ESTIMATES

Natural Sciences and Engineering Research Council of Canada

2001-2002
Estimates

Part III – Report on Plans and Priorities

Canada

The Estimates Documents

Each year, the government prepares Estimates in support of its request to Parliament for authority to spend public monies. This request is formalized through the tabling of appropriation bills in Parliament. The Estimates, which are tabled in the House of Commons by the President of the Treasury Board, consist of three parts:

Part I – The Government Expenditure Plan provides an overview of federal spending and summarizes both the relationship of the key elements of the Main Estimates to the Expenditure Plan (as set out in the Budget).

Part II – The Main Estimates directly support the *Appropriation Act*. The Main Estimates identify the spending authorities (votes) and amounts to be included in subsequent appropriation bills. Parliament will be asked to approve these votes to enable the government to proceed with its spending plans. Parts I and II of the Estimates are tabled concurrently on or before 1 March.

Part III – Departmental Expenditure Plans which is divided into two components:

(1) **Reports on Plans and Priorities (RPPs)** are individual expenditure plans for each department and agency (excluding Crown corporations). These reports provide increased levels of detail on a business line basis and contain information on objectives, initiatives and planned results, including links to related resource requirements over a three-year period. The RPPs also provide details on human resource requirements, major capital projects, grants and contributions, and net program costs. They are tabled in Parliament by the President of the Treasury Board on behalf of the ministers who preside over the departments and agencies identified in Schedules I, I.1 and II of the *Financial Administration Act*. These documents are to be tabled on or before 31 March and referred to committees, which then report back to the House of Commons pursuant to Standing Order 81(4).

(2) **Departmental Performance Reports (DPRs)** are individual department and agency accounts of accomplishments achieved against planned performance expectations as set out in respective RPPs. These Performance Reports, which cover the most recently completed fiscal year, are tabled in Parliament in the fall by the President of the Treasury Board on behalf of the ministers who preside over the departments and agencies identified in Schedules I, I.1 and II of the *Financial Administration Act*.

The Estimates, along with the Minister of Finance's Budget, reflect the government's annual budget planning and resource allocation priorities. In combination with the subsequent reporting of financial results in the Public Accounts and of accomplishments achieved in Departmental Performance Reports, this material helps Parliament hold the government to account for the allocation and management of public funds.

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Natural Sciences and Engineering Research Council of Canada

Conseil de recherches en sciences naturelles et en génie du Canada

NSERC CRSNG

Investing in people, discovery and innovation

Report on Plans and Priorities

2001-2002
Estimates

Brian Tobin
Minister of Industry

Canada

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Section I: Messages

1.1 Minister's Portfolio Message

Our vision of Canada is a country that is strong and dynamic, a leader in the global knowledge-based economy, and a country where all Canadians have the opportunity to benefit from economic and social prosperity.

That is why the government is investing in knowledge and innovation--fundamental contributors to our quality of life. Through strategic investments in skills development, knowledge creation and new technologies the government is committed to expanding Canada's knowledge base, innovation and research capacity, and accelerating Canada's leadership in the new economy.

The Industry Portfolio is …

Atlantic Canada Opportunities Agency
Business Development Bank of Canada*
Canadian Space Agency
Competition Tribunal
Copyright Board Canada
Canada Economic Development for Quebec Regions
Canadian Tourism Commission*
Enterprise Cape Breton Corporation*
Industry Canada
National Research Council Canada
Natural Sciences and Engineering Research Council of Canada
Social Sciences and Humanities Research Council of Canada
Standards Council of Canada*
Statistics Canada
Western Economic Diversification Canada

** Not required to submit Reports on Plans and Priorities*

The government's strategy of investing in knowledge and innovation is already helping to create new businesses, products, processes and jobs. The fifteen organizations within the Industry Portfolio contribute to economic growth, which leads to a higher quality of life and social well-being for all Canadians.

With over forty percent of the federal government's science and technology funding and many of the key micro-economic levers at its disposal, the Industry Portfolio is instrumental in promoting innovation through science and technology; helping small- and medium-sized enterprises grow; encouraging trade and investment; and promoting economic growth in Canadian communities.

I am pleased to present the Report on Plans and Priorities for NSERC (the Natural Sciences and Engineering Research Council) which describes for Canadians the expected achievements over the next three years. NSERC invests in Canada's capability in science and technology to provide Canadians with a highly qualified workforce, new knowledge, and the creative and productive use of that knowledge to fuel innovation in our knowledge-based economy.

NSERC supports both basic university research through research grants and project research through partnerships of universities with industry, as well as the advanced training of highly qualified people in both areas.

Through organizations like NSERC, we will work together to build on the strengths and opportunities that exist throughout Canada.

_____

The Honourable Brian Tobin

1.2 Message from the Secretary of State (Science, Research and Development)

These are times of rapid social, economic and technological change. How these changes will impact on our country and our citizens are subjects that the government has been tackling head-on with the collaborative efforts of our partners in academia, the private sector, voluntary groups and other government agencies and organisations

The fabric of our lives is increasingly woven by advances in science and technology. Our health care, our jobs, our safety, and our culture reflect the profound influences of science and technology. Research goes hand-in-hand with a community's ability to ensure its continued quality of life, economic growth, and sustainable development.

Our standard of living is closely tied to our success in fostering knowledge creation, adaptability and innovation. Canadians enjoy the fruits of a strong and growing economy. But we cannot simply assume that this prosperity will continue forever. Governments, in tandem with their research partners, need to take a broad approach that encompasses a multi-disciplinary perspective that includes the natural sciences and engineering, the health sciences, the social sciences, and the humanities. Decisions taken by governments – and well-founded by sound advice from credible sources – will affect the lives of individual Canadians, the interaction of our communities and the future of our firms at both the national and international levels.

We must lead the world in selected research and technology sectors and we must create and retain world-class technology entrepreneurs - people with the know-how and the drive to market our research discoveries. We must build on Canada's image as a technologically advanced, entrepreneurial, creative and innovative nation. We must strengthen our science and technology presence in global markets abroad.

The government's vision of the future is one of a society whose economy is competitive, whose population is healthy, whose children are prepared, and which invests in knowledge and skills.

_____

The Honourable Gilbert Normand

1.3 Management Representation Statement

MANAGEMENT REPRESENTATION STATEMENT

Report on Plans and Priorities 2001-2002

I submit, for tabling in Parliament, the 2001-2002 Report on Plans and Priorities (RPP) for NSERC (the Natural Sciences and Engineering Research Council of Canada).

To the best of my knowledge the information:

- Accurately portrays the Council's mandate, priorities, strategies and planned results of the organization.
- Is consistent with the disclosure principles contained in the *Guidelines for Preparing a Report on Plans and Priorities*.
- Is comprehensive and accurate.
- Is based on sound underlying information and management systems.

I am satisfied as to the quality assurance processes and procedures used for the RPP's production.

The Planning and Reporting Accountability Structure (PRAS) on which this document is based has been approved by Treasury Board Ministers and is the basis for accountability for the results achieved with the resources and authorities provided.

_____

T.A. Brzustowski, President

_____

Date

Section II: Departmental Overview

2.1 What's New

This next century will see the global, knowledge-based economy create tremendous opportunities for greater prosperity and improved high quality of life for all Canadians. We must seize these opportunities and build on our strengths.

To maximize the added value of investments Canadians make through NSERC, the Council must be flexible, dynamic, innovative, and forward-looking. NSERC is key to building a *Smart***Canada** (see Figure 21, page 34) and a smart country that is prepared for the next new economy.

NSERC is working on three fronts to make this happen.

> *A smart country is a place where people are the greatest source of competitive advantage.*
>
> *A smart country does not separate social and economic well-being. It is a place where educated, skilled people want to live and work. It is the best place to do business. It is a hotbed of research and innovation, a place that attracts investment and encourages new ventures.*
>
> *Opportunity For All*, The Liberal Plan for the Future of Canada. 2000

1. Long-Range Plan

NSERC will develop a Long-Range Plan to achieve the following objectives: double the number of students supported by NSERC funds; provide adequate grants for qualified new applicants; increase support for productive and excellent established researchers; create an Opportunity Fund to seize scientific and pre-commercial opportunities arising from breakthroughs in basic research; and increase the rate of innovation by Canadian industry through partnerships with universities and universities' capacity for technology transfer.

2. Innovation Platforms

NSERC will develop Innovation Platforms that will allow it to partner with other organizations that share similar goals and objectives. Innovation Platforms will be flexible arrangements to emphasize and accelerate research in areas of national importance. They will make it possible to intensify quickly research in an important area; accelerate research that cuts across disciplines; work with a greater variety of partners; offer higher support to students in very competitive fields; involve government labs and scientists; and help Canadian researchers join more international projects.

NSERC will actively participate in managing the Innovation Platforms and will provide the strengths of experienced staff, programs, peer-review evaluation, and accountability infrastructure. Research supported under the Innovation Platforms will be peer reviewed using NSERC panels and will involve researchers in universities, government, and industry where appropriate.

3. Friends of NSERC

NSERC will develop a local presence across Canada. It is envisioned that volunteers will work with NSERC and universities in representing NSERC locally by: mentoring researchers about NSERC programs and opportunities; improving the quality of researchers' applications; and communicating the achievements and needs of the Canadian natural sciences and engineering research community to government, business, media, and the public at large.

2.2 Mandate, Roles and Responsibilities

Mandate

NSERC was created in 1978. Its legal mandate and functions are defined as follows:

"The functions of the Council are to promote and assist research in the natural sciences and engineering, other than the health sciences; and advise the Minister in respect of such matters relating to such research as the Minister may refer to the Council for its consideration." **(*Natural Sciences and Engineering Research Council Act*, 1976-77, c.24.)**

NSERC's Vision

NSERC is working to build a "Smart Canada" for the 21st century – a country that's safe, clean and prosperous.

We see our people working at rewarding and meaningful jobs because they have the skills and knowledge to create value and meet needs in the global economy.

We see our scientists and engineers respected throughout the world because of their leading-edge discoveries and trailblazing projects.

We see our industries thriving because business is taking full advantage of the nation's capacity for science-based innovation.

And we see NSERC playing, and seen to be playing, a leading role in making all this happen…by investing in people, discovery and innovation.

NSERC's Mission

NSERC invests in people, discovery, and innovation to build a strong Canadian economy and to improve the quality of life of all Canadians. It supports research in universities and colleges, research training of scientists and engineers, and research-based innovation.

The Council promotes excellence in intellectual creativity in both the generation and use of new knowledge, and it works to provide the largest possible number of Canadians with leading-edge knowledge and skills to help Canada flourish in the 21st century.

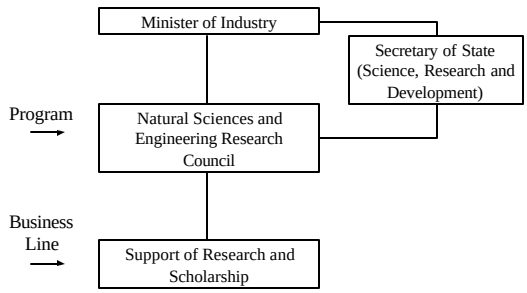
NSERC fulfils its mission by awarding scholarships and research grants through peer-reviewed competition, and by building partnerships among universities, colleges, governments and the private sector.

NSERC itself is committed to institutional innovation in achieving its mission.

Roles and Responsibilities

NSERC, which functions at arm's length from the federal government, is funded directly by Parliament and reports to it through the Minister of Industry. Its sole business line is: Support of Research and Scholarship. Figure 1 presents NSERC's organization structure.

Figure 1: Organization Structure



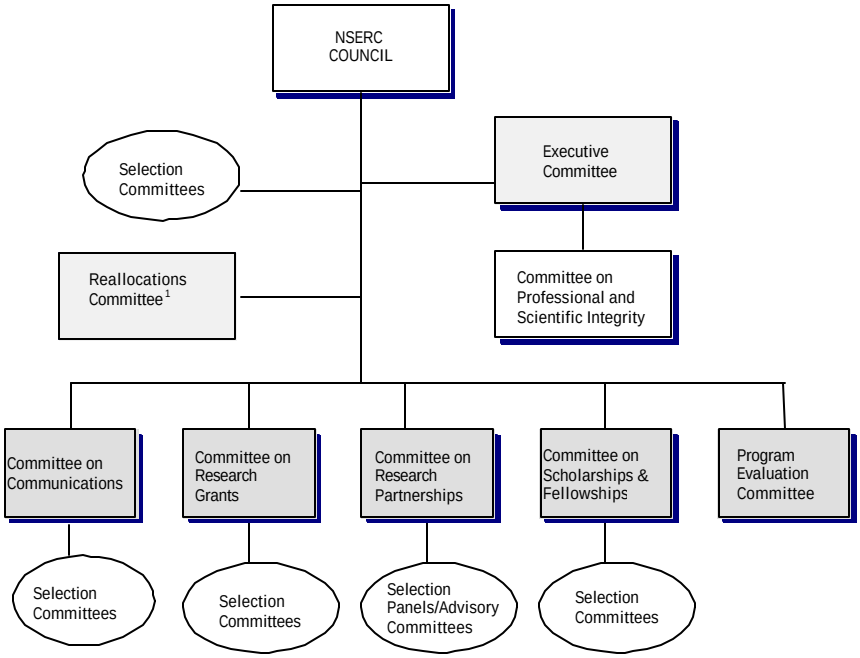
NSERC has always focused on the university sector. Universities play a vital role by helping to create new knowledge and by putting it to productive use. They are also key to providing young people with the skills to contribute to these vital activities. NSERC has recently expanded its eligibility guidelines to include colleges. College professors, in partnership with their university colleagues, are now eligible as co-applicants and can receive funding for project research. For the purposes of this report, the focus remains on NSERC's core sector, the universities. As we learn more about colleges and consider expanding their eligibility to

other NSERC program funding, subsequent reports may be expanded to include colleges and related issues.

The federal science and technology strategy, *Science and Technology for the New Century* (March 1996), commits the federal government to three related goals for building a dynamic Canadian innovation system: sustainable job creation and economic growth; improved quality of life; and advancement of knowledge. NSERC is committed to working towards these goals within the framework of the *Industry Portfolio's Action Plan.*

NSERC is governed by a Council (a Board of Directors) whose members are drawn from industry and the universities, as well as from the private non-profit sector, and appointed by the Governor-in-Council. Members serve part-time, and receive no remuneration for their participation. The President serves full-time, and functions as the Chair of the Board and the Chief Executive Officer of the Council. Council is advised on policy and programming matters by several committees. Figure 2 presents NSERC's committee structure.

Figure 2: Council Committee Structure



1. The Committee is active during the Reallocations Exercise, which occurs every four years.

2.3 Departmental Objectives

As stated in the Planning, Reporting and Accountability Structure (PRAS), the Council's ultimate objective is to strengthen Canada's economy and quality of life through the productive use of knowledge by the support of a broad base of high quality basic research in Canada's universities, and the encouragement and facilitation of links between the universities and the private sector.

To achieve this, NSERC supports research in Canadian universities that meets the highest international standards of excellence and it supports the education of young people in that research.

As a result, Canada has access to leading-edge science and technology from around the world and highly qualified people who are expert in it. Partnerships with the public and private sectors, mainly industry, expand research expertise and facilitate the exchange of knowledge, technology and people across all sectors. Researchers connect with those who can use the new knowledge productively and enhance Canada's capacity for innovation: this in turn contributes to wealth creation. New knowledge in the natural sciences and engineering (NSE) also enhances our quality of life through its impact on policies, regulations, practices and institutions.

The impact of these investments is detailed in the *1999-2000 Departmental Performance Report* through a suite of indicators that range from bibliometrics, to patents and licences, to "spin-off" companies, new products and processes.

2.4 Planning Context

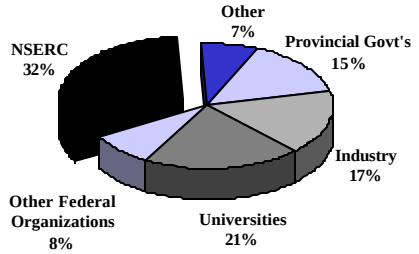
Key Co-Delivery Partners

NSERC does not conduct any research in-house, nor does the organization have any training facilities. Thus, the universities, colleges, companies, government agencies, and other institutions that NSERC collaborates with are all key co-delivery partners. A brief summary of NSERC's partners is presented below.

Universities

NSERC is the single most important supplier of funds of research and development (R&D) in the natural sciences and engineering in Canadian universities. In 1999, NSERC provided

Figure 3: University R&D Funding in the Natural Sciences and Engineering, 1999



Total: $1.3 Billion

Source: Statistics Canada

direct funding for one third of the $1.3 billion in R&D carried out by Canadian universities in this sector. Since other funding from universities, industries and governments is often contingent upon NSERC funding, it's estimated that the Council is directly and indirectly responsible for slightly more than half of the total funding. Figure 3 gives a breakdown of the total funding by direct source.

NSERC supports over 8,700 university professors, nearly 15,000 university students and postdoctoral fellows, and over 3,100 university technicians and professional research staff. In addition, NSERC has entered into partnerships with a growing number of industries and government departments. Figure 4 provides details of NSERC's clients and partners; estimates of the share of the population for eligible individuals and organizations that NSERC supports; and trends over the past 10 years.

Figure 4: NSERC's Clients and Partners, 1999-2000

	Number Supported or Participating	Share of the Population[1]	Trends in Share of the Population Over Past 10 Years
Clients:			
University Professors	8,734	60% – 65%	Small Increase
Undergraduate Students	5,609	5%	Small Increase
Master's/Doctoral Students	7,759	35% - 40%	Stable
Postdoctoral Fellows	1,497	40% - 50%	Stable
University Technicians and Research Professionals	3,143	30% - 40%	Stable
Partner Organizations:			
Universities	62	75%	Stable
Companies Performing R&D[2]	649	9% - 11%	Nearly Doubling
Federal Science Departments/Agencies[2]	12	65%	Large Increase
Provincial Science Departments/Agencies[2]	12	25% - 40%	Large Increase

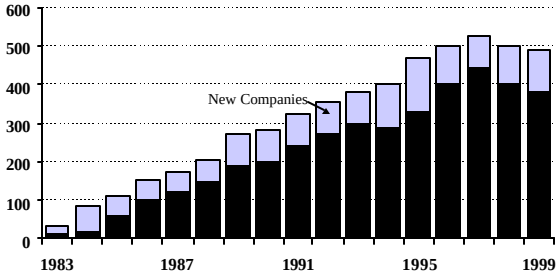
Source: NSERC

1. The percentage that NSERC supports of all individuals and organizations eligible for NSERC funding.
2. Organizations in partnership with NSERC (across all NSERC programs).

Companies

The trend in the number of companies that have contributed to NSERC's collaborative university-industry research programs has continued to grow (see Figure 5). Since the inception of these programs, more than 1,300 firms have participated, rising from less than 50 companies in 1983 to nearly 500 businesses in 1999. On average, 100 new firms work with NSERC every year.

Figure 5: Number of Companies Contributing to NSERC's University-Industry Programs



Source: NSERC

NSERC is well known to companies heavily involved in R&D. Thirty-two of the top 50 Canadian R&D companies (as ranked by the *Globe and Mail,* 1999) have funded university research jointly with NSERC.

Government Departments and Agencies

NSERC is also well known to most federal and provincial science-based departments and agencies. Figure 6 lists the federal and provincial departments and agencies that NSERC collaborated with in 1999.

Figure 6: NSERC's Federal/Provincial Partners, 1999-2000

Federal Departments/Agencies	Provincial Departments/Agencies
Agriculture and Agri-Food Canada	Alberta Advanced Education
Canadian Institutes of Health Research (formerly MRC)	Alberta Energy
Canadian Space Agency	Alberta Environmental Protection
Cape Breton Development Corp.	Forest Renewal BC
Environment Canada	Government of Newfoundland and Labrador
Fisheries and Oceans Canada	Manitoba Energy and Mines
Health Canada	Fonds FCAR (Quebec)
Industry Canada	Ministry of Environment (Quebec)
National Defence	Ministry of Natural Resources (Quebec)
National Research Council Canada	Ministry of Transportation (Quebec)
Natural Resources Canada	Ontario Ministry of Agriculture
Public Works and Government Services Canada	Saskatchewan Energy and Mines
Social Sciences and Humanities Research Council of Canada	

Challenges

Flood of new applicants

NSERC is experiencing a rapid and sustained influx of new applicants. These new professors are critical to Canada's future capabilities in S&T, not only because they generate new knowledge and innovations, but also because they train highly skilled people able to succeed and add value in today's and tomorrow's economy. For the current Research Grants competition, there are 762 first-time applicants who are new to the system – an over 50 percent increase in just two years. The number is much larger when combined with another 485 applications from professors who had been in the system before but are not currently funded. And these increases are offset by only 269 previously funded researchers retiring. By far, the largest increase is in the areas where increased numbers of graduates are desperately needed by the information and communication technology (ICT) sector.[1]

This growth trend is expected to continue and can be attributed to two key factors. First, four provinces (Ontario, Alberta, British Columbia, and Quebec) have taken steps to help universities increase enrolments in the ICT fields and the universities are attracting the new faculty needed to teach them. Nevertheless, several studies estimate that initiatives such as Ontario's Access to Opportunities Program and others are still not meeting industry's demand for people trained in ICT fields.[2] The overarching message suggests that there must be a dramatic increase in the number of professors teaching in faculties associated with these fields to accommodate the volume of new students.

Second, even though Statistics Canada reports a 9.5 percent decline in the number of full-time faculty at Canadian universities between 1992/93 and 1998/99, the Association of Universities and Colleges of Canada (AUCC) projects that universities will need to hire between 2,500 and 3,000 new faculty a year over the next 10 years.[3] The AUCC cites two key reasons that have led to this situation: student enrolment is increasing and expected to increase by about 20 percent by 2010 due to population growth and rises in the participation rate; and, with an ageing professoriate, the number of faculty retirements is on the rise. NSERC has commissioned the AUCC to do a study on the short-term demand for new faculty in the natural sciences and engineering.

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[1] Detailed analysis is found in *NSERC Contact*, Winter 2000, Vol. 25, No.4., pp. 1-2.

[2] The Canadian Advanced Technology Alliance (CATA) estimates that the shortage of computer programmers in Canada is 30,000, with similar shortages in engineering and science. eMPOWR commissioned a study that revealed a 70% shortfall between the number of graduates slated to emerge from Canadian universities and the requirements by industry. A study by the Canadian Institute for Telecommunications Research revealed that there is strong anecdotal evidence that demand for admission to electrical and computer engineering programs is outstripping universities' ability to accommodate new students.

[3] Elliott, Leanne. *Revitalizing universities through faculty renewal*. Association of Universities and Colleges of Canada, Research File, March 2000, Vol. 4, No. 1, page. 1.

This is good news for Canada and presents an excellent opportunity for faculty renewal in universities, but it creates pressures on NSERC's budget. All these new faculty members are expected to conduct research even though some may be replacing professors who were not active in research. Research funding is required so that these new professors can be active in leading-edge research, interact with industry, and train students in the most advanced knowledge. Added to this pressure, some early retirees remain as unpaid professors and because they are still active in research and training, they continue to win support in NSERC competitions.

In summary, the immediate pressure on NSERC's budget to fund these new applicants is $31.7 million per year with further increases required in future years as the number of researchers grows. NSERC Council is committed to providing the research funds needed by new applicants for Research Grants and will provide a portion of the additional funding needed from existing resources (as outlined in Figure 16, page 26). This one-time fix will help ease the pressure in the current competition, however, a longer-term solution is required so that these professors can realize their potential. These people are being attracted to our universities and if Canada is to prosper in the knowledge-based economy, we need them to succeed in research.

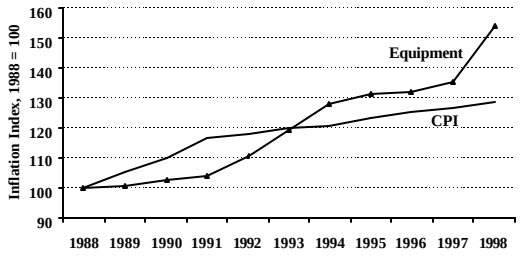
The rising cost of research

The cost of performing leading-edge, world-class research is rising, creating greater dependence on NSERC funding. This is due to:

- *The dollar*: The weak Canadian dollar makes it expensive to import scientific instruments (much of the equipment is purchased from abroad) and to participate in international research activities.
- *Inflation*: The prices for tools like scientific monographs and journals are going up much faster than the Consumer Price Index (CPI). For example, all subscriptions have risen by about 10 to 20 percent due to the combined effects of the devalued dollar, rising subscription costs and inflation.[4] Figure 7 shows the difference between the CPI and research equipment, while Figure 8 compares the CPI with the price of research supplies and materials.
- *Expensive research methods*: To conduct world-class research, Canadian researchers must adopt modern research methods because of advances in information and telecommunication technology. For example, DNA-research methods are now standard across all life sciences. These modern techniques are more expensive than traditional methods. Similarly, rising fuel prices make conducting research in the north extremely expensive.
- *Indirect costs becoming direct*: Many services that used to be free now carry user fees that must be paid out of NSERC grants. For instance, ship time, transportation to northern research stations, and access to some national facilities now carry user fees. This means NSERC grants have to pay for much more of the total cost of research than before.

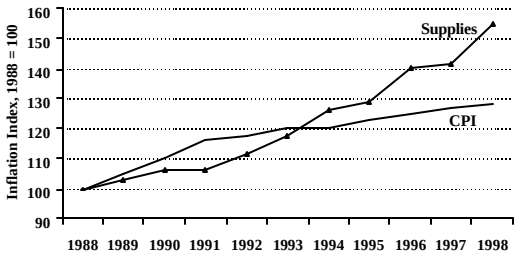
[4] University Affairs. *Libraries at the mercy of a falling dollar*. December 1998, p. 19.

Figure 7: Research Equipment Price Index[5]



Source: U.S. Bureau of Labor.

Figure 8: Supplies and Materials Price Index[6]



Source: Research Associates of Washington.

NSERC's key activities described in Figures 16 and 17 (pp. 26-27) help provide researchers with support to undertake world-class research; however, as the costs of research rise, the challenge becomes greater.

Impact of recent initiatives

The federal government has taken very positive steps in recent years to strengthen Canada's research base. While initiatives like the Canada Foundation for Innovation (CFI) and the Canada Research Chairs help address important needs in Canadian universities, they do create significant challenges for NSERC.

Funds are required to ensure that infrastructure provided by the CFI to date can actually be operated. Research grants, at internationally competitive levels, must also be provided to the Canada Research Chairs if we are to successfully attract and retain the best researchers and create a stimulating research environment in which they can work.

An example of this pressure is the CFI-funding of the Canadian Light Source (CLS). The CLS is expected to begin operations in 2003 and NSERC has agreed to provide $4.6 million per annum towards the $13.8 million annual operating costs. This commitment will be absorbed within NSERC's existing budget.

[5] Research equipment price index based on U.S. producer price index for engineering and scientific instruments. Assumes 100 percent sourcing from the U.S. Exchange rates (Canadian dollar per U.S. dollar): 1988 (1.231), 1989 (1.184), 1990 (1.167), 1991 (1.146), 1992 (1.209), 1993 (1.290), 1994 (1.366), 1995 (1.372), 1996 (1.364), 1997 (1.385), 1998 (1.540).

[6] Supplies and materials price index based on "Supplies and Materials" price index compiled by Research Associates of Washington for their university R&D price index. Assumes 100 percent sourcing from the U.S., and exchange rates as listed above.

The demand for highly skilled people

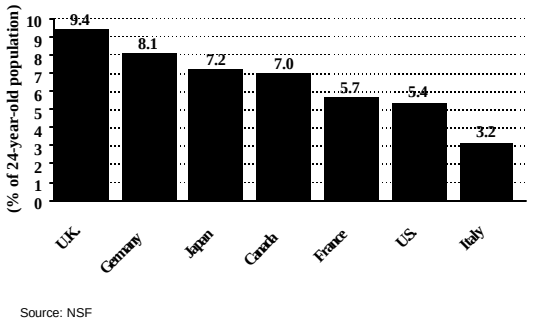
"The quintessential resource of today's knowledge-based economy is human capital…The successful societies, economies, firms and people will be those that create, combine and integrate knowledge into their activities."[7] However, there is widespread agreement that Canada's supply of highly skilled people is not meeting demand.

Many Canadian companies report that they cannot find highly skilled individuals in some fields, notably engineering and computer science. Companies often report unfilled vacancies and recruiting efforts outside Canada. The Canadian Advanced Technology Alliance (CATA) estimates that the shortage of computer programmers in Canada is 30,000, with similar shortages in engineering and science.[8] eMPOWR, a national campaign calling for a program to increase the number of faculty and postgraduate students in some of the hottest high-tech sectors – microelectronics, photonics, optoelectronics and wireless and radio engineering – commissioned a study that revealed a 70 percent shortfall between the number of graduates slated to emerge from Canadian universities and the requirements by industry.[9] A complementary study conducted by the Canadian Institute for Telecommunications Research revealed that while undergraduate enrolment in electrical and computer engineering programs has grown by 35 percent, there is strong anecdotal evidence that demand for admission to these programs is outstripping universities' ability to accommodate new students.[10]

If this trend continues, these companies and potential new firms, so important to Canada's prosperity, may set up in the United States and elsewhere to ensure a sufficient supply of highly qualified people.

International comparisons of first university and doctoral degrees granted by G-7 nations reveal a serious challenge for Canada. Canada compares favourably to most G-7 countries when looking at first university degrees in the natural sciences and engineering (NSE) as a percentage of 24-year-old population (see Figure 9). However, Canada does not fair as well when looking at the number of doctoral degrees earned in the NSE per 100,000 population (see Figure 10).

Figure 9: First University Degrees in the NSE as a % of 24-Year-Old Population, 1997



Source: NSF

[7] *Productivity and Innovation: A Competitive and Prosperous Canada*. Report of the Standing Committee on Industry, April 2000, Chapter 8, p. 1.
[8] CATA Alliance. *CATA Alliance Advances Growth Agenda for a Knowledge-Based Economy*. Pre-Budget Submission to the House of Commons Standing Committee on Finance, September 1999.
[9] *eMPOWR campaign to increase pipeline of personnel for key technology sectors gets boots with release of two surveys*. Research Money, December 20, 2000, p. 3.
[10] Canadian Institute for Telecommunications Research. *Survey of Student and Faculty Trends in Canadian University Electrical and Computer Engineering Programs*. December 2000, p. 1.

If Canada is to meet future demand for highly skilled people in industry, university and government, more young Canadians need to be encouraged to develop their talents fully. Only then can we sustain and improve our ability to compete and innovate in a knowledge-based world.

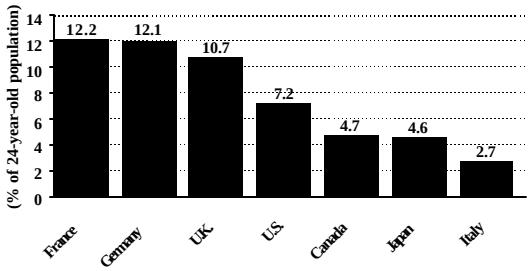
NSERC is an important source of support in Canada for scholarships and fellowships in the natural sciences and engineering. Figure 15 (page 25) describes the key activities NSERC is undertaking to help address this challenge.

Making our universities a competitive advantage

Productivity is a word frequently used in the media and in public policy debate. While we may never reach a consensus on how to measure productivity, Canadians can agree that increasing productivity growth is a primary method to enhance our quality of life.

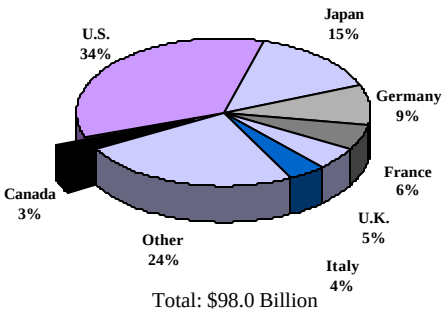
"In simple terms, productivity is the value of what is produced divided by the cost of producing it. We can enhance productivity performance three ways; by cutting the costs of production, or by increasing the value of the goods and services we produce, or by doing both. But to become more productive and at the same time create new good jobs for Canadians, the emphasis must be on increasing the value of what we produce. This is done by creating new goods and services that succeed in the world market, and that is the kind of innovation in which NSERC is involved."[11]

Figure 10: Earned Doctoral Degrees in the NSE Per 100,000 Population, 1997



Source: NSF, OECD.

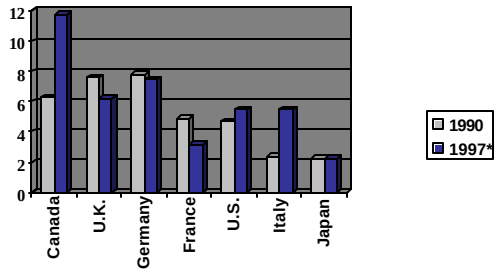
Figure 11: University R&D Expenditures in the OECD, 1997



Total: $98.0 Billion

Source: OECD

Figure 12: Share of University R&D Funded by Industry (%), 1990 and 1997



* Data shown for most recent year available: 1997 for Canada; 1996 for Germany and Italy; 1995 for Japan, the U.K. and the U.S.; and 1994 for France.
Source: Statistics Canada; National Science Board, Science & Engineering Indicators - 1998

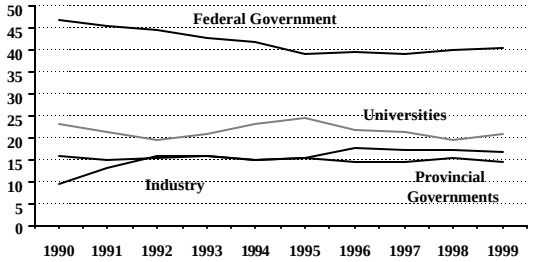
[11] Thomas Brzustowski, *The New Economy, Productivity, NSERC and the University Sector*. NSERC Submission to the Standing Committee on Finance in preparation for Pre-Budget Consultations, September 10, 1999. Quoted in the 1999 report of the Standing Committee on Finance entitled, *Budget 2000 New Era… New Plan*, chapter 3, page 2.

Canadian university professors perform 3 percent of the nearly $100 billion in university research in the OECD (see Figure 11). When measured as a percentage of gross expenditure on R&D, Canadian universities perform a larger share of national R&D than in most other G-7 countries.[12]

Canada's business community has increasingly invested in R&D, funding about half of R&D expenditures in Canada in 1998.[13] Industry has also increased its share of university R&D funding across all disciplines from about 6 percent in 1990 to almost 12 percent in 1997, the largest share in the G-7 (see Figure 12). This growth has significantly outpaced other G-7 countries and major trading partners.

This trend is also true for the natural sciences and engineering (see Figure 13). Between 1989 and 1998, for example, business contributions for R&D at universities in the natural sciences and engineering increased from $87 million to $200 million. At the same time, the share of private sector-funded R&D performed in universities is also greatest in Canada.[14]

Figure 13: Canadian University R&D Funding in the Natural Sciences and Engineering (%)



Source: Statistics Canada, NSERC estimate.

Canadian universities play a strategic role in strengthening our innovative capacity and productivity performance. Universities train highly qualified people critical to creating and building knowledge-based firms, and they create an advanced knowledge base that can lead to spin-off companies and new products and processes that add value in the global market.[15] And Canadian universities are better positioned to play a more prominent role than in most other G-7 countries. However, in absolute terms, private-sector funding still plays only a small role as a source of university funding. The Conference Board of Canada's second annual report entitled, *Collaborating for Innovation*, concludes that universities are a vital part of the national innovation system and that Canadian industry must increase its level of collaboration with universities to apply and diffuse knowledge and technology.

This increased importance of the role of Canadian universities on our economic and social development has complicated the research environment. The relationships

[12] Advisory Council on Science and Technology. *Public Investments in University Research: Reaping the Benefits*. Report of the Expert Panel on the Commercialization of University Research. May 4, 1999, pp. 7-8.
[13] Industry Canada. *Science and Technology Data, 1999*, p. 4.
[14] Advisory Council on Science and Technology. *Public Investments in University Research: Reaping the Benefits*. Report of the Expert Panel on the Commercialization of University Research. May 4, 1999, p. 8.
[15] Specific examples are available in NSERC's *1999-2000 Departmental Performance Report* and the second edition of *Research Means Business*, a directory of companies built on NSERC-supported university research.

between universities and industry are increasingly complex, governments are seeking maximum value for their investments in research, universities are struggling to find adequate resources and capabilities to support technology transfer and commercialization activities, and industry is pushing for more highly skilled people trained in certain fields.

Some of these challenges are addressed in the Expert Panel on the Commercialization of University Research report to the Advisory Council on Science and Technology (ACST) entitled, *Public Investments in University Research: Reaping the Benefits.*

In summary, the private sector is forming partnerships with universities at an increasing rate and it is NSERC that is helping to facilitate this through a suite of research partnership programs. Figure 5 (page 11) clearly shows the strong growth in the number of companies that have contributed to NSERC's collaborative university-industry research programs.

The key activities described in Figure 17 (page 27) highlight some of the measures NSERC is undertaking to address this challenge. In addition, NSERC will strive to implement two recommendations of the ACST report on commercialization. Specifically, NSERC will add a "Benefit to Canada" commitment to all NSERC applications – if any results of the work supported by the grant are commercialized, the applicant commits to make best efforts to obtain the largest feasible benefit to Canada. NSERC also plans to quadruple its Intellectual Property Management Program (to $12 million per year) to provide key funding for university commercialization offices. NSERC will discuss partnership opportunities with the Canadian Institutes of Health Research (CIHR) to make this happen.

Improving international linkages

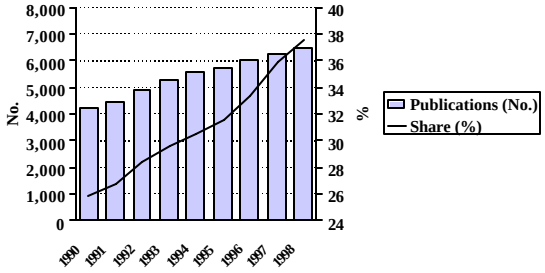
In today's knowledge-based society there is an increasing interdependence across disciplines, institutions, sectors and nations. Questions are more complex and finding answers requires groups of researchers with diverse disciplinary backgrounds and skills, often working in collaboration with industry, government and international partners.

Canada produces about 4 percent of the world's pool of scientific knowledge, but we need to be able to use the other 96 percent. "…Canada is highly dependent on the rest of the world for much of the scientific knowledge that we need to maintain our enviable position. As a result, it is critical that our researchers be able to work on the most important problems, collaborate with the best people, and use the best and latest facilities and equipment."[16] This requires both access to and understanding of the research done elsewhere. Therefore, Canadian researchers must collaborate and exchange scientific information with the world's best researchers, participate in international research networks and large-scale projects, and have access to the best equipment and facilities worldwide.

[16] Advisory Council on Science and Technology. *Reaching Out: Canada, International Science and Technology, and the Knowledge-based Economy*. Report of the Expert Panel on Canada's Role in International Science and Technology. June 2000, p. 1.

The level of international research collaboration by Canadian researchers has risen over the last twenty years. In 1980, 16 percent of Canada's scientific research publications were produced with foreign partners and by 1995 this figure had risen to over 30 percent. Canada is one of the highest-ranking countries in terms of foreign co-authorship of scientific publications.[17] Figure 14 details similar figures in the natural sciences and engineering. In fact, about 37 percent of Canadian publications in the NSE in 1998 were co-authored with international partners.

Figure 14: Number of Canadian Publications in the NSE Co-Authored with International Partners, and Share of Canadian Papers



Source: Observatoire des Sciences et des Technologies

In May 1999, the Advisory Council on Science and Technology created an Expert Panel to examine Canada's role in international science and technology. In June 2000, the Panel released its report and recommendations that provide a framework for action to maximize Canada's involvement in international S&T. It is anticipated that the federal government will formally respond to the report and recommendations in the coming year.

To address this challenge, NSERC is facilitating Canadian involvement in international S&T activities and has established three new mechanisms to give our researchers access to international knowledge networks (see Figure 16, page 26). Most recently, NSERC and the National Research Council's Industrial Research Assistance Program (IRAP) have created a new pilot initiative for Canadian researchers and small and medium-sized enterprises to stimulate international partnerships. Canadian researchers must be provided opportunities to gain an international presence and linkages that will help ensure our access to leading-edge research in many fields.

[17] Advisory Council on Science and Technology. *Reaching Out: Canada, International Science and Technology, and the Knowledge-based Economy*. Report of the Expert Panel on Canada's Role in International Science and Technology. June 2000, p. 14.

Loss of leaders

While the debate over "brain drain" or "brain gain" may never be resolved, it is certain that Canadian universities are losing some highly qualified faculty and these tend to be the leaders. "Loss of leaders" should perhaps replace "brain drain" as our greatest concern. As highly paid senior professors retire or relocate, often outside Canada, universities have tended to replace them with junior faculty resulting in a loss of research and training capability at our universities, at least in the short term.

In 1997, the Association of Universities and Colleges of Canada (AUCC), in collaboration with NSERC, surveyed almost 100 deans in four major fields (computer sciences, engineering, mathematics, and the physical and biological sciences). The survey revealed that most of the faculty who chose to leave were doing so at the height of their academic careers. Of those who were replaced, over 80 percent were replaced with entry-level faculty.

Dr. Monroe-Blum, in her 1999 report, *Growing Ontario's Innovation System: The Strategic Role of University Research*, echoes this concern: "Ontario and Canada have been losing some of their very best researchers and professionals. Ontario has lost top players in economics, physics, mathematics, Chinese culture, molecular biology, library and information science, computer and electrical engineering, religion, and literacy criticism, among others. Each of these faculty members ranks with the best in their fields worldwide."

This situation will become more complex in the next decade as student enrolment expands and faculty members retire,[18] and universities have to compete for highly qualified people across all sectors of the economy, and indeed, worldwide.

In the words of Prime Minister Jean Chrétien, "Today, our challenge as a country is to create a climate of opportunity for our graduate students and for our graduates. To provide exciting opportunities for Canadian researchers and to attract the best academic researchers in the world to Canadian universities. And to do so at a time when world-wide competition for them has never been so fierce. And particularly at a time when United States universities benefit from both permanent endowments and the generosity of private Foundations out of all proportion to those of our universities."[19]

This challenge was brought out in the Advisory report of the Conseil de la science et de la technologie, *To Understand and To Innovate, Assuring Competitive Means for*

[18] The Association of Universities and Colleges of Canada (AUCC) estimates that over the next decade, population growth and rises in the participation rate will increase enrolments by about 20 percent. In combination with retirements and other departures, between 2,500 and 3,000 new faculty a year will be required over the next 10 years. (Elliott, Leanne. *Revitalizing universities through faculty renewal*. Association of Universities and Colleges of Canada, Research File, March 2000, Vol. 4, No. 1.)

[19] Jean Chrétien, *Response to the Speech from the Throne*, October 13, 1999.

University Research, released in November 1999. "Overall growth in university research funding and in each individual field must be of central concern to governments interested in continuing to support and stimulate the transition to a knowledge-based society and an innovation-based economy."[20]

The recent federal investments in the granting Councils, the Networks of Centres of Excellence, the Canada Foundation for Innovation, the Canadian Institutes of Health Research and, most recently, the Canada Research Chairs provide a much needed boost to help improve the situation.[21]

Section 3.2 describes the key activities NSERC will undertake in the coming years to address this challenge. Canadian universities must be able to create excellent internationally competitive research opportunities for Canada's best and brightest and to bring back some of Canada's great minds, as well as attract those from other countries.

Regional Capacity

In today's economy, a healthy and diversified national innovation system is key and Canada's universities play a central role. Universities have become conscious of their potential to assist regional economic development, particularly by increasing the local capacity for innovation. They understand the connections between university teaching, research, innovation, and value-added economic activity. They are willing to work with industry and other partners to help them expand knowledge-based economic activity in all sectors.

However, the capacity for universities to seize these opportunities varies widely across the country. Some of the reasons for this situation include differences in provincial funding, low levels of value-added industrial activity, and limited access (or none at all) to graduate students.

Last year, a team of NSERC senior managers travelled through Atlantic Canada and part of Western Canada. The purpose of these visits was to learn what could be done to help these universities build up their capacity for research so that they can compete more successfully in national programs of research support, thus strengthening the innovation capacity of the region. The Atlantic visit was done in collaboration with Atlantic Canada Opportunities Agency (ACOA) and the western trip with Western Economic Diversification Canada (WD).

[20] Conseil de la science et de la technologie. *To Understand and To Innovate. Assuring Competitive Means for University Research*. November 1999. Summary, pg. 2.
[21] Detailed information on the Canada Research Chairs program is found in the Social Sciences and Humanities Research Council *Report on Plans and Priorities*.

These visits provided valuable information and insight into the issues facing Atlantic and some western universities. It was found that the main issue was not a low potential for research excellence but, rather the number of barriers to productivity that had grown over the years. NSERC believes that there is a need for a flexible new capacity-building program, targeted at the individual needs of the universities. Thus, NSERC will work with its Industry Portfolio partners in all regions to help remove these barriers so that universities across Canada compete on a more equal basis in the national NSERC competitions.

2.5 Departmental Planned Spending

Table 1: NSERC Planned Spending

($ millions)	Forecast Spending 2000-2001	**Planned Spending 2001-2002**	Planned Spending 2002-2003[2]	Planned Spending 2003-2004[2]
Budgetary Main Estimates	549.4	**606.9**	606.9	630.1
Non-Budgetary Main Estimates	—	—	—	—
Less: Respendable revenue	—	—	—	—
Total Main Estimates	549.4	**606.9**	606.9	630.1
Adjustments[3]	32.1			
Net Planned Spending	581.5[1]	**606.9**	606.9	630.1
Less: Non-respendable revenue	0.5	**0.5**	0.5	0.5
Plus: Cost of services received without charge	2.7	**2.7**	2.7	2.7
Net cost of Program	583.7	**609.1**	609.1	632.3
Full Time Equivalents	250	**264**	242	242

1. Reflects best forecast of total net planned spending to the end of the fiscal year.
2. Does not include the portion of funding for the Networks of Centres of Excellence flowing through NSERC.
3. Adjustments are to accommodate approvals obtained since the Main Estimates and to include budget initiatives, Supplementary Estimates, etc. Includes additional funding in 2000-2001 to establish the Canada Research Chairs.

Section III: Departmental Plans, Results, Activities and Resources

3.1 Business Line Details

Business Line Title

All NSERC activities relate to a single business line: **Support of Research and Scholarship**.

Business Line Objective

The objective for NSERC's business line is identical to the Council's overall objective described on page 9: *strengthen Canada's economy and quality of life through the productive use of knowledge by the support of a broad base of high quality basic research in Canada's universities, and the encouragement and facilitation of links between the universities and the private sector.*

Business Line Description

NSERC provides research grants to researchers at Canadian universities and fosters partnerships to support the basic and project research in the natural sciences and engineering, scholarships and fellowships to students and postdoctoral fellowships and the related administrative support.

3.2 Key Results Commitments, Planned Results, Related Activities and Resources

Key Results Commitment

NSERC is in business to provide Canadians with: *Economic and social benefits arising from the provision of a highly skilled workforce and knowledge transfer of Canadian discoveries in the natural sciences and engineering from universities and other sectors.*

Planned Results, Related Activities and Resources

It is important to remember that NSERC's investments take longer to bear fruit than most other government investments. Therefore, it is often impossible to specify all the expected results for the planning period. Concrete data can be provided on advanced degrees granted, theses published, patents applied for and granted, papers published, etc., but the long-term socio-economic benefits of research emerge much more slowly.

With NSERC support, Canadian researchers gain access to leading-edge knowledge from around the world. Armed with this knowledge, and working increasingly in partnership with industry, they help fuel Canada's innovation system. The students, trained with the help of NSERC, acquire the skills needed to pursue rewarding careers in all sectors of the economy and become tomorrow's leaders. These investments in Canada's knowledge base lead to innovations in industry, and help set policy, standards and regulations. In so doing, they strengthen our economy and improve the quality of life for all Canadians.

The *1999-2000 Departmental Performance Report* details the impact of NSERC's investments through a suite of indicators such as bibliometrics, licences, patents, spin-off companies, and the career progression of NSERC-funded students and fellows. For example, NSERC published *Research Means Business*, a directory of companies built on NSERC-supported university research. This report profiles one hundred and eleven companies that have created more than 7,500 jobs and nearly $1.3 billion in revenue annually. This activity is the result of research support sustained over many years, decades in some cases.

The Figures on pages 25-29 describe NSERC's major planned results, related activities, and resources for the next three years. Information is grouped to report on NSERC's three core priorities: people (Figure 15), discovery (Figure 16) and innovation (Figure 17). Figure 18 reports on NSERC's efforts to create public awareness of the natural sciences and engineering research sector and to achieve the government's commitments set out in *Results for Canadians: A Management Framework for the Government of Canada*.

Figure 15 – PEOPLE				
Planned Results	**Key Related Activities**	**Resources (millions of dollars)**		
		2001-02	**2002-03**	**2003-04**
Highly qualified people (HQP), expert in research in the natural sciences and engineering, able to pursue knowledge-intensive careers of many kinds within any sector of the economy. Help satisfy the demand for HQP by industry, government and other sectors of the economy.	Provide research training support to undergraduate, master's and doctoral students, and postdoctoral fellows. This is done by: • Providing direct support: awarding scholarships and fellowships, some in partnership with industry, to selected individuals through national competitions; • Providing indirect support: a researcher may hire a student or postdoctoral fellow using part of his or her NSERC grant.	83.3	83.3	83.3
		(Indirect support resources found in Figures 16 & 17.)		
	Provide targeted support to decrease the under-representation of women and Aboriginal peoples in faculty positions in the NSE.	2.8	3.8	4.8
	Recognize ongoing and significant work in encouraging Canadians to learn more about science and engineering through two new programs, the *Michael Smith Awards for Science Promotion* and *PromoScience*.	1.8	2.1	2.1
Enable Canadian universities to achieve the highest levels of research excellence and become world-class research centres in the global knowledge-based economy.	With the other granting councils (Social Sciences and Humanities Research Council and Canadian Institutes of Health Research) and Industry Canada, manage the investments of the Canada Research Chairs (CRC) program.[1]	54.0[2]	81.0[2]	108.0[2]

1. Detailed information on the CRC program is found in the Social Sciences and Humanities Research Council Report on Plans and Priorities.
2. Funding to Canada Research Chairs that flows through NSERC.

Figure 16 – DISCOVERY				
Planned Results	**Key Related Activities**	**Resources (millions of dollars)**		
		2001-02	**2002-03**	**2003-04**
High quality research capability maintained across all areas in the natural sciences and engineering.	Investments in research activities of individuals and groups working in leading-edge science and engineering, as well as in the equipment and facilities necessary for this work.	285.8	282.8	281.0
		(Approximately 29% is used to pay salaries for students and research fellows.)		
High quality new knowledge that is the source of new ideas for innovation.	Provide some additional funding needed to support new applicants to NSERC's Research Grants program (February 2001 competition only).	*(Additional resources from within existing budget envelope.)*		
Enhanced ability to access leading-edge knowledge from around the world.	Programs that enhance Canadian researchers' access to international knowledge networks.	7.5	7.5	7.5
	Honour excellence with prestigious prizes including a $1 million research prize, *The Gerhard Herzberg Canada Gold Medal for Science and Engineering*.	1.5	1.5	1.5
	2000-2002 Reallocations Exercise that helps set research priorities within the *Research Grants Program*.	*(Resources within the administration budget in Figure 18.)*		

Figure 17 – INNOVATION

Planned Results	Key Related Activities	Resources (millions of dollars)		
		2001-02	2002-03	2003-04
Productive use of knowledge in support of new products, processes, and services, leading to new jobs and businesses. Knowledge base for developing policies, standards and regulations, and making decisions, for government and industry.	Leverage investments by forging partnerships with the private sector, as well as with other sectors, including government departments and agencies.	84.5	84.5	83.5
	Provide funding in target areas of national importance and in emerging areas that are of potential significance to Canada.	32.0	32.0	32.0
		(Approximately 29% of above is used to pay salaries for students and research fellows.)		
	Continue to implement a communications strategy specifically aimed at industrial clients to enhance the private sector's awareness of NSERC programs that foster university-industry research collaboration and training.	*(Resources within the administration budget in Figure 18.)*		
	Manage (along with other granting councils and Industry Canada) and administer the Networks of Centres of Excellence Program. • Complete the competition for up to four networks in the following target areas: ➢ The Automobile of the 21st Century; ➢ Genomics Technologies and Society; ➢ Meeting Environmental Challenges for Clean Water; ➢ Early Child Development and its Impact on Society.	32.6	3.9[1]	3.9[1]

1. Funding to the Networks of Centres of Excellence that flows through NSERC. Years 2 and 3 are currently under negotiation.

Figure 18 – PUBLIC AWARENESS & RESULTS FOR CANADIANS				
Planned Results	**Key Related Activities**	**Resources (millions of dollars)**		
		2001-02	**2002-03**	**2003-04**
Increase public awareness of the natural sciences and engineering research sector.	• Run a *NewsBureau* that is a Web-based method of putting journalists in touch with NSERC-funded researchers; • Use media to draw public attention to NSERC-supported research; • SPARK (Students Promoting Awareness of Research Knowledge), a program in which students write stories based on NSERC-supported research; • NSERC/PAGSE[22] series of *Bacon and Egghead* Breakfast seminars on the Hill; • *NSERC/The Conference Board of Canada Synergy Awards.*	*NSERC's total administration resources which are indicated below, include the key activities described in this Figure.* 28.7	18.2	18.2
Provide Canadians with the ability to interact with NSERC, to receive information, program and services, and to do business electronically.	Complete a project plan to define a new service delivery model and migration strategy in relation to the Government On-Line initiative. Initiatives will include: • Data transfer to corporate database via Web-based interfaces; • Electronic submission of applications; • Web tools to facilitate peer review; • Web-based tools to facilitate awards management and monitoring; • Interface to facilitate bi-directional information exchange between grant applicants and their university and collaborating partners. Collaborate with the other granting councils to identify areas of mutual interest and opportunities for sharing products and services. Over the next two years, implement the *Common Look & Feel* for the Internet standards set out by Treasury Board.	--- *Estimated yearly cost of $1.5 million is included in the administration resources quoted above.*		

[22] PAGSE – Partnership Group for Science and Engineering

Figure 18 – PUBLIC AWARENESS & RESULTS FOR CANADIANS (continued)				
Planned Results	**Key Related Activities**	**Resources (millions of dollars)**		
		2001-02	**2002-03**	**2003-04**
Achieve a significant, quantifiable improvement in client satisfaction with NSERC services.	Establish a Service Improvement Plan, identify and report on service standards for key services, and establish client satisfaction baseline measures and targets. Determine ways to reduce the workload on researchers both in terms of applying for grants and peer reviewing the applications of others (focus of the Government On-line initiative described on the next page). Investigate the feasibility and potential benefit of program consolidation. Some existing service improvement initiatives include: • Participate in the Industry Portfolio Roundtables on Best Practices and Innovative Approaches to Improving Service Delivery; • Continue to develop service standards and service-level agreements (e.g. service level agreement for the Information Systems Division support centre); • Continue to harmonize policies and procedures with other granting councils; • Restructure the delivery of the partnership programs to focus on client sectors.			

Section IV: Joint Initiatives

4.1 Horizontal Initiatives

Figures 19 and 20 describe two horizontal initiatives, the results NSERC plans to achieve, and major activities. Planned resources are included within Section III.

Figure 19 – Climate Change	
Planned Results	**Related Activities**
Advanced knowledge base in the area of climate change and related issues. Highly qualified people expert in climate change research. Application of climate change research in support of new products, processes, policies, standards, and regulations.	Support for university research and training in the area of climate change. In addition to a suite of untargeted research funding programs, targeted investments are made through the Strategic Project Grants program and through five regional Chairs in Environmental Design Engineering. NSERC and NRCan plan to set up an agreement to fund early-stage research on greenhouse gas emission reduction technology (funding will be sought from the *Government of Canada Action Plan 2000 on Climate Change*). Networks of Centres of Excellence target area, *Meeting the Environmental Challenges for Clean Water*, in the competition for new networks currently underway. NSERC representation at the Climate Change Action Fund and National Climate Change "Issues Table" process. NSERC also represents Canada on the International Group of Funding Agencies for Global Change Research (IGFA). Collaboration with other federal departments and agencies to address issues related to research on climate change.

Figure 20 – Northern Research	
Planned Results	**Related Activities**
Enhanced research and training opportunities in the North that are essential to monitor, manage and safeguard Canada's northern communities and environment. Improved co-operation between researchers and northern communities to ensure research needs are defined and knowledge transfer takes place. Enhanced ability to meet international science and research obligations, and contribute to issues of global importance. Enhanced capacity for people in the North to plan and perform research.	NSERC/SSHRC* Task Force on Northern Research established in October 1998. Final report entitled, *From Crisis to Opportunity: Rebuilding Canada's Role in Northern Research*, was published in September 2000 (http://www.nserc.ca/news/p000921.htm). • NSERC Council approved some funding to begin implementing the recommendations, creating Northern Research Chairs and providing supplements to graduate students and postdoctoral fellows doing research in the North. NSERC representation on Interdepartmental Committee on Northern S&T. Recommendations of the Task Force final report will feed into federal Northern S&T Strategy.

*SSHRC – Social Sciences and Humanities Research Council

Section V: Financial Information

Table 2: Summary of Transfer Payments

($ millions)	Forecast Spending 2000-2001	**Planned Spending 2001-2002**	Planned Spending 2002-2003[1]	Planned Spending 2003-2004[1]
Grants				
Support of Research and Scholarship	555.0	**575.5**	586.7	609.8
Total grants	555.0	**575.5**	586.7	609.8
Contributions	—	**—**	—	—
Other Transfer Payments	—	**—**	—	—
Total Grants, Contributions and Other Transfer Payments	555.0	**575.5**	586.7	609.8

1. Does not include the portion of funding for the Networks of Centres of Excellence flowing through NSERC.

Table 3: Source of Non-Respendable Revenue

($ millions)	Forecast Revenue 2000-2001	**Planned Revenue 2001-2002**	Planned Revenue 2002-2003	Planned Revenue 2003-2004
Support of Research and Scholarship	0.5	**0.5**	0.5	0.5
Total Non-Respendable Revenue	0.5	**0.5**	0.5	0.5

Table 4: Net Cost of Program for 2001–2002

($ millions)	**Total**
Net Planned Spending	**606.9**
Plus: *Services Received Without Charge*	
Accommodation provided by Public Works and Government Services Canada (PWGSC)	**1.7**
Contributions covering employers' share of insurance premiums and expenditures paid by TBS	**1.0**
Workman's compensation coverage provided by Human Resources Canada	—
Salary and associated expenditures of legal services provided by Justice Canada	—
	2.7
Less: Non-Respendable Revenue	**0.5**
2001-2002 Net cost of Program	**609.1**

Section VI: Other Information

Figure 21: NSERC on a Page

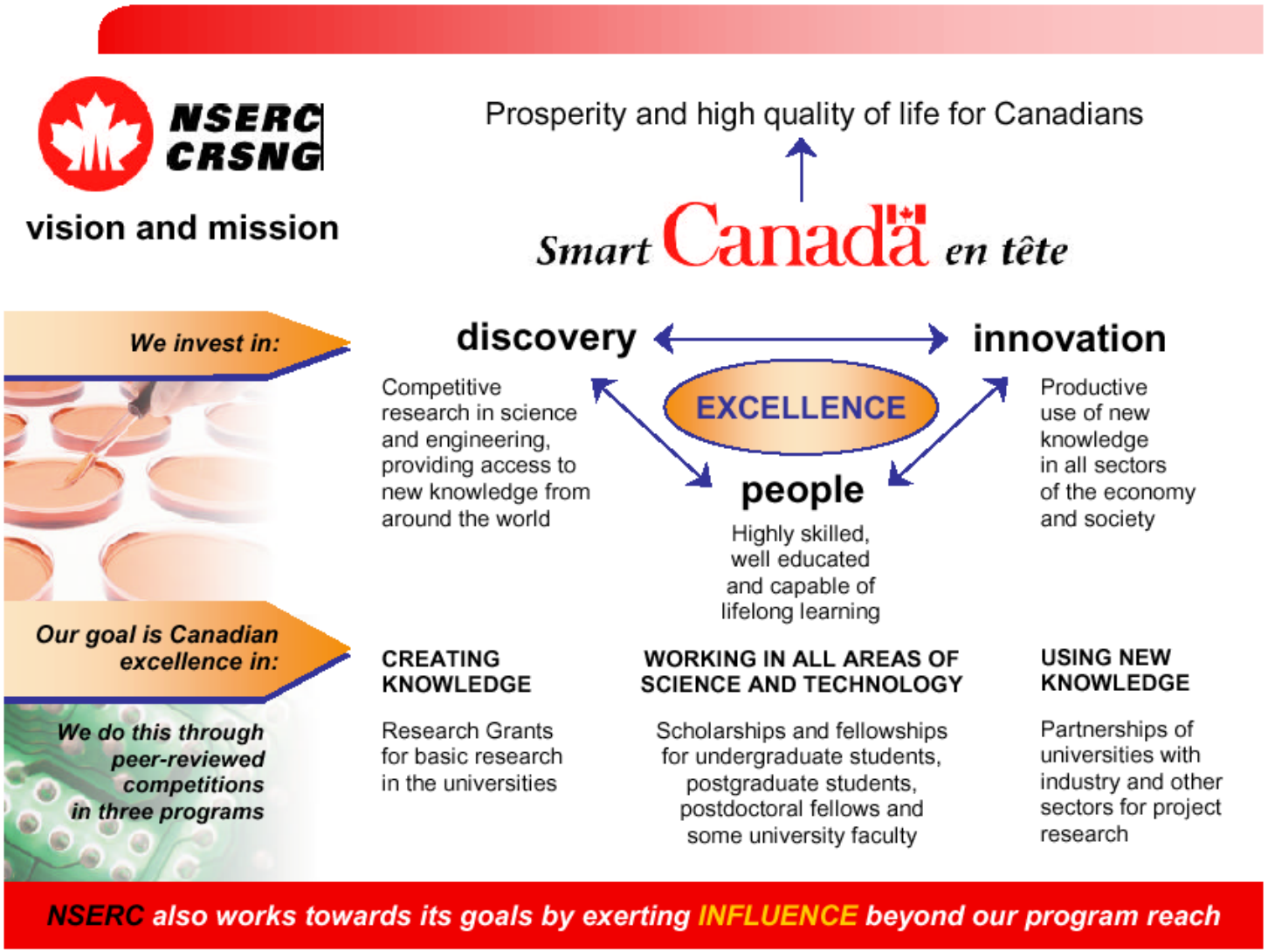


Table 5: Contacts for Further Information and Web Site

Our Web site is located at: www.nserc.ca.

A searchable Web database of grants and scholarships awarded by NSERC since 1991 is located at http://www.nserc.ca/programs/result/database.htm.

For further information about this report you can contact:

Mr. Steve Shugar
Director, Policy and International Relations
Tel.: (613) 995-6449 Fax.: (613) 947-5645
E-mail: steve.shugar@nserc.ca

Or

Ms. Robbyn Plumb
Senior Policy Analyst, Policy and International Relations
Tel.: (613) 996-0923 Fax.: (613) 947-5645
E-mail: robbyn.plumb@nserc.ca

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