Canada Foundation for Innovation
Fondation canadienne pour l'innovation

BRIEF TO THE

HOUSE OF COMMONS

STANDING COMMITTEE ON FINANCE

Canada's Place in a Competitive World

ELIOT A. PHILLIPSON
PRESIDENT AND CEO

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CFI's role in Canadian S&T

Canada's continuing social and economic prosperity in the 21st century is increasingly dependent on our competitiveness and connectedness in a global knowledge economy.

Key to this competitiveness and connectedness is our ability to generate new knowledge and understanding, and to translate this knowledge into new products, services, processes, and policies for the well-being of Canadians for generations to come. Of equal importance is the training of the highly qualified personnel who are critical to the transfer of knowledge from the academic to the private and public sectors.

The Federal Government plays a major role in supporting research and innovation by:

- enabling Canada's universities, research hospitals, and colleges to contribute to social and economic development across all regions of the country through research, training, and knowledge translation;
- maintaining and enhancing the international competitiveness of Canadian research institutions;
- ensuring that these institutions attract and retain the best researchers and students, and continue to build the capacity for innovation;
- promoting a balanced and coherent S&T investment strategy for institutions in four key areas (direct costs of research, indirect costs of research, infrastructure, and people).

The Canada Foundation for Innovation (CFI) was established by the Federal Government in 1997 with a mandate to invest in *research infrastructure* to increase the capacity of Canadian universities, colleges, research hospitals, and non-profit research institutions to compete internationally and enhance research productivity.

Research infrastructure includes facilities, laboratories, equipment, computing capability and networking. This advanced capital helps institutions attract and retain researchers, carry out world-class research and technology development in all R&D disciplines, and provide an environment for the training of people in the latest technology. The CFI works in a complementary fashion with agencies and organizations—federal, provincial and local—to support R&D at Canadian institutions.

CFI's current funding picture

Investments made in research infrastructure serve as a beacon for attraction of researchers, helping institutions to build their human infrastructure, our most important renewable resource, and enhance their expertise. As a result of the investments made by the CFI, the Canadian capacity for research, development, and innovation is being dramatically enhanced in areas of strategic importance. We owe it to future generations to maintain the commitment. Much like education and health care, investing in knowledge creation is not

a “one-time-only” event, but rather requires ongoing investments to ensure the future prosperity of the country and a better quality of life for all Canadians.

A new atmosphere of excitement exists on campuses across the country that has been generated not only by CFI contributions, but also by the way that this investment works with the multiple sources of support that the federal and provincial governments have put in place to support the research enterprise. This partnership approach has transformed Canada’s research landscape system-wide and has enabled leveraging of these strategic CFI investments.

In July 2005 the CFI launched its last major competition with decisions to be made public in the Fall of 2006. Unless it is known well in advance that additional funding will be available after this last competition, universities and colleges will find it difficult to undertake the planning of large infrastructure projects whose design and construction may span several years.

The CFI was designed as a sunset organization with a fixed budget of $3.65 billion. *In less than three months we will be announcing the results of our last major competitions.* After those results are made public in the fall of 2006, our capacity to invest in cutting-edge research going forward **will be largely depleted**. These last major competitions currently underway have a budget of $325 million for research infrastructure and $97 million for infrastructure operations and maintenance. With requests from institutions topping $1.6 billion, the funding rate will be only about 20%.

If Canada is to remain competitive in world-class research, research infrastructure funding at institutions must be provided to a level proportionate and appropriate to the funding provided for S&T itself. S&T cannot proceed in the absence of up-to-date tools. To be competitive, Canada’s investment in research infrastructure must be comparable to other developed, industrialized countries.

Given the rapidly evolving research environment -both nationally and internationally—and new emerging technologies, the need for infrastructure remains high and ongoing. Moving forward, some of the major challenges to be addressed for Canada include:

- Sustainability and operation of research infrastructure;
- The attraction and retention of highly qualified personnel—during the coming decade, universities will need to replace more than 60% of faculty and hire an additional 30% to respond to increased demands in research and teaching;
- Enhancing Canada’s role in the world and its international competitiveness by building on our strengths;
- Fostering the translation of knowledge including commercialization;
- Developing high quality personnel for the future;
- Enhancing collaboration with key stakeholders—including provinces, funding agencies and the private sector—to ensure the best results.

Last year, the CFI Board adopted a new program architecture to address the evolving infrastructure needs of Canada's research community. These new programs recognize the need for sustainability, performance, merit, partnerships, benefits, and planning.

The CFI estimates that, at a minimum, an additional investment of $1 Billion (or $2.5B when counting partner investments) between 2007 and 2010 would be required if it is to continue playing a significant role in helping to secure Canada's future prosperity and competitiveness by strengthening our capacity for leading-edge research.

Results of CFI investments to date

Within Canada, the S&T landscape is being transformed through the collective investment from all stakeholders. Research infrastructure is a critical component of these partnership investments, with the potential to address many of the contemporary S&T challenges. Through its emphasis on strategic planning by institutions, its 40/60 funding formula and its funding programs, the CFI has helped to transform the Canadian research landscape.

At the time the CFI was established, a severe deficit in research infrastructure was compromising Canada's capability to carry out world-class S&T, and there was disquiet among institutions over "brain drain" and the inability to attract young S&T trainees.

The CFI's national objectives support economic growth and job creation; as well as health and environmental quality through innovation. Our investments increase Canada's capability to carry out important world-class scientific research and technology development, and help to expand research and job opportunities for young Canadians. We are helping to promote productive networks and collaboration among Canadian post-secondary educational institutions, research hospitals and the private sector.

Institutions from across Canada receiving CFI support are required to submit an annual report, and to ensure that all projects funded at their institution do likewise, for each of the five years following the CFI award. These project and institutional reports are reviewed; a summary analysis report is prepared, and posted on the CFI's website. This process has been in operation since 1999. For 2006, a total of 3,137 project progress reports were received.

The results of the evaluations and analyses are clear: overall, the programs have had a marked impact and are meeting the objectives set out by the government. The following data have been collected, and will be available in the 2006 analysis of impacts of funded projects.

- **Canada is a beacon for new researchers**
  State-of-the-art infrastructure has proven to be key in attracting the best researchers from all over the world. Since 2001, the availability of state-of-the-art infrastructure has been a major factor in attracting over 8,050 new faculty members to Canadian universities. Of these, nearly 1,700 came from the U.S., close to than 1,500 from other countries, and the remainder from Canada.

- **The CFI helps meet Canada's need for knowledge workers**
  Since 2001:
  - close to 41,300 post-doctoral and graduate students have undertaken research projects where the CFI funded infrastructure was or is a key resource. These trainees will become the knowledge workers for Canada's R&D-based business, a need that is expressed by many sectors of society, including private, public, and non-profit;
  - more than 11,200 students with experience on the latest infrastructure have completed their training and joined the private, public, or non-profit sectors in a working capacity in Canada;
  - close to 11,000 technical support staff have been trained on the use and maintenance of state-of-the-art research infrastructure.

- **Canada is regarded as a significant international player in research**
  In the last year:
  - more than 7,600 visiting researchers from around the world made use of state-of-the-art infrastructure in Canadian universities, research hospitals, and colleges;
  - nearly 1,100 researchers attracted international funding. More than half of these stated that infrastructure had a significant impact on their ability to attract this funding.

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- **Collaboration with private-sector partners and service agencies for knowledge transfer**
  - In the last year, approximately 5,500 individuals from the private, public, and non-profit sectors used CFI-funded research infrastructure.
  - Since 2001, nearly 2,100 research collaborations between institutions and the private, public, and non-profit sectors have made use of CFI-funded infrastructure.
  - Of the 46% of researchers that received research funding from Canadian industry in the last year, well over half indicate that the infrastructure had a significant impact in attracting that funding to support their research projects.

- **The CFI is helping to build community-based technology clusters**
  CFI-funded infrastructure projects are located in 62 municipalities across Canada. In many cases, this state-of-the-art infrastructure serves as a magnet for the attraction of investment and talent. Around 38% of projects report local or regional collaboration in the formation of technology clusters fostered

by the infrastructure since 2001. Technology clusters are developing—both large and small—centered on areas such as advanced materials, pharmaceuticals, renewable energy, high performance computing, and more.

- **Social and economic benefits are emerging**
  Since 2001, the availability of infrastructure has helped with the:
  - creation of 155 spin-off companies;
  - generation of 528 new intellectual property rights;
  - development of 653 new or improved public policies and programs;
  - development of 837 new or improved products, processes, or services.

Investments made in research infrastructure serve as a beacon of attraction for researchers, helping institutions to build their expertise from abroad and from different sectors. As a result of these investments, established world-class and promising young researchers are being attracted to the facilities at Canadian institutions, young researchers are being trained in leading-edge facilities, the research itself is being transformed by networking and collaboration, and research and technology clusters are emerging. In short, the Canadian capacity for research and development (R&D) is being dramatically enhanced in areas of strategic importance.

CFI's Governance and Accountability Structure

Because of its unique status as a foundation entrusted with public money, the CFI attaches paramount importance to operating in an economical, effective and transparent manner, and to communicating its activities and results to a wide audience. It also recognizes its responsibility to deliver programs that focus on Canada's needs and on enabling institutions and their researchers to compete in the global, knowledge-based economy.

The CFI's Governance and Accountability Structure is summarized in the chart in *Appendix 1*. The CFI is governed by a Board of Directors which makes final decisions on projects to be funded, and sets strategic objectives in the context of the funding agreement between the CFI and the federal government.

The Board of Directors also oversees management's responsibilities for financial reporting through its Audit and Finance Committee and its Investment Committee. These Committees review the financial statements and provide recommendations to the Board of Directors. The other key responsibilities include reviewing the budgets, internal control procedures, investments, and advising the Directors on auditing matters and financial reporting issues.

The Board of Directors reports to 15 Members—a higher governing body similar to a company's shareholders, but representing the Canadian public. The Members are responsible for the appointment of eight of the 15 Directors of the Board. The seven

others, including the Chair, are appointed by the Governor in Council. Members also appoint individuals to replace Members whose term has expired.

The Board of Directors, staff, and reviewers sign a *Statement on Ethics* to deal with any conflict of interest issues.

The CFI Board won the prestigious *Conference Board of Canada / Spencer Stuart 2006 National Award in Governance* in the Public Sector category. These awards celebrate bold and innovative solutions to governance challenges, and recognize organizations that have achieved excellence in governance.

Benefits of the Foundation Model

The CFI is responsible for implementing government policy. The Foundation model enables the CFI to do this with speed, agility and flexibility and in the best interest of the public. Our experience of the last nine years has shown that this model can work in an efficient, economical and effective manner, and has resulted in innovative multidisciplinary infrastructure projects that are unlikely to have been funded through other possible mechanisms.

The *2006 Federal Budget* acknowledged the benefits of the foundation model and announced that the CFI would receive an additional $20 million per year for its *Leaders Opportunity Fund* (LOF) program.

> "…[F]*oundations will continue to operate as they have since their creation. The Government will retain the use of foundations as an important policy tool on the same governance principles. The independence, financial stability and focused expertise of foundations allow them to address specific challenges in a highly effective manner.*
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> *Foundations have become important vehicles for implementing policy, particularly in areas such as research and development, where expert knowledge, third-party partnerships and peer review are especially important."*
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> **Federal Budget 2006**

Conclusion

There is a complex but certain connection between publicly funded research and industrial growth in modern knowledge based economies. Several studies have demonstrated that with successful stewardship and adequate entrepreneurial support, successful knowledge economy clusters will develop around universities, which generate both knowledge and skilled researchers and management graduates. Institutions, moreover, have the ability to provide opportunities for their researchers to perform at internationally competitive standards, and to draw in world-class expertise and

knowledge where it exists, and deploying it to the various ends of knowledge creation, training, knowledge translation. These are the features which define the economic geography of innovation in highly developed societies.

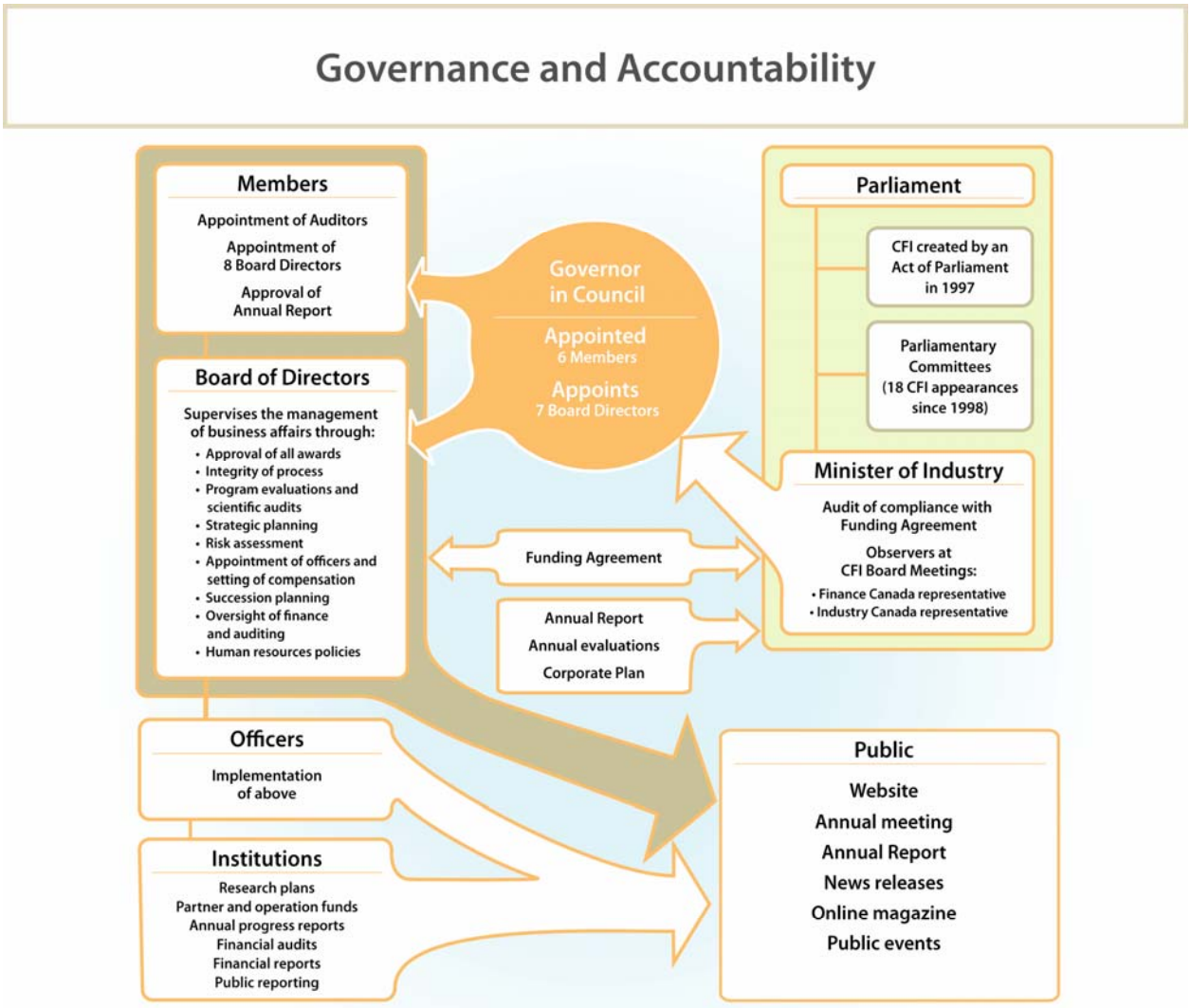
As Canada, like all industrialized countries, positions itself to be competitive in the innovation-based economy of the 21st century, it is critically important that commitment to the research agenda of the nation be maintained.

Our country currently enjoys a competitive advantage as a result of the fact that 44 percent of the population has received a post-secondary education, making Canada #1 among OECD countries. But, in a knowledge-based world, with growing competition from countries like Brazil, India and China, an even higher percentage will be required to secure our competitiveness for the future. Attracting the best and the brightest researchers to educate our children and grandchildren is key to ensuring that post-secondary education remains an attractive choice.

The CFI is successfully meeting its mandate to strengthen the ability of Canadian universities, colleges, research hospitals and other not-for-profit institutions to carry out world-class research and technology development for the benefit of Canadians.

Its infrastructure investments have clearly had a dramatic impact on the S&T landscape in Canada, paving the way for the transformation to a knowledge-based economy. Maintaining S&T capability in the face of global challenges and competitive pressures is vital for present and future generations of Canadians.

Appendix 1


Governance and Accountability
Members
Appointment of Auditors
Appointment of 8 Board Directors
Approval of Annual Report
Board of Directors
Supervises the management of business affairs through:
• Approval of all awards
• Integrity of process
• Program evaluations and scientific audits
• Strategic planning
• Risk assessment
• Appointment of officers and setting of compensation
• Succession planning
• Oversight of finance and auditing
• Human resources policies
Governor in Council
Appointed 6 Members
Appoints 7 Board Directors
Parliament
CFI created by an Act of Parliament in 1997
Parliamentary Committees (18 CFI appearances since 1998)
Minister of Industry
Audit of compliance with Funding Agreement
Observers at CFI Board Meetings:
• Finance Canada representative
• Industry Canada representative
Funding Agreement
Annual Report
Annual evaluations
Corporate Plan
Officers
Implementation of above
Institutions
Research plans
Partner and operation funds
Annual progress reports
Financial audits
Financial reports
Public reporting
Public
Website
Annual meeting
Annual Report
News releases
Online magazine
Public events

Appendix 2

CFI Investments by Municipalities / Investissements de la FCI par municipalité

(August 1st, 2006 / 1er août 2006)

Municipality / Municipalité	Total $	# of Projects / # de projets
Abbottsford	$74,992	1
Antigonish	$1,778,785	15
Athabasca	$741,166	6
Bathurst	$187,338	1
Brandon	$1,489,370	9
Burnaby	$37,363,194	94
Calgary	$86,757,049	173
Cape Breton Regional District	$1,135,590	12
Castlegar	$543,756	1
Charlottetown	$5,739,617	19
Edmonton	$161,229,711	251
Fredericton	$12,709,903	68
Gatineau	$2,416,436	10
Glenhaven	$126,000	1
Guelph	$64,920,816	144
Halifax	$40,114,965	166
Hamilton	$100,907,701	178
Kamloops	$1,058,539	5
Kelowna	$46,763	1
Kingston	$87,103,800	150
La Pocatière	$1,010,060	3
Lethbridge	$4,577,353	16
Lévis	$1,017,104	2
London	$117,859,976	186
Moncton	$2,491,709	17
Montréal	$449,791,489	745
Nanaimo	$4,525,744	8
North Bay	$690,000	3
Oakville	$1,584,492	3
Olds	$1,807,727	4
Oshawa	$300,238	4
Ottawa	$165,296,029	237
Peterborough	$10,281,136	31
Pointe-de-L'Eglise	$72,081	1
Prince George	$4,045,648	20
Québec	$206,845,884	256
Regina	$8,049,911	36
Rimouski	$9,670,967	19
Rouyn-Noranda	$3,531,798	11
Sackville	$1,888,144	10
Saguenay (Includes Chicoutimi-Jonquière)	$6,630,226	22
Saint-Jérôme	$2,103,143	1
Sainte-Hyacinthe	$2,165,957	4
Saskatoon	$116,765,594	116
Sault Ste. Marie	$1,657,535	4
Shawinigan	$683,000	2
Sherbrooke	$31,665,594	98
St. John's	$29,758,128	81
St-Catherines	$8,933,052	33
Stephenville	$670,060	1
Sudbury	$4,434,007	34
Thunder Bay	$6,217,804	34
Toronto	$360,197,782	529
Trois-Rivières	$10,335,058	27
Truro	$4,637,151	15
Vancouver	$275,860,996	341
Victoria	$60,016,511	103
Waterloo (Includes Kitchener)	$82,563,820	180
Welland	$797,110	1
Windsor	$9,893,787	60
Winnipeg	$45,565,863	163
Wolfville	$2,208,844	12
62 Municipalities / Municipalités	**$2,665,544,003**	**4778**