



Government
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ACHIEVING EXCELLENCE

INVESTING IN PEOPLE, KNOWLEDGE
AND OPPORTUNITY



CANADA'S INNOVATION STRATEGY

EXECUTIVE SUMMARY

Canada 

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*In the 21st century, our economic and social goals
must be pursued hand-in-hand. Let the world see
in Canada a society marked by innovation and
inclusion, by excellence and justice.*

The Right Honourable Jean Chrétien
Prime Minister of Canada
Reply to the Speech from the Throne, January 2001

CANADA'S INNOVATION STRATEGY

Canada's Innovation Strategy is presented in two papers. Both focus on what Canada must do to ensure equality of opportunity and economic innovation in the knowledge society.

Achieving Excellence: Investing in People, Knowledge and Opportunity recognizes the need to consider knowledge as a strategic national asset. It focuses on how to strengthen our science and research capacity and on how to ensure that this knowledge contributes to building an innovative economy that benefits all Canadians.

Knowledge Matters: Skills and Learning for Canadians recognizes that a country's greatest resource in the knowledge society is its people. It looks at what we can do to strengthen learning in Canada, to develop people's talent and to provide opportunity for all to contribute to and benefit from the new economy.

Both publications are also available electronically on the World Wide Web at the following address: <http://www.innovationstrategy.gc.ca>

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Ingenuity has always been crucial to human progress. It brought us the printing press, the steam engine, electricity and the Internet. Each of these inventions forever altered the way we live our lives and the way we relate to each other. Canadian ingenuity has contributed to the world's innovations — the telephone, insulin, the pacemaker, the Canadarm, the BlackBerry™. Every day, dramatic advances in medical research, telecommunications and science are changing the world in which Canada must compete.

In order to stay competitive in a knowledge-based economy, Canada had to get the fundamentals right. In recent years, Canada has eliminated the federal deficit, kept inflation low, dramatically reduced unemployment, improved our debt-to-GDP ratio, and made significant investments in the infrastructure that supports research and development. We also have the most highly educated work force on Earth. Each of these factors demonstrates that we have a strong foundation for economic growth.

But Canada must do more.

It is time to focus on excellence in all sectors and all regions of the country. It is time to take what Canada has done well and ask ourselves: *How do we do more of this, faster? How can we multiply our successes across the country and into the future?*

We need to find ways to support the Canadian research teams making groundbreaking discoveries; the Canadian businesses — large and small — that are capturing new markets with innovative products and services; and the Canadian communities that have attracted world-class expertise and entrepreneurial talent. We need to support our traditional manufacturing and natural resources industries that continue to prove that Canada can compete with the world.

It is time to push our efforts to a new level; to challenge Canadians with ambitious targets for the next decade and then work together to achieve them. Government alone cannot achieve this goal.

We must build on the growing consensus among business leaders, entrepreneurs, unions, academics and all levels of government. In order for Canada to succeed, we need to galvanize a truly national effort.

INTRODUCTION

Canada's Innovation Strategy is presented in two papers. *Knowledge Matters: Skills and Learning for Canadians* recognizes that Canada's greatest resource is its people and identifies ways for all Canadians to benefit from a knowledge-based economy. It is presented in a separate paper.

Achieving Excellence: Investing in People, Knowledge and Opportunity is a blueprint for building a stronger, more competitive economy. This paper proposes goals, targets and federal priorities for the next decade in four key areas:

The Knowledge Performance Challenge — Finding better ways to create knowledge and bring these ideas to market.

The Skills Challenge — Finding ways to develop, attract and retain the best and the brightest.

The Innovation Environment Challenge — Looking at ways to improve business and regulatory policies to support innovation.

Finding Ways to Strengthen Our Communities — Supporting innovation at the local level so that our communities continue to be magnets for investment and opportunity.

We need to hear from Canadians on how to move forward. In the coming months, there will be a series of regional and sectoral meetings to seek consensus on how best to achieve the goals and targets identified in *Achieving Excellence*. These meetings will result in a National Summit this fall, where further ideas, opportunities and partnerships can be identified.

By working together, Canada will be able to stand strong in a global economy; to make our own decisions about the kind of lives we want for ourselves and for our children.

With excellence as our hallmark, Canada can continue to be one of the best places in the world to live and work.

It is time for Canada to adopt a true culture of opportunity and innovation, one that will enable all of us as Canadians to get on with building better lives for ourselves, for our families and for our communities.

— Business Council on National Issues,
Risk and Reward, Creating a Canadian Culture of Innovation,
April 5, 2000

WHAT IS INNOVATION?

What does innovation mean? It means coming up with new ideas about how to do things better or faster. It is about making a product or offering a service that no one had thought of before. It is about putting new ideas to work in our businesses and industries and having a skilled work force that can use those new ideas. And it is about aggressively pursuing new markets for Canada's products and services.

Innovation is not just the job of government or the private sector. Innovation is everybody's business.

CANADA'S POSITION IN THE WORLD: WHERE ARE WE NOW?

Against the measures that matter most, Canadians enjoy an outstanding quality of life. Overall, life expectancy is long, the population is healthy, income levels are high and our communities are safe. Our natural environment makes us a tourist destination for the rest of the world. Canada consistently ranks as one of the best countries in the world in which to live. Obviously, as a country, we are doing a lot of things right.

But we face a number of challenges.

Canada has the seventh highest standard of living among the 30 member countries of the Organisation for Economic Co-operation and Development (OECD). However, relative to the United States, the world's benchmark economy, real incomes per capita in Canada have been steadily falling over much of the last two decades. The income gap narrowed somewhat in 1999, and again in 2000. This suggests that we are moving in the right direction. But the substantial gap that remains is cause for concern because the U.S. is our closest neighbour, largest trading partner and key competitor for talent and North American investment. If we do not narrow the gap further, we risk an outflow of talent and capital, which could contribute to a decline in our standard of living and, ultimately, the quality of life of Canadians.

BACKGROUND

The gap with the U.S. is almost entirely due to our lower level of productivity. Improving productivity is heavily reliant on innovation and, at present, Canada's overall level of innovation capacity is near the bottom of the world's leading economies.

However, Canada's innovation performance is improving, and in some areas we are outpacing our major competitors. Over the past two decades, Canada achieved the fastest rate of growth in the G-7 in the number of workers devoted to research and development (R&D), in external patent applications, and in business expenditures on R&D.

There is a growing body of evidence from international bodies, including the World Economic Forum, that Canada's future economic prospects are significantly more promising than our current performance.

THE FOUNDATION IS THERE

Governments, academia and the private sector have made substantial investments in innovation in recent years and progress has been made in every region of the country.

Canada has been getting the economic fundamentals right. Thanks to the efforts of Canadians, we have eliminated the deficit, paid down the public debt and reduced taxes. The Government of Canada has provided direct support for public, private and academic R&D through the Canada Foundation for Innovation, Canada Research Chairs and Technology Partnerships Canada, to name just a few. In 2001–02, federal expenditures on science and technology are estimated at \$7.4 billion.

The Government of Canada also understands the skills challenge and encourages the development of highly qualified people through such initiatives as Canada Millennium Scholarships, Canada Study Grants, Canada Education Savings Grants and tax measures that help Canadians finance their education needs.

Canadians must become more innovative. Improvements in our innovative capacity are critical to productivity growth and wealth creation. Companies that are innovative are more profitable, create more jobs and fare better in global markets.

— The Conference Board of Canada,
Performance and Potential 2001–02, 2001

Most recently, Budget 2001 provided support to universities and research hospitals for the indirect costs of publicly funded research and supported the growth of our national Internet connections by supporting programs for our schools, communities and research institutions.

WHERE SHOULD CANADA FOCUS ITS EFFORTS?

We know that Canadians can compete with the very best and win. But our competition is global and we must be able to compete in every sector of the Canadian economy and in every region. Most of Canada's larger companies and many of our smaller ones can no longer survive by focusing solely on domestic customers. Our companies are in stiff competition with others from around the world for the rewards that flow from expanding their global market share.

We cannot stand still. Countries that are behind are trying to overtake us. Those that are ahead are determined to stay there. If Canada is going to compete, we need to move faster and work smarter than our competition.

This requires a strategic and systematic approach. Equally important, it requires a culture that values excellence and entrepreneurship.

To improve Canada's innovation performance in the world, we face four basic challenges.

- **Knowledge Performance** — Encouraging Canadian firms to reap more benefits from creating knowledge and bringing ideas to market. It also means increasing R&D investment in Canada by all sectors.
- **Skills** — Ensuring that in years to come, Canada has enough highly qualified people with the skills for a vibrant, knowledge-based economy.
- **The Innovation Environment** — Modernizing our business and regulatory policies to support and recognize investment and innovation excellence.
- **Strengthening Communities** — Supporting innovation at the local level so that our communities continue to be magnets for investment and opportunity.

The realities of the market today — intense international competition, the rapid pace of technological development, and the ease with which investment and knowledge flow around the world — mean it is more important than ever for companies to strengthen competitive capabilities based on productivity and innovation.

— Canadian Manufacturers and Exporters, *Canada's Excellence Gap: Benchmarking the Performance of Canadian Industry Against the G7*, August 1, 2001

Canadian firms are adopting innovations, new technologies and business practices that embody the latest thinking from around the world. These firms see innovation as *the* way to grow profit margins and increase productivity. Other areas of our economy are being forced to compete in rapidly changing global markets. We can do better.

Comparisons with other countries suggest more of Canada's private sector needs to aggressively develop its capacity to create new ideas and bring them to market in order to remain competitive. This will require an increased investment in R&D and the knowledge infrastructure associated with it, as an investment in the future of the firm rather than a cost of doing business. It will also require more strategic alliances and improved access to venture capital to enable more firms to benefit from the commercial application of knowledge.

The Knowledge Performance Challenge

The Government of Canada proposes the following goals, targets and federal priorities to help more firms develop, adopt and market leading-edge innovations.

GOALS

- Vastly increase public and private investments in knowledge infrastructure to improve Canada's R&D performance.
- Ensure that a growing number of firms benefit from the commercial application of knowledge.

TARGETS

- By 2010, rank among the top five countries in the world in terms of R&D performance.
- By 2010, at least double the Government of Canada's current investments in R&D.
- By 2010, rank among world leaders in the share of private sector sales from new innovations.
- By 2010, raise venture capital investments per capita to prevailing U.S. levels.



KNOWLEDGE PERFORMANCE

Managing knowledge as a strategic national asset

GOVERNMENT OF CANADA PRIORITIES

1. Address key challenges for the university research environment.

The Government of Canada has committed to implementing the following initiatives:

- **Support the indirect costs of university research.** Contribute to a portion of the indirect costs of federally supported research, taking into account the particular situation of smaller universities.
- **Leverage the commercialization potential of publicly funded academic research.** Support academic institutions in identifying intellectual property with commercial potential and forging partnerships with the private sector to commercialize research results.
- **Provide internationally competitive research opportunities in Canada.** Increase support to the granting councils to enable them to award more research grants at higher funding levels.

2. Renew the Government of Canada's science and technology capacity to respond to emerging public policy, stewardship and economic challenges and opportunities.

- The Government of Canada will consider a collaborative approach to investing in research in order to focus federal capacity on emerging science-based issues and opportunities. The government would build collaborative networks across government departments, universities, non-government organizations and the private sector.

3. Encourage innovation and the commercialization of knowledge in the private sector.

- **Provide greater incentives for the commercialization of world-first innovations.** The Government of Canada will consider increased support for established commercialization programs that target investments in biotechnology, information and communications technologies, sustainable energy, mining and forestry, advanced materials and manufacturing, aquaculture and eco-efficiency.
- **Provide more incentives to small and medium-sized enterprises (SMEs) to adopt and develop leading-edge innovations.** The Government of Canada will consider providing support to the National Research Council Canada's Industrial Research Assistance Program to help Canadian SMEs assess and access global technology, form international R&D alliances, and establish international technology-based ventures.
- **Reward Canada's innovators.** The Government of Canada will consider implementing a new and prestigious national award, given annually, to recognize internationally competitive innovators in Canada's private sector.
- **Increase the supply of venture capital in Canada.** The Business Development Bank of Canada will pool the assets of various partners, invest these proceeds in smaller, specialized venture capital funds and manage the portfolio on behalf of its limited partners.

To succeed in the global, knowledge-based economy, where highly skilled people are more mobile than ever before, a country must produce, attract and retain a critical mass of well-educated and well-trained people. Canada has one of the most highly educated labour forces in the world, and over the years our supply of highly qualified people has sustained economic growth and helped attract foreign investment. However, Canada, like most Western countries, is beginning to experience major demographic changes that will result in fewer workers. Meanwhile, the demand for high-level skills will continue to increase in all sectors. Given these trends, competition for highly skilled workers will intensify within Canada, and between Canada and other countries.

To reach the knowledge performance target of becoming one of the top five countries for R&D performance by 2010, we will need to at least double the number of research personnel in our current labour force and foster a strong “management class.” In order to meet our requirements for highly qualified people, we must develop, attract and retain talent, and upgrade the skills of our population.

The companion document to this paper, *Knowledge Matters: Skills and Learning for Canadians*, identifies several additional areas for improving the skills environment in this country, particularly for children and youth, adult learners and Aboriginal people.



SKILLS

Preparing people for opportunity

The Skills Challenge

The Government of Canada proposes the following goals, targets and federal priorities to develop, attract and retain the highly qualified people required to fuel Canada's innovation performance.

GOALS

- Develop the most skilled and talented labour force in the world.
- Ensure that Canada receives the skilled immigrants it needs and helps immigrants to achieve their full potential in the Canadian labour market and society.

TARGETS

- Over the next five years, increase the number of adults pursuing learning opportunities by 1 million.
- Through to 2010, increase the admission of Master's and PhD students at Canadian universities by an average of 5 percent per year.
- By 2002, implement the new *Immigration and Refugee Protection Act* and regulations.
- By 2004, significantly improve Canada's performance in the recruitment of foreign talent, including foreign students, by means of both the permanent immigrant and the temporary foreign workers programs.

GOVERNMENT OF CANADA PRIORITIES

- 1. Produce new graduates.** The Government of Canada will consider the following initiatives:
 - Provide financial incentives to students registered in graduate studies programs, and double the number of Master's and Doctoral fellowships and scholarships awarded by the federal granting councils.

- Create a world-class scholarship program of the same prestige and scope as the Rhodes Scholarship; support and facilitate a coordinated international student recruitment strategy led by Canadian universities; and implement changes to immigration policies and procedures to facilitate the retention of international students.
- Establish a cooperative research program to support graduate and post-graduate students and, in special circumstances, undergraduates, wishing to combine formal academic training with extensive applied research experience in a work setting.

2. Modernize the Canadian immigration system.

The Government of Canada has committed to:

- Maintain its commitment to higher immigration levels and work toward increasing the number of highly skilled workers.
- Expand the capacity, agility and presence of the domestic and overseas immigration delivery system to offer competitive service standards for skilled workers, both permanent and temporary.
- Brand Canada as a destination of choice for skilled workers.
- Use a redesigned temporary foreign worker program and expanded provincial nominee agreements to facilitate the entry of highly skilled workers, and to ensure that the benefits of immigration are more evenly distributed across the country.

Canada must do more to market its advantages to the world, ensuring that international investors are attracted to Canada. This also means keeping our tax environment competitive.

A truly world-class innovation environment suffers no trade-off between the public interest and business opportunity. Canada's stewardship policies and systems that protect health, the environment, safety, privacy and consumer rights are among the world's best. However, as the pace of innovation worldwide continues to accelerate, other countries are refining and modernizing their policies to be in the best possible position to encourage and benefit from innovation. Canada must do the same.

To encourage excellence across all sectors, we must work to continually improve our investment and regulatory environment so that Canadians can benefit from new scientific and technological breakthroughs, and know that their quality of life will be protected. We must also ensure that our scientific investments are focused on emerging public policy areas in line with our international competitors.

The private sector, including my own industry and company, needs to be part of the solution as well. We need to foster more innovation to fuel the growth we need to meet our standard of living objective.

— A. Charles Baillie, Chairman and CEO, TD Bank Financial Group, Speech to the Canadian Club, Toronto, February 26, 2001



THE INNOVATION ENVIRONMENT

Creating the right conditions for investment and opportunity

The Innovation Environment Challenge

The Government of Canada proposes the following goals, targets and federal priorities to protect Canadians and encourage them to adopt innovations; encourage firms to invest in innovation; and attract the people and capital upon which innovation depends.

GOALS

- Address potential public and business confidence challenges before they develop.
- Ensure that Canada's stewardship regimes and marketplace framework policies are world-class.
- Improve incentives for innovation.
- Ensure that Canada is recognized as a leading innovative country.

TARGETS

- By 2010, complete systematic expert reviews of Canada's most important business and regulatory regimes.
- Ensure Canada's business taxation regime continues to be competitive with those of other G-7 countries.
- By 2005, substantially improve Canada's profile with international investors.
- By 2004, fully implement the Council of Science and Technology Advisors' guidelines to ensure the effective use of science and technology in government decision making.

GOVERNMENT OF CANADA PRIORITIES

1. Ensure effective decision making for new and existing policies and regulatory priorities.

The Government of Canada will consider the following initiatives:

- Support a "Canadian Academies of Science" to build on and complement the contribution of existing Canadian science organizations.
- Undertake systematic expert reviews of existing stewardship regimes through international benchmarking, and collaborate internationally to address shared challenges.

2. Ensure that Canada's business taxation regime is internationally competitive.

- The Government of Canada will work with the provinces and territories to ensure that Canada's federal, provincial and territorial tax systems encourage and support innovation.

3. Brand Canada as a location of choice.

- The Government of Canada has committed to a sustained investment branding strategy. This could include Investment Team Canada missions and targeted promotional activities.

Communities are where the elements of a national, globally competitive innovation system come together.

To become magnets for investment and growth, communities need a critical mass of entrepreneurship and innovation capabilities. Communities where innovation thrives typically house industrial “clusters” — internationally competitive centres of growth. Canadian communities are already leading the way with several mature and emerging clusters but we can support more. Canada’s communities also have to be part of a globally connected world, and broadband will be part of the national strategy. Communities have the potential to accelerate the pace of innovation, attract investment, stimulate job creation and generate wealth.

Federal-provincial-territorial governments agree on the goal of making Canada one of the most innovative countries in the world ... Ministers recognize that this overarching goal cannot be met by government actions alone and call upon all players in the innovation system to play their part.

— *Principles for Action, Federal-Provincial-Territorial Science and Technology Ministerial Meeting, Québec, September 20–21, 2001*



STRENGTHENING COMMUNITIES

**Bringing investment benefits
into our communities**

Community-Based Innovation Challenges

The Government of Canada proposes the following goals, targets and federal priorities to support innovation in communities across the country.

GOALS

- Governments at all levels work together to stimulate the creation of more clusters of innovation at the community level.
- Federal, provincial/territorial and municipal governments cooperate and supplement their current efforts to unleash the full innovation potential of communities across Canada, guided by community-based assessments of local strengths, weaknesses and opportunities.

TARGETS

- By 2010, develop at least 10 internationally recognized technology clusters.
- By 2010, significantly improve the innovation performance of communities across Canada.
- By 2005, ensure that high-speed broadband access is widely available to Canadian communities.

GOVERNMENT OF CANADA PRIORITIES

1. Support the development of globally competitive industrial clusters.

- The Government of Canada will accelerate community-based consultations already under way to develop technology clusters where Canada has the potential to develop world-class expertise, and identify and start more clusters.

2. Strengthen the innovation performance of communities.

- The Government of Canada will consider providing funding to smaller communities to enable them to develop innovation strategies tailored to their unique circumstances. Communities would be expected to engage local leaders from the academic, private and public sectors in formulating their innovation strategies. Additional resources, drawing on existing and new programs, could be provided to implement successful community innovation strategies.
- As part of this effort, the Government of Canada will work with industry, the provinces and territories, communities and the public to advance a private sector solution to further the deployment of broadband, particularly for rural and remote areas.

A CALL FOR ACTION

The goals, targets and priorities proposed in this document are ambitious, but they are within Canada's reach. Achieving them depends primarily on whether all the players are willing to work together, leveraging one another's strengths and expertise.

Over the coming months, the Government of Canada will engage large and small businesses, academia, provincial, territorial and municipal governments and Canadians to align expertise and interest in a Canadian effort. There will be a series of regional and sectoral meetings, culminating in a National Summit this fall. The aim will be to ensure that actions are complementary and targeted, seeking partnerships to pursue our objective of a more innovative country.

Achieving Excellence: Investing in People, Knowledge and Opportunity focuses on the economic imperatives for Canada to improve its innovation performance. Our quality of life and standard of living during the next decade will depend on how innovative we are — as small businesses,

workers, governments, education and research institutions, communities, large corporations and as a society. Indeed, if we are to succeed, innovation must be everybody's business.

As we work together to build a more innovative society, we can build on our advantages. Across this vast land, people are coming up with new products or processes and finding new and better ways to do things. It is these innovative efforts, multiplied across the country — in urban centres, small towns and isolated communities — that will keep Canada strong.

However, strengthening our competitive position in the global economy is not only about jobs and the economy. It is about Canada standing strong in the world; achieving a reputation for excellence and opportunity. It is about an excellent health care system, first-rate schools, a clean environment and social policies that reflect our values.

The reward for becoming a more innovative society is that, as Canadians, we will be able to achieve a brighter future for ourselves and our children.

ACHIEVING EXCELLENCE

And a more secure future for Canada