T performance against international standards of excellence.

Establishing competitive environments, measuring success, and holding people and organizations more accountable for the results they achieve with taxpayers' dollars are more important than ever. Canada's federal government will increase its accountability to Canadians by improving the way that we measure and report the results of federal S&T expenditures.

The Path Forward

Mobilizing Science and Technology to Canada's Advantage sets out a new and focused approach to mobilize science and technology to our long-term economic and social advantage. It takes into account where we have come from and where we need to go, the changing landscape within which S&T takes place, and international developments. It positions Canada to succeed by addressing our challenges and building on our science and technology strengths. Above all, it recognizes the important role that the private sector and others play in Canada.

The Government of Canada will do its part, and create a climate of innovation and discovery in our nation.

- For the business community, we will focus on what government does best; providing an enabling environment that promotes private investment in R&D, advanced technologies, and skilled workers.

- For the higher-education community, we will sustain our world-leading commitment to basic and applied research in all domains, while focusing that collective effort more effectively on priorities that matter to Canadians. We will sustain our commitment to train the next generation of researchers and innovators upon whom Canada's future success depends.
- For Canadians overall, we will hold ourselves accountable for delivering results. Canada's federal government understands the far-reaching implications of science and technology discoveries and applications, and the endless educational and professional opportunities they provide for Canadians. The main reason for enhancing Canada's S&T capability is to improve the lives of ordinary Canadians, their families, and communities. This is our ultimate aim, and it is how Canadians will judge the success of this S&T Strategy.

This Strategy benefited from the advice of many individuals and organizations this past year, including the Advisory Council on Science and Technology, the Council of Canadian Academies, the Council of Science and Technology Advisors, the National Science Advisor, the Expert Panel on Commercialization, the Telecommunications Policy Review Panel, and the Association of Universities and Colleges of Canada. The work of the Conference Board of Canada, the Canadian Council of Chief Executives, the OECD, and others has also been an important source of information and ideas. Provincial and territorial governments shared their views in a comprehensive discussion paper and subsequent dialogue with the federal government. Leaders active at the forefront of S&T developments in Canada also gave of their time, participating in regional roundtables and a forum in Edmonton to share their views on how to make Canada a stronger country though science and technology.

The federal government is thankful to those who have taken the time to share their valuable insights and helpful suggestions, and looks forward to implementing this Strategy in collaboration with other orders of government and Canada's S&T leaders over the coming years. Together, we will build a sustainable national competitive advantage based on science and technology and the skilled workers whose aspirations, ambitions, and talents bring innovations to life.