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Federal Scientific Activities

2012/2013



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Federal Scientific Activities

2012/2013

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Symbols

The following standard symbols are used in Statistics Canada publications:

- . not available for any reference period
- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero
- 0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- p preliminary
- r revised
- x suppressed to meet the confidentiality requirements of the *Statistics Act*
- E use with caution
- F too unreliable to be published
- * significantly different from reference category ($p < 0.05$)

Table of contents

Highlights	6
Analysis	7
Related products	10
Statistical tables	
1 Federal expenditures	13
1-1 On science and technology, research and development and related scientific activities in current dollars and in constant 2002 dollars	13
1-2 On science and technology, by major departments and agencies	14
1-3 On research and development, by major departments and agencies	15
1-4 On related scientific activities, by major departments and agencies	15
1-5 On science and technology and its components, by activity	16
1-6 On science and technology, by science and by performing sector	16
1-7 On research and development, by science and by performing sector	17
1-8 On related scientific activities, by science and by performing sector	17
1-9 On science and technology and its components, by activity and performing sector, 2010/2011 ^r	18
1-10 On science and technology and its components, by activity and performing sector, 2011/2012 ^r	18
1-11 On science and technology and its components, by activity and performing sector, 2012/2013 ^p	19
2 Federal intramural expenditures	19
2-1 On science and technology and its components, by activity	19
2-2 On science and technology, by major departments and agencies	20
2-3 On research and development, by major departments and agencies	20
2-4 On related scientific activities, by major departments and agencies	21
2-5 On science and technology for the National Capital Region	21
3 Federal extramural expenditures	22
3-1 On science and technology and its components, by performing sector	22
3-2 On science and technology and its components in the business enterprise sector, by major departments and agencies	23
3-3 On science and technology and its components in the higher education sector, by major departments and agencies	24
3-4 On science and technology and its components in the business enterprise sector, by type of payment and by major departments and agencies	25

Table of contents – continued

3-5	On science and technology and its components in the higher education sector, by type of payment and by major funding departments and agencies	26
3-6	On science and technology and its components in the Canadian non-profit institutions sector, by major funding departments and agencies	27
3-7	On science and technology and its components in the foreign performers sector, by major funding departments and agencies	28
4	Federal personnel	28
4-1	Engaged in science and technology activities	28
4-2	Scientific and professional engaged in science and technology activities	29
4-3	Technical engaged in science and technology activities	29
4-4	Other personnel engaged in science and technology activities	30
4-5	Engaged in science and technology activities, by category and activity	30
4-6	Engaged in science and technology activities in the natural sciences and engineering, by category and activity	31
4-7	Engaged in science and technology activities in the social sciences and humanities, by category and activity	31
4-8	Engaged in science and technology activities, by type of science, activity, category and by provinces and territories, 2010/2011	32
4-9	Engaged in science and technology activities, by major departments and agencies	32
4-10	Scientific and professional engaged in science and technology activities, by major departments and agencies	33
4-11	Technical engaged in science and technology activities, by major departments and agencies	33
4-12	Other personnel engaged in science and technology activities, by major departments and agencies	34
4-13	Engaged in research and development activities, by major departments and agencies	34
4-14	Engaged in related scientific activities, by major departments and agencies	35
5	Federal expenditures by provinces and territories	35
5-1	On science and technology	35
5-2	On science and technology, by type of science and performing sector, 2010/2011	36
5-3	On research and development, by type of science and performing sector, 2010/2011	37
5-4	On related scientific activities, by type of science and performing sector, 2010/2011	38
5-5	Extramural expenditures on science and technology, by type of science and activity, 2010/2011	39
5-6	Extramural expenditures in the business enterprise sector on science and technology, by type of science and activity, 2010/2011	40
5-7	Extramural expenditures in the higher education sector on science and technology, by type of science and activity, 2010/2011	41
5-8	Extramural expenditures in the other Canadian performer sector on science and technology, by type of science and activity, 2010/2011	42

Table of contents – continued

6	Federal expenditures by socio-economic objectives	43
6-1	On science and technology	43
6-2	On research and development	43
6-3	On related scientific activities	44

Data quality, concepts and methodology

Bibliography	45
Methodology	46
Technical notes	48
Definitions	49

Charts

1.	Federal expenditures on science and technology (S&T) in current dollars, 2000/2001 to 2012/2013 (intentions)	7
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Highlights

- Federal departments and agencies reported that they intend on spending \$10.9 billion on science and technology activities (S&T) for fiscal year 2012/2013, down 5.9% from 2011/2012. This decrease represents a return to more normal levels, due to the conclusion of federal stimulus spending.
- S&T spending comprises two components: research and development and related scientific activities. In 2012/2013, federal government departments and agencies reported that they anticipate spending on research and development to be \$7.0 billion, with the remaining \$3.9 billion directed to related scientific activities. Examples of related scientific activities include the gathering, processing and analyzing of data, feasibility and policy studies, information services and museum services.
- Extramural expenditures are anticipated by federal departments and agencies to account for slightly more than half (\$5.6 billion) of expected federal S&T expenditures in 2012/2013. The higher education sector continues to be the leading recipient of federal government extramural S&T spending, receiving almost \$6 out of every \$10 dedicated to extramural activities.
- In 2012/2013, federal departments and agencies are anticipating that they would employ 37,382 full-time equivalent (FTE) positions engaged in S&T activities. Of this total, 19,844 positions will be classified as scientific and professional; 7,977 as technical and 9,562 as other staff engaged in S&T support activities. Almost six in 10 of all federal S&T personnel will be engaged in related scientific activities (including the administration of extramural programs).

Analysis

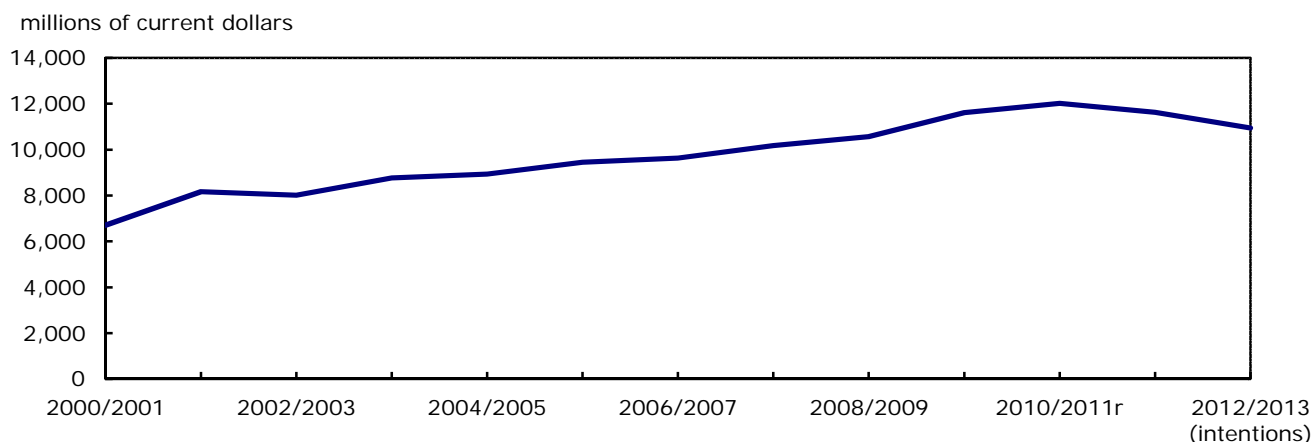
Federal departments and agencies reported that they intend on spending \$10.9 billion on science and technology activities (S&T) for fiscal year 2012/2013, down 5.9% from 2011/2012. This decrease represents a return to more normal levels, due to the conclusion of federal stimulus spending. (table 1-1)

Since 2000/2001, S&T expenditures have increased by 62.7%, from \$6.7 billion to \$10.9 billion. The largest year-over-year increase within this 12-year period occurred in 2001/2002 when S&T expenditures increased 21.8% as a result of new federal S&T commitments. (chart 1 and table 1-1)

Reflecting the inflow of the latest tranche of funds for S&T activities related to stimulus spending, S&T expenditures peaked in 2010/2011¹. Given the conclusion of overall stimulus spending, expected S&T spending reported by federal government departments and agencies for 2011/2012 will decrease by 3.2% from 2010/2011 expenditures, to \$11.6 billion.

Chart 1

Federal expenditures on science and technology (S&T) in current dollars, 2000/2001 to 2012/2013 (intentions)



Note: Fiscal years 2010/2011 and 2011/2012 are revised data.

Source: Statistic Canada Federal Science Expenditures and Personnel Survey.

Accounting for inflation, federal government S&T spending reached a historic high of \$9.8 billion in 2010/2011, an increase of 42.9% over the ten-year period from 2000/2001 to 2010/2011. (table 1-1)

Federal S&T expenditures are composed of two elements: research and development (R&D) and related scientific activities (RSA). Research and development is defined as “creative work, undertaken in a systematic manner to increase the stock of knowledge” (OECD, 2002). Related scientific activities include activities such as scientific data collection, information services, as well as special services and studies, all of which support R&D activities.

In 2012/2013, the majority, \$7.0 billion or 64 %, of federal S&T spending will be dedicated to R&D activities, while RSA accounts for the remainder. (table 1-5)

S&T expenditures are available for two science types: natural sciences and engineering; and social sciences and humanities. Federal departments and agencies reported that they expect three-quarters of all federal government

1. Data for 2010/2011 are actual expenditures incurred by the reporting departments and agencies, and, as such, are not subject to change.

S&T spending will be directed to natural sciences and engineering and the rest will be spent on social sciences and humanities in 2012/2013. This proportion has remained fairly stable over the past twelve years. (table 1-6)

S&T expenditures made within the federal government, such as salaries of scientific personnel and the materials and equipment required to support their activities, are known as intramural expenditures. S&T payments for research and development (R&D) and related scientific activities (RSA) made to other performing sectors, such as higher education, business enterprises, private non-profit organizations, foreign and other entities, are known as extramural expenditures.

Intramural performance of science and technology (S&T) activities

Federal government departments and agencies reported that in 2012/2013, about one-half (\$5.4 billion) of the expenditures on S&T activities will be performed within their organizations. Over half (54%) of this expenditure will be directed to RSA, with the remainder being spent on R&D. (table 1-11)

Extramural funding of science and technology (S&T) activities

Federal payments to extramural performers, as reported, are expected to decrease to \$5.6 billion in 2012/2013, mainly the result of the winding down of payments to provincial governments for S&T activities under the stimulus program. (table 3-1)

It was reported that in 2012/2013, the higher education sector, which is the leading beneficiary of the federal government's extramural S&T spending, will receive \$3.3 billion in federal payments. Just over 90% of these funds to be directed to R&D activities and the remaining for RSA. (table 3-1)

In 2012/2013, the dominant funders of extramural R&D activities will be the three granting councils: Canadian Institutes of Health Research (\$894 million), Natural Sciences and Engineering Research Council (\$876 million), and the Social Sciences and Humanities Research Council (\$528 million), who together account for about \$8 out of every \$10 paid to the higher education sector for R&D activities. (table 3-3)

Federal science and technology (S&T) personnel

In 2012/2013, federal departments and agencies reported that they anticipate a total of 37,382 full-time equivalent (FTE) positions engaged in S&T activities. This figure represents a 4.0% decline from 2011/2012 FTE figures. Of these positions, 19,844 were classified as scientific and professional, 7,977 as technical and 9,562 as other positions engaged in support activities. (table 4-5)

In 2012/2013, almost six in 10 of all federal S&T personnel will be engaged in related scientific activities (RSA) (including the administration of extramural RSA programs). (table 4-1)

Socio-economic objectives of expenditures on research and development (R&D) activities

The three most important socio-economic objectives for federal extramural R&D spending in 2010/2011² were: protection and improvement of human health (\$1.5 billion), non-oriented research³ (\$938 million) and industrial production and technology (\$801 million). Payments to extramural performers for non-oriented research increased from 8% of total extramural payments in 2002/2003⁴ to 19% in 2010/2011. (table 6-2)

2. Most recent year for which data is available.

3. Non-oriented research refers to basic activities motivated by scientific curiosity with the objective of increasing scientific knowledge. It also includes funding used to support postgraduate studies and fellowships.

4. Earliest year for which data is available, in CANSIM table 358-0151.

In 2010/2011, the three most important socio-economic objectives that tended to be researched within government departments (intramural) were: energy (\$717 million), agriculture (\$360 million) and protection and improvement of human health (\$280 million). The increased importance of energy research within the federal government is manifested by the growth of intramural expenditures on energy R&D from \$214 million or 10% of intramural expenditures in 2002/2003⁵ to \$717 million or 25% of intramural expenditures in 2010/2011. (table 6-2)

Federal science and technology (S&T) investment in the regions in 2010/2011⁶

In 2010/2011, although total federal expenditures on S&T increased in Canada, five provinces, Newfoundland and Labrador, Nova Scotia, New Brunswick, Manitoba, and Saskatchewan, witnessed decreases from 2009/2010 spending levels. The remaining regions of the country recorded increases in expenditures. (table 5-1)

The largest dollar increases were in Ontario, the National Capital Region (NCR) and Quebec. In Ontario, federal science expenditures increased by 6.1% to almost \$3.2 billion in 2010/2011. In the NCR, federal science expenditures (includes only intramural expenditures) also increased by 3.6% to \$3.3 billion, while in Quebec, total S&T expenditures grew by 4.2% to reach \$ 1.8 billion. (table 5-1)

5. Earliest year for which data is available, in CANSIM table 358-0151.

6. Most recent year for which data is available.

Related products

Selected publications from Statistics Canada

88-001-X	Science Statistics
88-202-X	Industrial Research and Development: Intentions
88F0017M	Science, Innovation and Electronic Information Division Research Papers

Selected technical and analytical products from Statistics Canada

88F0017M1999006	Diffusion of Biotechnologies in Canada: Results from the Survey of Biotechnology Use in Canadian Industries
88F0017M2000008	Explaining Rapid Growth in Canadian Biotechnology Firms
88F0017M2001010	Analysis of the Survey on Innovation, Advanced Technologies and Practices in the Construction and Related Industries, 1999
88F0017M2001011	Capacity to Innovate, Innovation and Impact: The Canadian Engineering Services Industry
88F0017M2001012	Patterns of Advanced Manufacturing Technology (AMT) Use in Canadian Manufacturing: 1998 AMT Survey Results

Selected CANSIM tables from Statistics Canada

358-0001	Gross domestic expenditures on research and development, by science type and by funder and performer sector, annual
358-0026	Intellectual property management, by federal departments and agencies indicators, annual
358-0142	Federal expenditures on science and technology and its components in current dollars and 2002 constant dollars, annual
358-0143	Federal expenditures on science and technology and its components, by type of science and performing sector, annual
358-0144	Federal expenditures on science and technology and its components, by activity and performing sector, annual

358-0145	Federal intramural expenditures on science and technology and its components, by type of science for the National Capital Region, annual
358-0146	Federal personnel engaged in science and technology activities, by type of science and personnel category, annual
358-0147	Federal personnel engaged in science and technology and its components, by type of science and personnel category, annual
358-0148	Federal personnel engaged in science and technology and its components, by type of science, personnel category, Canada, provinces and territories, annual
358-0149	Federal expenditures on science and technology and its components, by type of science, performing sector, Canada, provinces and territories, annual
358-0150	Federal extramural expenditures on science and technology and its components, by type of science, performing sector, type of payment, Canada, provinces and territories, annual
358-0151	Federal expenditures on science and technology and its components, by socio-economic objectives, annual
358-0163	Federal expenditures on science and technology, by major departments and agencies
358-0164	Federal extramural expenditures on science and technology, by performing sector and major departments and agencies
358-0165	Federal personnel engaged in science and technological activities, by occupational category and major departments and agencies
358-0166	Federal personnel engaged in science and technological activities, by major departments and agencies

Selected surveys from Statistics Canada

4212	Federal Science Expenditures and Personnel, Activities in the Social Sciences and Natural Sciences
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Selected summary tables from Statistics Canada

- *Domestic spending on research and development (GERD), funding sector, by province*
- *Domestic spending on research and development (GERD), performing sector, by province*
- *Domestic spending on research and development (GERD)*

Statistical tables

Table 1-1

Federal expenditures — On science and technology, research and development and related scientific activities in current dollars and in constant 2002 dollars

	Current dollars				GDP implicit price index ²	Constant 2002 dollars			
	Science and technology					Science and technology			
	Main Estimates ¹	Total science and technology	Research and development	Related scientific activities		Main Estimates ¹	Total science and technology	Research and development	Related scientific activities
	millions of dollars					millions of dollars			
2000/2001	156,157	6,707	4,150	2,556	97.8	159,670	6,857	4,244	2,614
2001/2002	165,234	8,169	4,989	3,180	98.9	167,072	8,260	5,044	3,216
2002/2003	170,367	8,014	4,927	3,087	100.0	170,367	8,014	4,927	3,087
2003/2004	175,937	8,765	5,462	3,303	103.3	170,317	8,485	5,288	3,197
2004/2005	183,290	8,934	5,454	3,480	106.6	171,942	8,381	5,116	3,265
2005/2006	194,863	9,449	6,042	3,407	110.1	176,987	8,582	5,488	3,095
2006/2007	207,986	9,633	6,073	3,560	113.0	184,058	8,524	5,374	3,150
2007/2008	230,772	10,176	6,602	3,573	116.6	197,918	8,727	5,662	3,064
2008/2009	241,308	10,573	6,655	3,918	121.4	198,771	8,709	5,482	3,227
2009/2010	236,135	11,613	7,456	4,157	119.1	198,266	9,751	6,260	3,491
2010/2011 r	261,200	12,013	7,826	4,187	122.6	213,051	9,799	6,384	3,415
2011/2012 r	250,800	11,633	7,279	4,354	126.8	197,792	9,174	5,740	3,434
2012/2013 p	251,896	10,946	6,967	3,979	...	...	...	...	...

1. Part 1, Government Expenditure Plans, Estimates.

2. CANSIM, table 380-0056

Note(s): Due to rounding, components may not add to the totals.

Table 1-2

Federal expenditures — On science and technology, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total	10,573	11,613	12,013	11,633	10,946
Agriculture and Agri-Food Canada	377	409	425	426	364
Atomic Energy of Canada Limited	393	470 ¹	640 ²	470 ²	430
Canada Foundation for Innovation	385	392	473 ³	462 ³	559 ³
Canadian Institutes of Health Research	980	998	1,041	1,046	1,010
Canadian International Development Agency	435	410	402	434	407
Canadian Space Agency	294	329	351	406	345
Environment Canada	742 ⁴	732 ⁴	728 ⁴	690	668
Fisheries and Oceans Canada	289	283	281	288	267
Health Canada	515	566	566	576	584
Industry Canada	460	820 ⁵	705 ⁵	557	486
National Defence	433	395	443	411	367
National Research Council Canada	781	1027 ⁶	1016 ⁶	796	722
Natural Resources Canada	585	692	778 ⁷	731 ⁷	690 ⁷
Natural Sciences and Engineering Research Council of Canada	1,036	1,057	1,085	1,096	1,063
Social Sciences and Humanities Research Council of Canada	683 ⁸	690 ⁹	693 ¹⁰	703 ¹⁰	692 ¹¹
Statistics Canada	684	679	746 ¹²	933 ¹²	654
Total of major departments and agencies	9,071	9,950	10,372	10,024	9,307
Other	1,502	1,663	1,642	1,609	1,639

1. Includes cost of repairs to AECL's research reactor, the National Research Universal (NRU) reactor.

2. Includes cost related to Advanced Candu Reactor (ACR) development and licensing.

3. Includes funds for the Research Hospital Fund (RHF) Project.

4. Includes additional funding for new initiatives such as the Clean Air Agenda, the Chemicals Management Plan, the Action Plan on Freshwater, Species at Risk and a grant to the Canada Foundation for Sustainable Development Technology (SDTC) towards the Next Generation Biofuels Fund.

5. Includes \$836 million allocated to S&T activities from the Knowledge Infrastructure Program (KIP), a \$2 billion two-year program which started in 2009/2010.

6. Includes about \$140 million to fund various programs under the Economic Action Plan.

7. Includes \$795 million for the Clean Energy Fund Program, a 5 year program starting in 2010/2011.

8. Includes \$315 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

9. Includes \$325 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

10. Includes \$322 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

11. Includes \$332 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

12. Includes costs related to the conduct of the 2011 Censuses of Population and Agriculture.

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 1-3
Federal expenditures — On research and development, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total	6,655	7,456	7,826	7,279	6,967
Agriculture and Agri-Food Canada	329	363 ¹	360	362	314
Atomic Energy of Canada Limited	393	470 ²	640 ³	470 ³	430 ³
Canada Foundation for Innovation	385	392 ⁴	473 ⁴	462 ⁴	559 ⁴
Canadian Institutes of Health Research	957	957	996	1,001	966
Canadian Space Agency	285	208	237	290	231
Environment Canada	270	266 ⁵	264 ⁵	250 ⁵	242 ⁵
Health Canada	155	166	168	160	158
Industry Canada	384	737 ⁶	623 ⁶	475	400
National Defence	326	288	337	292	263
National Research Council Canada	719	967 ⁷	963 ⁷	745	669
Natural Resources Canada	282	338	469 ⁸	421 ⁸	421 ⁸
Natural Sciences and Engineering Research Council of Canada	896	911	944	967	944
Social Sciences and Humanities Research Council of Canada	559 ⁹	555 ¹⁰	558 ¹¹	566 ¹¹	563 ¹²
Total of major departments and agencies	5,942	6,619	7,032	6,468	6,160
Other	713	837	795	810	807

1. Includes \$8 million for the Cost shared Growing Forward programs, and \$13 million for the Agricultural Bioproducts Innovation Program (ABIP).
2. Includes cost of repairs to AECL's research reactor (the National Research Universal (NRU) reactor).
3. Includes cost related to Advanced Candu Reactor (ACR) development and licensing.
4. Includes funds for the Research Hospital Fund (RHF) Project.
5. Includes additional funding for new initiatives such as the Clean Air Agenda, the Chemicals Management Plan, the Action Plan on Freshwater, Species at Risk and a grant to the Canada Foundation for Sustainable Development Technology (SDTC) towards the Next Generation Biofuels Fund.
6. Includes \$836 million allocated to S&T activities from the Knowledge Infrastructure Program (KIP), a \$2 billion two-year program which started in 2009/2010.
7. Includes about \$140 million to fund various programs under the Economic Action Plan.
8. Includes \$795 million for the Clean Energy Fund Program, a 5 year program starting in 2010/2011.
9. Includes \$315 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
10. Includes \$325 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
11. Includes \$322 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
12. Includes \$332 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 1-4
Federal expenditures — On related scientific activities, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total	3,918	4,157	4,187	4,354	3,979
Canadian International Development Agency	387	320	362	390	366
Canadian Space Agency	9	122 ¹	114 ¹	116 ¹	115 ¹
Environment Canada	472 ²	466 ²	464 ²	440 ²	426 ²
Fisheries and Oceans Canada	277	270	268	276	255
Health Canada	360	400	398	417	426
Library and Archives Canada	115	115	112	112	124
National Defence	106	107	106	118	104
Natural Resources Canada	302	353	309	303	269
Natural Sciences and Engineering Research Council of Canada	140	146	141	129	119
Parks Canada	107	113	120	97	97
Public Health Agency of Canada	90	85	113	117	114
Social Sciences and Humanities Research Council of Canada	124	135	135	137	129
Statistics Canada	622	612	644 ³	821 ³	571
Total of major departments and agencies	3,111	3,243	3,285	3,472	3,113
Other	807	914	902	882	866

1. Increase in expenditures in related scientific activities is due to the reclassification of certain activities.
2. Includes additional funding for new initiatives such as the Clean Air Agenda, the Chemicals Management Plan, the Action Plan on Freshwater, Species at Risk and a grant to the Canada Foundation for Sustainable Development Technology (SDTC) towards the Next Generation Biofuels Fund.
3. Includes costs related to the conduct of the 2011 Censuses of Population and Agriculture.

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 1-5

Federal expenditures — On science and technology and its components, by activity

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Science and technology	10,573	11,613	12,013	11,633	10,946
Research and development	6,655	7,456	7,826	7,279	6,967
Current expenditures	6,107	6,907	7,135	6,730	6,479
Administration of extramural programs	321	319	310	310	292
Capital expenditures	228	230	381	238	197
Related scientific activities	3,918	4,157	4,187	4,354	3,979
Data collection	2,049	2,100	2,113	2,291	2,019
Information services	613	734	717	708	642
Special services and studies	802	801	812	867	837
Education support	300	326	329	322	306
Administration of extramural programs	75	83	89	86	79
Capital expenditures	79	113	128	81	97

Note(s): Due to rounding, components may not add to the totals.

Table 1-6

Federal expenditures — On science and technology, by science and by performing sector

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total sciences	10,573	11,613	12,013	11,633	10,946
Intramural	5,498	5,832	6,059	5,850	5,386
Business enterprises	910	1,081	1,201	1,188	1,120
Higher education	3,066	3,107	3,329	3,261	3,297
Canadian non-profit institutions	469	521	472	541	481
Provincial and municipal governments	45	486 ¹	394 ¹	176	61
Foreign performers	556	553	535	582	569
Other Canadian performers	29	33	23	35	32
Natural sciences	7,805	8,815	9,161	8,593	8,168
Intramural	3,971	4,301	4,483	4,133	3,914
Business enterprises	870	1,031	1,125	1,110	1,055
Higher education	2,345	2,376	2,583	2,514	2,548
Canadian non-profit institutions	282	304	270	334	297
Provincial and municipal governments	21	448	372	141	36
Foreign performers	300	344	319	343	306
Other Canadian performers	15	11	8	18	13
Social sciences	2,768	2,798	2,852	3,040	2,778
Intramural	1,527	1,531	1,576	1,717	1,472
Business enterprises	40	50	75	78	65
Higher education	721	730	746	747	750
Canadian non-profit institutions	186	217	202	207	184
Provincial and municipal governments	24	38	22	35	24
Foreign performers	256	209	216	239	263
Other Canadian performers	14	22	15	17	19

1. Includes \$836 million allocated to S&T activities under the Knowledge Infrastructure Program (KIP), a \$2 billion two-year program which started in 2009/2010.

Note(s): As reported by the funder, the federal government, not by the performers. Due to rounding, components may not add to the totals.

Table 1-7
Federal expenditures — On research and development, by science and by performing sector

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total sciences	6,655	7,456	7,826	7,279	6,967
Intramural	2,599	2,762	3,007	2,669	2,475
Business enterprises	732	868	968	954	915
Higher education	2,769	2,765	2,983	2,934	2,984
Canadian non-profit institutions	324	356	303	364	352
Provincial and municipal governments	14	448 ¹	366 ¹	134	26
Foreign performers	200	239	186	205	197
Other Canadian performers	17	17	13	17	18
Natural sciences	5,667	6,455	6,764	6,198	5,880
Intramural	2,388	2,546	2,726	2,389	2,220
Business enterprises	729	861	965	943	902
Higher education	2,188	2,194	2,395	2,343	2,387
Canadian non-profit institutions	217	245	190	251	231
Provincial and municipal governments	8	437 ¹	360 ¹	128	22
Foreign performers	128	165	124	137	111
Other Canadian performers	8	6	4	8	7
Social sciences	988	1,001	1,062	1,080	1,087
Intramural	211	216	280	280	256
Business enterprises	3	7	3	11	13
Higher education	582	572	588	591	597
Canadian non-profit institutions	106	111	112	113	121
Provincial and municipal governments	6	11	6	7	3
Foreign performers	72	73	62	68	85
Other Canadian performers	9	11	10	9	11

1. Includes \$836 million allocated to S&T under the Knowledge Infrastructure Program (KIP), a \$2 billion two-year program which started in 2009/2010.

Note(s): As reported by the funder, the federal government, not by the performers. Due to rounding, components may not add to the totals.

Table 1-8
Federal expenditures — On related scientific activities, by science and by performing sector

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total sciences	3,918	4,157	4,187	4,354	3,979
Intramural	2,899	3,070	3,052	3,181	2,911
Business enterprises	178	213	233	234	205
Higher education	297	341	346	327	314
Canadian non-profit institutions	145	164	170	177	129
Provincial and municipal governments	31	38	28	42	35
Foreign performers	356	315	349	377	373
Other Canadian performers	13	16	9	17	14
Natural sciences	2,138	2,360	2,397	2,394	2,289
Intramural	1,583	1,755	1,757	1,744	1,694
Business enterprises	141	170	161	167	153
Higher education	158	183	188	171	161
Canadian non-profit institutions	65	58	80	83	65
Provincial and municipal governments	12	11	12	13	14
Foreign performers	172	179	195	206	195
Other Canadian performers	7	5	4	10	7
Social sciences	1,780	1,797	1,790	1,960	1,691
Intramural	1,316	1,315	1,296	1,436	1,217
Business enterprises	37	43	72	67	52
Higher education	139	159	158	156	153
Canadian non-profit institutions	80	106	90	94	63
Provincial and municipal governments	19	27	16	28	21
Foreign performers	184	136	153	171	178
Other Canadian performers	6	11	6	7	7

Note(s): As reported by the funder, the federal government, not by the performers. Due to rounding, components may not add to the totals.

Table 1-9

Federal expenditures — On science and technology and its components, by activity and performing sector, 2010/2011^r

	Intramural	Business enterprise	Higher education	Canadian non-profit institutions	Provincial and municipal governments	Foreign performers	Other Canadian performers	Total
millions of dollars								
Total science and technology	6,059	1,201	3,329	472	394	535	23	12,013
Total research and development	3,007	968	2,983	303	366	186	13	7,826
In-house research and development	2,072	...	...	...	...	...	...	2,072
Research and development contracts	64	229	25	7	2	15	3	344
Supporting contracts	168	...	...	...	...	...	...	168
Research and development grants and contributions	...	734	2,906	296	364	152	1	4,453
Research fellowships	12	5	52	0 ^s	0 ^s	20	9	98
Administration of extramural programs	310	...	...	...	...	...	...	310
Capital expenditures	381	...	...	...	...	...	...	381
Total related scientific activities	3,052	233	346	170	28	349	9	4,187
Data collection	1,884	134	22	41	9	19	4	2,113
Information services	640	15	23	30	7	2	1	717
Special services and studies	311	78	17	85	12	309	1	812
Education support	1	6	285	14	0 ^s	20	3	329
Administration of extramural programs	89	...	...	...	...	...	...	89
Capital expenditures	128	...	...	...	...	...	...	128

Note(s): As reported by the funder, the federal government, not by the performers. Due to rounding, components may not add to the totals.

Table 1-10

Federal expenditures — On science and technology and its components, by activity and performing sector, 2011/2012^r

	Intramural	Business enterprise	Higher education	Canadian non-profit institutions	Provincial and municipal governments	Foreign performers	Other Canadian performers	Total
millions of dollars								
Total science and technology	5,850	1,188	3,261	541	176	582	35	11,633
Total research and development	2,669	954	2,934	364	134	205	17	7,279
In-house research and development	1,885	...	...	...	...	...	...	1,885
Research and development contracts	43	239	14	7	1	9	5	318
Supporting contracts	181	...	...	...	...	...	...	181
Research and development grants and contributions	...	710	2,867	357	133	177	3	4,247
Research fellowships	12	5	54	0 ^s	0 ^s	19	10	100
Administration of extramural programs	310	...	...	...	...	...	...	310
Capital expenditures	238	...	...	...	...	...	...	238
Total related scientific activities	3,181	234	327	177	42	377	17	4,354
Data collection	2,042	148	19	44	13	18	7	2,291
Information services	637	18	22	23	6	1	1	708
Special services and studies	335	63	13	94	21	335	6	867
Education support	1	5	272	16	2	22	3	322
Administration of extramural programs	86	...	...	...	...	...	...	86
Capital expenditures	81	...	...	...	...	...	...	81

Note(s): As reported by the funder, the federal government, not by the performers. Due to rounding, components may not add to the totals.

Table 1-11

Federal expenditures — On science and technology and its components, by activity and performing sector, 2012/2013^p

	Intramural	Business enterprise	Higher education	Canadian non-profit institutions	Provincial and municipal governments	Foreign performers	Other Canadian performers	Total
millions of dollars								
Total science and technology	5,386	1,120	3,297	481	61	569	32	10,946
Total research and development	2,475	915	2,984	352	26	197	18	6,967
In-house research and development	1,719	...	...	...	...	...	...	1,719
Research and development contracts	43	204	30	24	1	91	3	396
Supporting contracts	212	...	...	...	...	...	...	212
Research and development grants and contributions	...	706	2,901	328	24	89	5	4,055
Research fellowships	12	5	53	0 ^s	0 ^s	17	9	97
Administration of extramural programs	292	...	...	...	...	...	...	292
Capital expenditures	197	...	...	...	...	...	...	197
Total related scientific activities	2,911	205	314	129	35	373	14	3,979
Data collection	1,793	134	19	35	12	19	7	2,019
Information services	575	11	22	25	6	2	1	642
Special services and studies	350	54	12	67	15	337	2	837
Education support	17	6	261	2	2	15	3	306
Administration of extramural programs	79	...	...	...	...	...	...	79
Capital expenditures	97	...	...	...	...	...	...	97

Note(s): As reported by the funder, the federal government, not by the performers. Due to rounding, components may not add to the totals.

Table 2-1

Federal intramural expenditures — On science and technology and its components, by activity

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
millions of dollars					
Science and technology	5,498	5,832	6,059	5,850	5,386
Research and development	2,599	2,762	3,007	2,669	2,475
Current expenditures	2,051	2,212	2,315	2,121	1,987
Administration of extramural programs	321	319	310	310	292
Capital expenditures	228	230	381	238	197
Related scientific activities	2,899	3,070	3,052	3,181	2,911
Data collection	1,885	1,895	1,884	2,042	1,793
Information services	526	654	640	637	575
Special services and studies	324	323	311	335	350
Education support	9	2	1	1	17
Administration of extramural programs	75	83	89	86	79
Capital expenditures	79	113	128	81	97

Note(s): Due to rounding, components may not add to the totals.

Table 2-2

Federal intramural expenditures — On science and technology, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total	5,498	5,832	6,059	5,850	5,386
Agriculture and Agri-Food Canada	356	367	358	358	312
Atomic Energy of Canada Limited	393	468 ¹	640 ²	467	427
Environment Canada	649 ³	636 ³	626 ³	605	583
Fisheries and Oceans Canada	266	270	265	273	253
Health Canada	354	392	390	409	421
Industry Canada	122	133	129	125	124
National Defence	272	273	340	326	299
National Research Council Canada	635	729 ⁴	714 ⁴	579	571
Natural Resources Canada	494	544	502	489 ⁵	432 ⁵
Statistics Canada	675	665	729 ⁶	899 ⁶	640
Total of major departments and agencies	4,216	4,475	4,694	4,531	4,061
Other	1,281	1,357	1,365	1,318	1,325

1. Includes cost of repairs to AECL's research reactor, the National Research Universal (NRU) reactor.

2. Includes cost related to Advanced Candu Reactor (ACR) development and licensing.

3. Includes additional funding for new initiatives such as the Clean Air Agenda, the Chemicals Management Plan, the Action Plan on Freshwater, Species at Risk and a grant to the Canada Foundation for Sustainable Development Technology (SDTC) towards the Next Generation Biofuels Fund.

4. Includes about \$140 million to fund various programs under the Economic Action Plan.

5. Includes \$795 million for the Clean Energy Fund Program, a 5 year program starting in 2010/2011.

6. Includes costs related to the conduct of the 2011 Censuses of Population and Agriculture.

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 2-3

Federal intramural expenditures — On research and development, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total	2,599	2,762	3,007	2,669	2,475
Agriculture and Agri-Food Canada	311	331	311	316	274
Atomic Energy of Canada Limited	393	468 ¹	640 ²	467	427
Canadian Institutes of Health Research	62	66	71	64	60
Environment Canada	234 ³	230 ³	223 ³	219 ³	210 ³
Health Canada	55	63	68	65	62
National Defence	240	210	280	256	232
National Research Council Canada	574	669 ⁴	662	529	519
Natural Resources Canada	205	223	220 ⁵	209 ⁵	182 ⁵
Statistics Canada	62	67	101 ⁶	112 ⁶	83
Total of major departments and agencies	2,134	2,327	2,576	2,239	2,050
Other	465	435	431	430	425

1. Includes cost of repairs to AECL's research reactor, the National Research Universal (NRU) reactor.

2. Includes cost related to Advanced Candu Reactor (ACR) development and licensing.

3. Includes additional funding for new initiatives such as the Clean Air Agenda, the Chemicals Management Plan, the Action Plan on Freshwater, Species at Risk and a grant to the Canada Foundation for Sustainable Development Technology (SDTC) towards the Next Generation Biofuels Fund.

4. Includes about \$140 million to fund various programs under the Economic Action Plan.

5. Includes \$795 million for the Clean Energy Fund Program, a 5 year program starting in 2010/2011.

6. Includes costs related to the conduct of the 2011 Censuses of Population and Agriculture.

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 2-4

Federal intramural expenditures — On related scientific activities, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total	2,899	3,070	3,052	3,181	2,911
Canadian Museum of Civilization	74	72	73	81	73
Canadian Space Agency	8	63 ¹	62 ¹	62 ¹	63 ¹
Environment Canada	415 ²	406 ²	403 ²	386	372
Fisheries and Oceans Canada	254	257	253	260	241
Health Canada	299	329	322	344	359
Industry Canada	73	82	81	80	84
Library and Archives Canada	112	112	110	110	122
Natural Resources Canada	290	320	282	280	250
Parks Canada	106	112	119	96	96
Public Health Agency of Canada	58	64	69	69	67
Statistics Canada	614	598	628 ³	788 ³	556
Total of major departments and agencies	2,304	2,415	2,402	2,556	2,284
Other	595	655	650	624	627

1. Increase in expenditures in related scientific activities is due to the reclassification of certain activities.

2. Includes additional funding for new initiatives such as the Clean Air Agenda, the Chemicals Management Plan, the Action Plan on Freshwater, Species at Risk and a grant to the Canada Foundation for Sustainable Development Technology (SDTC) towards the Next Generation Biofuels Fund.

3. Includes costs related to the conduct of the 2011 Censuses of Population and Agriculture.

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 2-5

Federal intramural expenditures — On science and technology for the National Capital Region

	2006/2007	2007/2008	2008/2009	2009/2010 ^r	2010/2011
	millions of dollars				
National Capital Region (total)					
Science and technology	2,989	2,922	3,104	3,191¹	3,305
Natural sciences	1,649	1,664	1,727	1,831	1,950
Social sciences	1,340	1,258	1,377	1,360	1,356
Research and development	1,105	1,134	1,146	1,227¹	1,334
Natural sciences	953	968	944	1,021	1,085
Social sciences	153	166	202	206	249
Related scientific activities	1,884	1,788	1,958	1,964¹	1,972
Natural sciences	696	697	783	810	865
Social sciences	1,188	1,092	1,175	1,154	1,107
National Capital Region (Ontario)					
Science and technology	2,632	2,582	2,584	2,661¹	2,926
Natural sciences	1,445	1,498	1,404	1,497	1,766
Social sciences	1,186	1,084	1,181	1,164	1,160
Research and development	1,021	1,076	1,041	1,118¹	1,270
Natural sciences	878	919	851	925	1,033
Social sciences	143	157	191	194	237
Related scientific activities	1,611	1,506	1,543	1,542¹	1,657
Natural sciences	568	579	553	572	734
Social sciences	1,043	927	990	970	923
National Capital Region (Quebec)					
Science and technology	358	340	520	531¹	379
Natural sciences	204	166	323	334	183
Social sciences	154	174	196	196	196
Research and development	85	58	105	108¹	64
Natural sciences	75	48	93	96	53
Social sciences	9	10	12	12	12
Related scientific activities	273	282	415	422¹	315
Natural sciences	128	117	230	238	131
Social sciences	145	164	185	184	184

1. This value has been revised due to a redistribution of personnel from the National Capital Region (Quebec) to the National Capital Region (Ontario) and Quebec (excluding the National Capital Region).

Note(s): Due to rounding, components may not add to the totals.

Table 3-1

Federal extramural expenditures — On science and technology and its components, by performing sector

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total science and technology	5,075	5,781	5,955	5,783	5,560
Business enterprises	910	1,081	1,201	1,188	1,120
Higher education	3,066	3,107	3,329	3,261	3,297
Canadian non-profit institutions	469	521	472	541	481
Provincial and municipal governments	45	486 ¹	394 ¹	176	61
Foreign performers	556	553	535	582	569
Other Canadian performers	29	33	23	35	32
Total research and development	4,056	4,694	4,820	4,610	4,492
Business enterprises	732	868	968	954	915
Higher education	2,769	2,765	2,983	2,934	2,984
Canadian non-profit institutions	324	356	303	364	352
Provincial and municipal governments	14	448 ¹	366 ¹	134	26
Foreign performers	200	239	186	205	197
Other Canadian performers	17	17	13	17	18
Total related scientific activities	1,019	1,087	1,135	1,173	1,069
Business enterprises	178	213	233	234	205
Higher education	297	341	346	327	314
Canadian non-profit institutions	145	164	170	177	129
Provincial and municipal governments	31	38	28	42	35
Foreign performers	356	315	349	377	373
Other Canadian performers	13	16	9	17	14

1. Includes \$836 million allocated to S&T activities from the Knowledge Infrastructure Program (KIP), a \$2 billion two-year program which started in 2009/2010.

Note(s): As reported by the funder, the federal government, not by the performers. Due to rounding, components may not add to the totals.

Table 3-2

Federal extramural expenditures — On science and technology and its components in the business enterprise sector, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total science and technology	910	1,081	1,201	1,188	1,120
Atlantic Canada Opportunities Agency	57	65	32	32	32
Canadian International Development Agency	21	17	25	28	27
Canadian Space Agency	131	167	187	228	185
Environment Canada	54	48	49	37	38
Industry Canada	290	223	218	320 ¹	355
National Defence	136	103	84	66	58
National Research Council Canada	87	233 ²	237 ²	157 ²	92
Natural Resources Canada	64	120	240 ³	200 ³	230 ³
Other	69	105	129	120	104
Total research and development	732	868	968	954	915
Atlantic Canada Opportunities Agency	57	65	31	31	31
Canadian Space Agency	130	116	143	182	141
Industry Canada	289	223	218	320 ¹	355
National Defence	66	63	45	26	25
National Research Council Canada	87	233 ²	237 ²	157 ²	92
Natural Resources Canada	59	100	222 ³	187 ³	218 ³
Other	43	69	72	51	54
Total related scientific activities	178	213	233	234	205
Canadian International Development Agency	21	17	25	28	26
Canadian Space Agency	0 ^s	51 ⁴	44	46	44
Environment Canada	35	34	35	30	29
Fisheries and Oceans Canada	6	3	5	3	2
Health Canada	5	4	8	7	8
National Defence	71	39	38	39	33
Natural Resources Canada	5	21	18	13	12
Public Health Agency of Canada	6	3	6	9	7
Statistics Canada	6	13	16	31	13
Other	22	29	37	29	28

1. Increase due to a re-profiling of the expenditures linked to the Automotive Innovation Fund (AIF) and an extension into 2011/2012 of some projects funded under the Knowledge Infrastructure Program (KIP).

2. Includes about \$140 million to fund various programs under the Economic Action Plan.

3. Includes \$795 million for the Clean Energy Fund Program, a 5 year program starting in 2010/2011.

4. Increase in expenditures in related scientific activities is due to the reclassification of certain activities.

Note(s): Represents departments and agencies that contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 3-3

Federal extramural expenditures — On science and technology and its components in the higher education sector, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total science and technology	3,066	3,107	3,329	3,261	3,297
Canada Foundation for Innovation	372	353	455 ¹	425 ¹	518 ¹
Canadian Institutes of Health Research	891	905	954	966	934
Natural Sciences and Engineering Research Council of Canada	921	943	974	982	974
Social Sciences and Humanities Research Council of Canada	623 ²	629 ³	633 ⁴	640 ⁴	635 ⁵
Other	260	278	314	248	236
Total research and development	2,769	2,765	2,983	2,934	2,984
Canada Foundation for Innovation	372	353	455 ¹	425 ¹	518 ¹
Canadian Institutes of Health Research	869	868	913	924	894
Natural Sciences and Engineering Research Council of Canada	801	818	856	876	876
Social Sciences and Humanities Research Council of Canada	524 ²	520 ³	523 ⁴	529 ⁴	528 ⁵
Other	203	206	237	180	168
Total related scientific activities	297	341	346	327	314
Canadian Institutes of Health Research	22	37	41	42	40
Health Canada	23	19	27	25	25
Natural Sciences and Engineering Research Council of Canada	119	124	118	107	99
Public Health Agency of Canada	7	7	11	10	11
Social Sciences and Humanities Research Council of Canada	99	108	110	111	107
Other	26	46	38	32	32

1. Includes funds for the Research Hospital Fund (RHF) Project.

2. Includes \$315 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

3. Includes \$325 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

4. Includes \$322 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

5. Includes \$332 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

Note(s): Represents departments and agencies that contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 3-4

Federal extramural expenditures — On science and technology and its components in the business enterprise sector, by type of payment and by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total science and technology payments	910	1,081	1,201	1,188	1,120
Total research and development payments	732	868	968	954	915
Total contracts	231	225	229	239	204
Aboriginal Affairs and Northern Development Canada	...	5	5	0 ^s	4
Canadian Space Agency	127	114	142	182	140
Environment Canada	19	14	13	7	8
National Defence	66	63	45	26	25
Natural Resources Canada	3	3	6	4	3
Transport Canada	5	9	5	6	4
Other	11	18	12	13	19
Total grants and contributions	498	633	734	710	706
Atlantic Canada Opportunities Agency	57	65	31	31	31
Economic Development Agency of Canada for the Regions of Quebec	2	2	15	1	0 ^s
Industry Canada	289	223	218	320	355
National Research Council Canada	87	229 ¹	234 ¹	154	89
Natural Resources Canada	56	97	215 ²	183 ²	214 ²
Other	6	17	22	22	17
Total research fellowships	4	10	5	5	5
Total related scientific activities payments	178	213	233	234	205
Canadian International Development Agency	21	17	25	28	26
Canadian Space Agency	0 ^s	51 ³	44 ³	46 ³	44 ³
Environment Canada	35	34	35	30	29
Fisheries and Oceans Canada	6	3	5	3	2
Health Canada	5	4	8	7	8
National Defence	71	39	38	39	33
Natural Resources Canada	5	21	18	13	12
Public Health Agency of Canada	6	3	6	9	7
Statistics Canada	6	13	16	31	13
Other	22	29	37	29	28

1. Includes about \$140 million to fund various programs under the Economic Action Plan.

2. Includes \$795 million for the Clean Energy Fund Program, a 5 year program starting in 2010/2011.

3. Increase in expenditures in related scientific activities is due to the reclassification of certain activities.

Note(s): Represents departments and agencies that contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 3-5

Federal extramural expenditures — On science and technology and its components in the higher education sector, by type of payment and by major funding departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total science and technology payments	3,066	3,107	3,329	3,261	3,297
Total research and development payments	2,769	2,765	2,983	2,934	2,984
Total contracts	30	28	25	14	30
Canadian Space Agency	12	7	6	6	6
Environment Canada	4	4	4	3	3
Health Canada	2	2	2	1	1
National Defence	7	4	3	1	1
National Research Council Canada	2	5	5	0	6
Natural Resources Canada	1	2	2	0 ^s	0 ^s
Public Health Agency of Canada	1	3	1	0 ^s	1
Public Works and Government Services Canada	0 ^s	0 ^s	1	0 ^s	0 ^s
Other	2	1	1	1	11
Total grants and contributions	2,697	2,691	2,906	2,867	2,901
Canada Foundation for Innovation	372	353 ¹	455 ¹	425 ¹	518 ¹
Canadian Institutes of Health Research	834	828	868	879	850
Natural Sciences and Engineering Research Council of Canada	795	811	849	867	867
Social Sciences and Humanities Research Council of Canada	524 ²	520 ³	523 ⁴	529 ⁴	528 ⁵
Other	173	178	212	166	139
Total research fellowships	42	47	52	54	53
Total related scientific activities payments	297	341	346	327	314
Total education support payments	251	278	285	272	261
Canadian Institutes of Health Research	22	37	38	38	37
Health Canada	20	17	25	23	23
Natural Sciences and Engineering Research Council of Canada	119	124	118	107	99
Social Sciences and Humanities Research Council of Canada	86	97	98	99	95
Other	4	4	6	6	7
Total other related scientific activities	46	64	62	54	53

1. Includes funds for the Research Hospital Fund (RHF) Project.

2. Includes \$315 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

3. Includes \$325 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

4. Includes \$322 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

5. Includes \$332 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

Note(s): Represents departments and agencies that contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 3-6

Federal extramural expenditures — On science and technology and its components in the Canadian non-profit institutions sector, by major funding departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total science and technology	469	521	472	541	481
Agriculture and Agri-Food Canada	16	17	43	49	36
Canadian International Development Agency	47	34	35	36	34
Economic Development Agency of Canada for the Regions of Quebec	18	19	11	16	13
Environment Canada	11	19	22	23	23
Foreign Affairs and International Trade Canada	15	12	14	16	1
Genome Canada	76	76	53	59	61
Health Canada	105	119	114	112	105
Industry Canada	33	33	30	5	5
International Development Research Centre	7	6	13	14	18
Natural Resources Canada	12	15	12	18	14
Natural Sciences and Engineering Research Council of Canada	37	28	26	27	9
Public Health Agency of Canada	12	7	19	17	15
Social Sciences and Humanities Research Council of Canada	10	12	10	11	7
Other	69	124	70	139	142
Total research and development	324	356	303	364	352
Aboriginal Affairs and Northern Development Canada	1	2	8	1	1
Agriculture and Agri-Food Canada	15	8	27	29	25
Environment Canada	3	8	10	12	12
Federal Economic Development Agency for Southern Ontario	...	6	9	55	50
Genome Canada	76	76	53	59	61
Health Canada	89	89	89	88	88
Industry Canada	33	33	30	5	5
International Development Research Centre	6	6	12	13	17
Natural Resources Canada	7	9	7	11	10
Natural Sciences and Engineering Research Council of Canada	35	27	24	25	7
Other	59	93	31	66	76
Total related scientific activities	145	164	170	177	129
Agriculture and Agri-Food Canada	1	8	16	20	10
Canadian International Development Agency	47	33	33	34	32
Economic Development Agency of Canada for the Regions of Quebec	7	4	10	2	1
Environment Canada	8	11	12	11	11
Fisheries and Oceans Canada	10	8	8	11	10
Foreign Affairs and International Trade Canada	15	12	14	16	1
Health Canada	16	30	24	24	17
Human Resources and Social Development Canada	5	4	7	6	4
Natural Resources Canada	5	5	5	7	4
Public Health Agency of Canada	11	6	16	16	14
Social Sciences and Humanities Research Council of Canada	6	8	7	7	4
Status of Women Canada	...	0	4	4	4
Other	14	33	15	19	17

Note(s): Represents departments and agencies that contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 3-7

Federal extramural expenditures — On science and technology and its components in the foreign performers sector, by major funding departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	millions of dollars				
Total science and technology	556	553	535	582	569
Canadian International Development Agency	320	316	303	330	310
Canadian Space Agency	36	32	36	48	32
Foreign Affairs and International Trade Canada	31	30	27	34	47
Health Canada	17	17	17	15	16
International Development Research Centre	80	84	77	85	108
National Defence	15	11	11	7	5
National Research Council Canada	12	14	13	14	7
Natural Sciences and Engineering Research Council of Canada	17	20	21	19	16
Other	29	29	31	29	29
Total research and development	200	239	186	205	197
Canadian Institutes of Health Research	8	8	9	9	8
Canadian International Development Agency	42	82	35	38	35
Canadian Space Agency	36	31	34	46	30
International Development Research Centre	71	76	69	77	98
National Defence	14	9	8	6	3
National Research Council Canada	12	14	13	14	7
Natural Sciences and Engineering Research Council of Canada	9	10	10	10	8
Other	8	9	8	6	7
Total related scientific activities	356	315	349	377	373
Canadian International Development Agency	278	234	268	292	274
Foreign Affairs and International Trade Canada	31	30	27	34	47
Health Canada	14	14	15	14	14
International Development Research Centre	9	8	7	8	10
Natural Sciences and Engineering Research Council of Canada	8	10	10	9	9
Other	17	19	21	19	19

Note(s): Represents departments and agencies that contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 4-1

Federal personnel — Engaged in science and technology activities

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	number				
Total science and technology	37,333	38,968	38,594	38,945	37,382
Research and development	14,172	15,110	15,011	14,839	14,426
Administration of extramural research and development programs	2,100	2,162	2,072	2,037	1,973
Related scientific activities	20,459	20,983	20,759	21,335	20,295
Administration of extramural related scientific activities programs	602	713	753	733	688
Natural sciences	25,977	27,340	27,073	26,883	26,480
Research and development	13,240	13,981	13,616	13,484	13,155
Administration of extramural research and development programs	1,762	1,745	1,711	1,673	1,640
Related scientific activities	10,659	11,223	11,308	11,305	11,281
Administration of extramural related scientific activities programs	316	392	438	421	404
Social sciences	11,356	11,628	11,521	12,062	10,902
Research and development	932	1,129	1,394	1,355	1,272
Administration of extramural research and development programs	338	417	361	364	333
Related scientific activities	9,800	9,760	9,451	10,031	9,014
Administration of extramural related scientific activities programs	286	321	315	312	284

Note(s): Personnel counts are reported as full-time equivalents. Due to rounding, components may not add to the totals.

Table 4-2
Federal personnel — Scientific and professional engaged in science and technology activities

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	number				
Total science and technology	17,249	17,896	20,341	20,701	19,844
Research and development	6,532	6,790	7,114	6,988	6,822
Administration of extramural research and development programs	786	877	896	870	842
Related scientific activities	9,768	10,023	12,090	12,607	11,961
Administration of extramural related scientific activities programs	162	205	241	237	219
Natural sciences	12,475	12,884	12,888	12,899	12,836
Research and development	5,942	6,158	6,035	5,956	5,857
Administration of extramural research and development programs	650	696	743	713	697
Related scientific activities	5,794	5,925	5,984	6,112	6,173
Administration of extramural related scientific activities programs	88	105	127	118	109
Social sciences	4,774	5,012	7,453	7,803	7,008
Research and development	590	633	1,080	1,032	965
Administration of extramural research and development programs	136	181	153	157	145
Related scientific activities	3,974	4,098	6,106	6,495	5,788
Administration of extramural related scientific activities programs	74	100	115	119	110

Note(s): Personnel counts are reported as full-time equivalents. Due to rounding, components may not add to the totals.

Table 4-3
Federal personnel — Technical engaged in science and technology activities

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	number				
Total science and technology	8,897	9,577	8,255	8,168	7,977
Research and development	4,601	5,081	4,831	4,811	4,685
Administration of extramural research and development programs	104	85	69	67	84
Related scientific activities	4,181	4,372	3,316	3,256	3,178
Administration of extramural related scientific activities programs	12	39	39	33	30
Natural sciences	7,054	7,609	7,404	7,300	7,161
Research and development	4,511	4,933	4,752	4,731	4,608
Administration of extramural research and development programs	101	80	63	61	79
Related scientific activities	2,433	2,578	2,562	2,485	2,451
Administration of extramural related scientific activities programs	9	18	27	24	23
Social sciences	1,844	1,967	851	867	816
Research and development	90	148	79	81	76
Administration of extramural research and development programs	3	5	7	6	5
Related scientific activities	1,748	1,794	754	771	727
Administration of extramural related scientific activities programs	3	21	12	10	8

Note(s): Personnel counts are reported as full-time equivalents. Due to rounding, components may not add to the totals.

Table 4-4

Federal personnel — Other personnel engaged in science and technology activities

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	number				
Total science and technology	11,187	11,495	9,998	10,076	9,562
Research and development	3,039	3,239	3,066	3,040	2,920
Administration of extramural research and development programs	1,210	1,200	1,107	1,101	1,047
Related scientific activities	6,511	6,588	5,353	5,472	5,156
Administration of extramural related scientific activities programs	428	468	473	464	439
Natural sciences	6,449	6,847	6,781	6,684	6,483
Research and development	2,787	2,889	2,830	2,798	2,690
Administration of extramural research and development programs	1,011	969	906	899	864
Related scientific activities	2,432	2,719	2,761	2,707	2,657
Administration of extramural related scientific activities programs	218	269	284	280	272
Social sciences	4,738	4,648	3,217	3,392	3,079
Research and development	251	349	236	242	230
Administration of extramural research and development programs	199	231	201	202	183
Related scientific activities	4,079	3,869	2,592	2,764	2,499
Administration of extramural related scientific activities programs	209	200	189	184	167

Note(s): Personnel counts are reported as full-time equivalents. Due to rounding, components may not add to the totals.

Table 4-5

Federal personnel — Engaged in science and technology activities, by category and activity

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	number				
Total science and technology personnel	37,333	38,968	38,594	38,945	37,382
Scientific and professional	17,249	17,896	20,341	20,701	19,844
Technical	8,897	9,577	8,255	8,168	7,977
Other	11,187	11,495	9,998	10,076	9,562
Total research and development personnel	16,272	17,272	17,082	16,876	16,399
Scientific and professional	7,319	7,667	8,010	7,858	7,663
Technical	4,705	5,166	4,900	4,878	4,769
Other	4,248	4,439	4,172	4,140	3,967
Total related scientific activities personnel	21,061	21,696	21,512	22,069	20,983
Scientific and professional	9,930	10,229	12,331	12,844	12,180
Technical	4,192	4,411	3,355	3,289	3,208
Other	6,939	7,056	5,826	5,936	5,594

Note(s): Personnel counts are reported as full-time equivalents. Due to rounding, components may not add to the totals.

Table 4-6

Federal personnel — Engaged in science and technology activities in the natural sciences and engineering, by category and activity

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	number				
Total science and technology personnel	25,977	27,340	27,073	26,883	26,480
Scientific and professional	12,475	12,884	12,888	12,899	12,836
Technical	7,054	7,609	7,404	7,300	7,161
Other	6,449	6,847	6,781	6,684	6,483
Total research and development personnel	15,003	15,725	15,328	15,157	14,795
Scientific and professional	6,593	6,854	6,777	6,669	6,554
Technical	4,612	5,013	4,814	4,792	4,688
Other	3,798	3,859	3,736	3,697	3,554
Total related scientific activities personnel	10,975	11,615	11,745	11,726	11,685
Scientific and professional	5,882	6,030	6,111	6,230	6,282
Technical	2,442	2,596	2,589	2,509	2,474
Other	2,651	2,988	3,045	2,987	2,929

Note(s): Personnel counts are reported as full-time equivalents. Due to rounding, components may not add to the totals.

Table 4-7

Federal personnel — Engaged in science and technology activities in the social sciences and humanities, by category and activity

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	number				
Total science and technology personnel	11,356	11,628	11,521	12,062	10,902
Scientific and professional	4,774	5,012	7,453	7,803	7,008
Technical	1,844	1,967	851	867	816
Other	4,738	4,648	3,217	3,392	3,079
Total research and development personnel	1,269	1,546	1,755	1,719	1,604
Scientific and professional	726	814	1,233	1,189	1,110
Technical	93	153	86	87	81
Other	450	580	437	444	414
Total related scientific activities personnel	10,087	10,081	9,766	10,343	9,298
Scientific and professional	4,048	4,198	6,220	6,614	5,898
Technical	1,750	1,815	765	781	735
Other	4,288	4,068	2,781	2,948	2,665

Note(s): Personnel counts are reported as full-time equivalents. Due to rounding, components may not add to the totals.

Table 4-8

Federal personnel — Engaged in science and technology activities, by type of science, activity, category and by provinces and territories, 2010/2011

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T., N.W.T. and Nvt.	National Capital Region	Canada
	number												
Total sciences													
Scientific and professional personnel													
Science and technology	204	56	606	283	1,740	2,346	522	255	610	809	212	12,699	20,341
Research and development	79	37	226	183	1,038	1,803	275	194	359	350	18	3,448	8,010
Related scientific activities	125	19	380	100	702	542	247	62	251	459	194	9,251	12,331
Total personnel													
Science and technology	451	137	1,323	491	3,693	5,269	1,459	702	1,379	1,724	362	21,606	38,594
Research and development	177	98	544	313	2,112	3,843	744	503	861	706	31	7,152	17,082
Related scientific activities	273	39	780	178	1,582	1,426	715	199	518	1,018	330	14,454	21,512
Natural sciences													
Scientific and professional personnel													
Science and technology	189	46	557	215	1,552	2,161	469	251	563	759	206	5,920	12,888
Research and development	79	37	224	125	983	1,743	252	194	357	348	17	2,418	6,777
Related scientific activities	111	9	333	91	569	419	216	57	206	411	188	3,502	6,111
Total personnel													
Science and technology	413	120	1,168	413	3,348	4,873	1,318	685	1,280	1,630	336	11,491	27,073
Research and development	177	98	540	255	2,052	3,777	720	503	858	703	30	5,615	15,328
Related scientific activities	236	22	628	159	1,295	1,096	597	182	422	927	306	5,876	11,745
Social sciences													
Scientific and professional personnel													
Science and technology	15	10	50	68	188	184	54	4	46	49	6	6,779	7,453
Research and development	0	0	2	58	55	61	23	0	1	2	1	1,030	1,233
Related scientific activities	15	10	47	10	133	124	31	4	45	48	6	5,749	6,220
Total personnel													
Science and technology	37	17	155	78	346	397	141	17	99	94	26	10,115	11,521
Research and development	0	0	3	58	59	66	24	0	3	3	1	1,537	1,755
Related scientific activities	37	17	152	19	286	330	118	17	96	91	25	8,578	9,766

Note(s): Quebec and Ontario figures exclude federal government full-time equivalents employed in the National Capital Region. Due to rounding, components may not add to the totals.

Table 4-9

Federal personnel — Engaged in science and technology activities, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ¹	2011/2012 ¹	2012/2013 ^P
	number				
Total	37,333	38,968	38,594	38,945	37,382
Agriculture and Agri-Food Canada	2,190	2,387	2,422	2,431	2,252
Atomic Energy of Canada Limited	2,061	2,422	2,372	2,472	2,422
Environment Canada	3,453	3,640	3,635	3,438	3,284
Fisheries and Oceans Canada	1,861	1,851	1,851	1,805	1,788
Health Canada	3,078	3,138	3,074	3,269	3,408
Industry Canada	956	1,034	1,029	988	977
National Defence	1,879	2,130	2,250	2,147	2,064
National Research Council Canada	4,436	4,644	4,365	4,092	4,092
Natural Resources Canada	3,052	3,024	2,760	2,886	2,867
Statistics Canada	5,652	5,545	5,691	6,424 ¹	5,353
Total of major departments and agencies	28,618	29,815	29,449	29,951	28,505
Other	8,715	9,152	9,145	8,994	8,877

1. Increase in full-time equivalent (FTE) figures related to the conduct of the 2011 Censuses of Population and Agriculture.

Note(s): Personnel counts are reported as full-time equivalents. The major departments and agencies are those who contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 4-10

Federal personnel — Scientific and professional engaged in science and technology activities, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	number				
Total	17,249	17,896	20,341	20,701	19,844
Agriculture and Agri-Food Canada	775	786	782	822	791
Atomic Energy of Canada Limited	845	993	981	1,000	980
Environment Canada	1,688	1,780	1,777	1,681	1,605
Fisheries and Oceans Canada	822	794	823	804	800
Health Canada	2,236	2,151	2,049	2,201	2,321
Industry Canada	663	723	732	702	700
National Defence	896	1,081	1,173	1,074	1,040
National Research Council Canada	1,732	1,857	1,816	1,717	1,717
Natural Resources Canada	1,924	1,878	1,737	1,810	1,787
Statistics Canada	1,511	1,502	3,949 ¹	4,458 ¹	3,714 ¹
Total of major departments and agencies	13,090	13,544	15,819	16,269	15,455
Other	4,158	4,352	4,522	4,432	4,388

1. Increase in number of scientific and professional personnel is due to reclassification of some full-time equivalents.

Note(s): Personnel counts are reported as full-time equivalents. The major departments and agencies are those who contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 4-11

Federal personnel — Technical engaged in science and technology activities, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	number				
Total	8,897	9,577	8,255	8,168	7,977
Agriculture and Agri-Food Canada	907	976	976	952	896
Atomic Energy of Canada Limited	1,030	1,211	1,183	1,222	1,192
Environment Canada	1,030	1,085	1,084	1,026	980
Fisheries and Oceans Canada	695	711	683	665	657
Health Canada	274	338	314	305	314
Industry Canada	58	59	57	55	71
National Defence	472	459	471	482	461
National Research Council Canada	1,125	1,192	1,151	1,081	1,081
Natural Resources Canada	766	748	643	688	698
Statistics Canada	1,255	1,235	247 ¹	278 ¹	232 ¹
Total of major departments and agencies	7,612	8,013	6,807	6,755	6,582
Other	1,286	1,564	1,448	1,413	1,395

1. Decrease in the number of Technical personnel is due to the reclassification of some full-time equivalents.

Note(s): Personnel counts are reported as full-time equivalents. The major departments and agencies are those who contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 4-12

Federal personnel — Other personnel engaged in science and technology activities, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	number				
Total	11,187	11,495	9,998	10,076	9,562
Agriculture and Agri-Food Canada	508	626	664	656	564
Atomic Energy of Canada Limited	185	218	208	250	250
Environment Canada	735	775	774	731	699
Fisheries and Oceans Canada	345	347	345	336	331
Health Canada	568	650	712	762	773
Industry Canada	235	253	239	231	205
National Defence	512	589	606	591	563
National Research Council Canada	1,579	1,596	1,398	1,294	1,294
Natural Resources Canada	362	398	381	388	382
Statistics Canada	2,887	2,808	1,496 ¹	1,688 ¹	1,407 ¹
Total of major departments and agencies	7,916	8,259	6,822	6,927	6,468
Other	3,271	3,236	3,176	3,149	3,094

1. Decrease in the number of Other personnel is due to the reclassification of some full-time equivalents.

Note(s): Personnel counts are reported as full-time equivalents. The major departments and agencies are those who contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 4-13

Federal personnel — Engaged in research and development activities, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	number				
Total	16,272	17,272	17,082	16,876	16,399
Agriculture and Agri-Food Canada	1,982	2,148	2,134	2,118	1,966
Atomic Energy of Canada Limited	2,061	2,422	2,372	2,472	2,422
Canadian Institutes of Health Research	393	380	413	409	409
Environment Canada	966	1,018	1,017	961	917
Health Canada	458	440	453	462	450
National Defence	1,678	1,887	1,966	1,861	1,791
National Research Council Canada	3,989	4,249	4,114	3,880	3,880
Natural Resources Canada	1,411	1,357	1,247	1,297	1,303
Statistics Canada	426	461	577	651	542
Total of major departments and agencies	13,363	14,362	14,293	14,111	13,679
Other	2,909	2,909	2,790	2,765	2,720

Note(s): Personnel counts are reported as full-time equivalents. The major departments and agencies are those who contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 4-14

Federal personnel — Engaged in related scientific activities, by major departments and agencies

	2008/2009	2009/2010	2010/2011 ^r	2011/2012 ^r	2012/2013 ^p
	number				
Total	21,061	21,696	21,512	22,069	20,983
Canadian Museum of Civilization	390	333	370	385	385
Canadian Space Agency	31	410 ¹	424	414	400
Environment Canada	2,487	2,622	2,618	2,477	2,367
Fisheries and Oceans Canada	1,777	1,765	1,767	1,724	1,708
Health Canada	2,620	2,698	2,621	2,806	2,958
Industry Canada	625	690	688	658	671
Library and Archives Canada	885	901	883	862	862
Natural Resources Canada	1,641	1,667	1,514	1,589	1,564
Parks Canada	597	626	613	589	589
Public Health Agency of Canada	593	539	727	741	739
Statistics Canada	5,226	5,084	5,114	5,773 ²	4,810
Total of major departments and agencies	16,872	17,334	17,339	18,019	17,054
Other	4,190	4,362	4,173	4,050	3,929

1. Increase in personnel in related scientific activities is due to the reclassification of certain activities.

2. Increase in full-time equivalent (FTE) figures related to the conduct of the 2011 Censuses of Population and Agriculture.

Note(s): Personnel counts are reported as full-time equivalents. The major departments and agencies are those who contributed 2% or more to the total 2010/2011 expenditures. Due to rounding, components may not add to the totals.

Table 5-1

Federal expenditures by provinces and territories — On science and technology

	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011
	millions of dollars				
Total	9,633	10,176	10,573	11,613	12,013
Canada	9,332	9,730	10,017	11,060	11,478
Newfoundland and Labrador	119	126	118	138	127
Prince Edward Island	47	41	53	45	49
Nova Scotia	303	307	317	377	337
New Brunswick	107	130	111	151	131
Quebec ¹	1,468	1,517	1,623	1,751 ²	1,825
Ontario ¹	2,045	2,382	2,548	2,992	3,174
Manitoba	235	266	306	368	355
Saskatchewan	208	193	216	249	248
Alberta	499	471	515	613	691
British Columbia	681	822	730	920	924
Yukon Territory, Northwest Territories and Nunavut	42	42	51	62	104
National Capital Region ³	2,989	2,922	3,104	3,191 ²	3,305
Unallocated (within Canada)	587	511	324	201	208
Foreign (outside Canada)	301	445	556	553	535

1. Includes the extramural expenditures of the National Capital Region.

2. This value has been revised due to a redistribution of personnel from the National Capital Region (Quebec) to the National Capital Region (Ontario) and Quebec (excluding the National Capital Region).

3. Federal intramural expenditures only.

Note(s): Due to rounding, components may not add to the totals.

Table 5-2

Federal expenditures by provinces and territories — On science and technology, by type of science and performing sector, 2010/2011

	Intramural	Business enterprises	Higher education	Other performers ¹	Total
millions of dollars					
Total sciences	6,059	1,201	3,329	1,424	12,013
Canada	6,059	1,201	3,329	889	11,478
Newfoundland and Labrador	58	19	33	17	127
Prince Edward Island	17	15	13	3	49
Nova Scotia	192	34	92	19	337
New Brunswick	59	22	39	11	131
Quebec ²	500	395	781	150	1,825
Ontario ²	1,117	347	1,273	437	3,174
Manitoba	218	15	71	50	355
Saskatchewan	101	14	110	23	248
Alberta	188	145	302	56	691
British Columbia	239	137	481	67	924
Yukon Territory, Northwest Territories and Nunavut	64	1	10	30	104
National Capital Region ³	3,305	...	...	...	3,305
Unallocated (within Canada)	...	56	125	27	208
Foreign (outside Canada)	...	...	...	535	535
Natural sciences	4,483	1,125	2,583	969	9,161
Canada	4,483	1,125	2,583	650	8,842
Newfoundland and Labrador	55	19	24	14	112
Prince Edward Island	15	15	11	2	44
Nova Scotia	163	34	67	18	281
New Brunswick	54	21	29	10	114
Quebec ²	441	387	597	127	1,552
Ontario ²	1,057	303	952	262	2,574
Manitoba	198	14	52	44	308
Saskatchewan	95	14	91	21	221
Alberta	170	138	242	52	602
British Columbia	226	134	386	59	805
Yukon Territory, Northwest Territories and Nunavut	58	1	10	27	96
National Capital Region ³	1,950	...	...	...	1,950
Unallocated (within Canada)	...	46	123	13	182
Foreign (outside Canada)	...	...	...	319	319
Social sciences	1,576	75	746	455	2,852
Canada	1,576	75	746	239	2,637
Newfoundland and Labrador	3	0 ^s	9	3	15
Prince Edward Island	2	0 ^s	2	1	6
Nova Scotia	30	1	25	1	56
New Brunswick	5	1	10	1	17
Quebec ²	59	8	183	23	273
Ontario ²	60	44	321	175	600
Manitoba	21	1	18	6	46
Saskatchewan	6	0 ^s	19	2	27
Alberta	18	7	60	4	89
British Columbia	13	3	95	8	119
Yukon Territory, Northwest Territories and Nunavut	5	0 ^s	0 ^s	3	8
National Capital Region ³	1,356	...	...	...	1,356
Unallocated (within Canada)	...	10	2	13	25
Foreign (outside Canada)	...	...	...	216	216

1. Includes Canadian non-profit institutions, provincial and municipal governments, foreign performers and other Canadian performers.

2. Includes the extramural expenditures of the National Capital Region.

3. Federal intramural expenditures only.

Note(s): Due to rounding, components may not add to the totals.

Table 5-3

Federal expenditures by provinces and territories — On research and development, by type of science and performing sector, 2010/2011

	Intramural	Business enterprises	Higher education	Other performers ¹	Total
millions of dollars					
Total sciences	3,007	968	2,983	868	7,826
Canada	3,007	968	2,983	682	7,640
Newfoundland and Labrador	22	18	29	11	80
Prince Edward Island	12	15	13	2	42
Nova Scotia	69	31	82	16	199
New Brunswick	35	21	36	8	101
Quebec ²	244	344	714	115	1,416
Ontario ²	911	242	1,107	332	2,592
Manitoba	107	13	64	41	226
Saskatchewan	67	10	103	21	202
Alberta	106	131	276	48	561
British Columbia	93	124	429	53	699
Yukon Territory, Northwest Territories and Nunavut	6	1	9	26	42
National Capital Region ³	1,334	...	...	...	1,334
Unallocated (within Canada)	...	18	121	8	147
Foreign (outside Canada)	...	...	...	186	186
Natural sciences	2,726	965	2,395	678	6,764
Canada	2,726	965	2,395	554	6,640
Newfoundland and Labrador	22	18	23	9	72
Prince Edward Island	12	15	11	2	40
Nova Scotia	67	31	61	16	175
New Brunswick	33	21	27	8	89
Quebec ²	235	342	560	108	1,246
Ontario ²	900	241	871	224	2,237
Manitoba	102	12	49	39	203
Saskatchewan	67	10	86	19	183
Alberta	105	131	225	47	507
British Columbia	92	123	353	50	619
Yukon Territory, Northwest Territories and Nunavut	6	1	9	24	40
National Capital Region ³	1,085	...	...	...	1,085
Unallocated (within Canada)	...	18	121	7	146
Foreign (outside Canada)	...	...	...	124	124
Social sciences	280	3	588	190	1,062
Canada	280	3	588	128	1,000
Newfoundland and Labrador	0	0	7	2	9
Prince Edward Island	0 ^s	0	2	1	3
Nova Scotia	2	0 ^s	21	0 ^s	24
New Brunswick	3	0 ^s	9	0 ^s	12
Quebec ²	9	1	153	7	170
Ontario ²	10	1	236	108	355
Manitoba	5	0 ^s	15	2	23
Saskatchewan	0 ^s	0 ^s	17	2	19
Alberta	2	0 ^s	51	1	54
British Columbia	1	0 ^s	76	3	80
Yukon Territory, Northwest Territories and Nunavut	0 ^s	0	0 ^s	2	2
National Capital Region ³	249	...	...	...	249
Unallocated (within Canada)	...	0 ^s	0 ^s	1	1
Foreign (outside Canada)	...	...	...	62	62

1. Includes Canadian non-profit institutions, provincial and municipal governments, foreign performers and other Canadian performers.

2. Includes the extramural expenditures of the National Capital Region.

3. Federal intramural expenditures only.

Note(s): Due to rounding, components may not add to the totals.

Table 5-4

Federal expenditures by provinces and territories — On related scientific activities, by type of science and performing sector, 2010/2011

	Intramural	Business enterprises	Higher education	Other performers ¹	Total
millions of dollars					
Total sciences	3,052	233	346	556	4,187
Canada	3,052	233	346	207	3,838
Newfoundland and Labrador	36	1	4	6	46
Prince Edward Island	5	0 ^s	0 ^s	1	7
Nova Scotia	123	3	9	3	138
New Brunswick	23	1	4	3	30
Quebec ²	256	51	67	35	409
Ontario ²	207	105	166	105	583
Manitoba	111	3	6	9	129
Saskatchewan	34	4	6	2	47
Alberta	82	13	26	8	130
British Columbia	146	13	52	13	225
Yukon Territory, Northwest Territories and Nunavut	58	0 ^s	1	3	62
National Capital Region ³	1,972	...	...	...	1,972
Unallocated (within Canada)	...	38	4	19	60
Foreign (outside Canada)	...	...	...	349	349
Natural sciences	1,757	161	188	291	2,397
Canada	1,757	161	188	96	2,201
Newfoundland and Labrador	33	0 ^s	2	5	40
Prince Edward Island	3	0 ^s	0 ^s	1	4
Nova Scotia	96	2	6	2	107
New Brunswick	21	0 ^s	2	2	25
Quebec ²	206	45	37	19	306
Ontario ²	157	62	80	38	337
Manitoba	96	2	3	5	106
Saskatchewan	28	4	5	2	38
Alberta	66	7	17	5	95
British Columbia	134	11	33	8	186
Yukon Territory, Northwest Territories and Nunavut	52	0 ^s	1	3	56
National Capital Region ³	865	...	...	...	865
Unallocated (within Canada)	...	28	2	6	36
Foreign (outside Canada)	...	...	...	195	195
Social sciences	1,296	72	158	264	1,790
Canada	1,296	72	158	111	1,637
Newfoundland and Labrador	3	0 ^s	2	1	6
Prince Edward Island	2	0 ^s	0 ^s	0 ^s	3
Nova Scotia	27	1	4	0 ^s	32
New Brunswick	2	1	1	1	5
Quebec ²	50	7	30	16	103
Ontario ²	50	43	86	67	245
Manitoba	15	1	3	4	23
Saskatchewan	6	0 ^s	2	0 ^s	8
Alberta	17	7	9	3	35
British Columbia	12	3	19	5	39
Yukon Territory, Northwest Territories and Nunavut	5	0 ^s	0 ^s	1	6
National Capital Region ³	1,107	...	...	...	1,107
Unallocated (within Canada)	...	10	2	12	24
Foreign (outside Canada)	...	...	...	153	153

1. Includes Canadian non-profit institutions, provincial and municipal governments, foreign performers and other Canadian performers.

2. Includes the extramural expenditures of the National Capital Region.

3. Federal intramural expenditures only.

Note(s): Due to rounding, components may not add to the totals.

Table 5-5

Federal expenditures by provinces and territories — Extramural expenditures on science and technology, by type of science and activity, 2010/2011

	N.L.	P.E.I.	N.S.	N.B.	Que. ¹	Ont. ¹	Man.	Sask.	Alta.	B.C.	Y.T., N.W.T. and Nvt.	Unallocated within Canada	Canada	Outside of Canada	Total
millions of dollars															
Total sciences															
Total science and technology	69	32	145	72	1,325	2,057	136	147	502	685	40	208	5,420	535	5,955
Grants and contributions	64	31	137	70	1,264	1,829	131	139	487	598	39	130	4,919	508	5,428
Contracts	5	1	8	2	61	228	5	8	16	87	1	77	500	27	527
Total research and development	58	30	130	65	1,172	1,681	118	134	455	606	36	147	4,634	186	4,820
Grants and contributions	58	30	125	64	1,138	1,570	117	132	445	533	36	119	4,367	171	4,539
Contracts	1	0 ^s	5	1	34	111	1	2	10	73	0 ^s	28	267	15	281
Total related scientific activities	11	2	15	7	153	376	18	13	48	79	4	60	786	349	1,135
Grants and contributions	7	1	11	6	126	259	15	7	42	65	3	11	552	337	889
Contracts	4	1	4	1	27	117	3	6	6	14	1	49	234	12	245
Natural sciences															
Total science and technology	57	29	119	60	1,111	1,517	110	126	432	578	37	182	4,359	319	4,678
Grants and contributions	52	28	111	58	1,057	1,339	107	118	417	494	36	122	3,939	295	4,234
Contracts	5	1	8	2	55	178	4	8	14	84	1	60	420	24	445
Total research and development	50	27	108	56	1,011	1,337	101	116	402	527	34	146	3,914	124	4,038
Grants and contributions	49	27	104	55	978	1,227	99	113	392	455	34	118	3,652	110	3,762
Contracts	1	0 ^s	5	1	32	110	1	2	10	72	0 ^s	28	263	14	277
Total related scientific activities	7	1	10	4	100	180	10	11	29	51	4	36	445	195	640
Grants and contributions	3	1	7	3	78	112	7	5	25	39	2	4	287	185	472
Contracts	4	1	3	1	22	68	3	6	4	12	1	33	158	10	168
Social sciences															
Total science and technology	12	3	26	12	214	540	26	21	71	106	3	25	1,061	216	1,276
Grants and contributions	12	3	26	12	208	490	25	21	69	104	3	9	981	213	1,194
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	7	50	1	0 ^s	2	2	0 ^s	17	80	2	82
Total research and development	9	3	22	9	161	344	18	19	52	79	2	1	719	62	782
Grants and contributions	9	3	22	9	160	343	17	19	52	79	2	1	715	62	777
Contracts	0 ^s	0	0 ^s	0 ^s	1	1	0 ^s	0 ^s	0 ^s	0 ^s	0	0 ^s	4	1	5
Total related scientific activities	3	1	5	3	53	196	8	2	18	27	1	24	341	153	495
Grants and contributions	3	0 ^s	4	3	48	147	7	2	17	25	1	7	265	152	417
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	5	49	1	0 ^s	1	2	0 ^s	17	76	2	77

1. Includes the extramural expenditures of the National Capital Region.

Note(s): Due to rounding, components may not add to the totals.

Table 5-6

Federal expenditures by provinces and territories — Extramural expenditures in the business enterprise sector on science and technology, by type of science and activity, 2010/2011

	N.L.	P.E.I.	N.S.	N.B.	Que. ¹	Ont. ¹	Man.	Sask.	Alta.	B.C.	Y.T., N.W.T. and Nvt.	Unallocated within Canada	Canada
millions of dollars													
Total sciences													
Total science and technology	19	15	34	22	395	347	15	14	145	137	1	56	1,201
Grants and contributions	18	15	29	22	342	146	12	10	138	60	1	1	792
Contracts	1	0 ^s	5	1	53	201	4	4	6	77	0 ^s	55	408
Total research and development	18	15	31	21	344	242	13	10	131	124	1	18	968
Grants and contributions	18	15	29	21	314	140	11	10	128	54	1	0 ^s	739
Contracts	1	0 ^s	3	0 ^s	30	103	1	0 ^s	4	70	0	18	229
Total related scientific activities	1	0^s	3	1	51	105	3	4	13	13	0^s	38	233
Grants and contributions	0 ^s	0 ^s	1	1	28	6	0 ^s	0 ^s	11	6	0 ^s	1	54
Contracts	0 ^s	0 ^s	2	0 ^s	23	99	3	4	3	7	0 ^s	37	179
Natural sciences													
Total science and technology	19	15	34	21	387	303	14	14	138	134	1	46	1,125
Grants and contributions	18	15	29	21	340	144	11	10	133	59	1	0 ^s	780
Contracts	1	0 ^s	5	0 ^s	47	159	3	4	5	75	0 ^s	46	346
Total research and development	18	15	31	21	342	241	12	10	131	123	1	18	965
Grants and contributions	18	15	29	21	314	139	11	10	128	54	1	0 ^s	738
Contracts	1	0 ^s	3	0 ^s	29	102	1	0 ^s	3	69	0	18	226
Total related scientific activities	0^s	0^s	2	0^s	45	62	2	4	7	11	0^s	28	161
Grants and contributions	0 ^s	0 ^s	0 ^s	0 ^s	26	5	0 ^s	0 ^s	5	5	0 ^s	0 ^s	41
Contracts	0 ^s	0 ^s	2	0 ^s	19	57	2	4	1	6	0 ^s	28	119
Social sciences													
Total science and technology	0^s	0^s	1	1	8	44	1	0^s	7	3	0^s	10	75
Grants and contributions	0 ^s	0 ^s	0 ^s	0 ^s	2	2	0 ^s	0 ^s	6	1	0 ^s	1	13
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	6	42	1	0 ^s	1	2	0	10	63
Total research and development	0	0	0^s	0^s	1	1	0^s	0^s	0^s	0^s	0	0^s	3
Grants and contributions	0	0	0	0	0 ^s	0 ^s	0	0 ^s	0 ^s	0	0	0 ^s	0 ^s
Contracts	0	0	0 ^s	0 ^s	1	1	0 ^s	0	0 ^s	0 ^s	0	0 ^s	3
Total related scientific activities	0^s	0^s	1	1	7	43	1	0^s	7	3	0^s	10	72
Grants and contributions	0 ^s	0 ^s	0 ^s	0 ^s	2	2	0 ^s	0 ^s	6	1	0 ^s	1	12
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	5	42	1	0 ^s	1	1	0	9	60

1. Includes the extramural expenditures of the National Capital Region.

Note(s): Due to rounding, components may not add to the totals.

Table 5-7

Federal expenditures by provinces and territories — Extramural expenditures in the higher education sector on science and technology, by type of science and activity, 2010/2011

	N.L.	P.E.I.	N.S.	N.B.	Que. ¹	Ont. ¹	Man.	Sask.	Alta.	B.C.	Y.T., N.W.T. and Nvt.	Unallocated within Canada	Canada
millions of dollars													
Total sciences													
Total science and technology	33	13	92	39	781	1,273	71	110	302	481	10	125	3,329
Grants and contributions	33	13	91	38	776	1,258	70	107	294	478	10	120	3,288
Contracts	0 ^s	0 ^s	1	1	5	15	0 ^s	3	8	4	0	5	42
Total research and development	29	13	82	36	714	1,107	64	103	276	429	9	121	2,983
Grants and contributions	29	13	82	35	711	1,100	64	102	270	427	9	117	2,958
Contracts	0 ^s	0 ^s	0 ^s	1	3	7	0 ^s	2	6	2	0	4	25
Total related scientific activities	4	0^s	9	4	67	166	6	6	26	52	1	4	346
Grants and contributions	4	0 ^s	9	3	65	158	6	5	24	51	1	3	330
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	2	8	0 ^s	1	2	1	0	1	17
Natural sciences													
Total science and technology	24	11	67	29	597	952	52	91	242	386	10	123	2,583
Grants and contributions	24	11	66	28	593	940	52	88	234	383	10	118	2,546
Contracts	0 ^s	0 ^s	1	1	4	12	0 ^s	3	8	3	0	5	37
Total research and development	23	11	61	27	560	871	49	86	225	353	9	121	2,395
Grants and contributions	23	11	60	26	558	864	49	85	219	351	9	117	2,371
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	3	7	0 ^s	2	6	2	0	4	25
Total related scientific activities	2	0^s	6	2	37	80	3	5	17	33	1	2	188
Grants and contributions	2	0 ^s	6	2	35	75	3	3	15	32	1	2	175
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	2	5	0 ^s	1	2	1	0	1	13
Social sciences													
Total science and technology	9	2	25	10	183	321	18	19	60	95	0^s	2	746
Grants and contributions	9	2	25	10	183	318	18	19	60	95	0 ^s	2	742
Contracts	0	0	0 ^s	0 ^s	0 ^s	3	0 ^s	0 ^s	0 ^s	0 ^s	0	0 ^s	4
Total research and development	7	2	21	9	153	236	15	17	51	76	0^s	0^s	588
Grants and contributions	7	2	21	9	153	235	15	17	51	76	0 ^s	0 ^s	587
Contracts	0	0	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	0	0 ^s	1
Total related scientific activities	2	0^s	4	1	30	86	3	2	9	19	0^s	2	158
Grants and contributions	2	0 ^s	3	1	30	83	3	2	9	19	0 ^s	1	154
Contracts	0	0	0 ^s	0 ^s	0 ^s	3	0 ^s	0 ^s	0 ^s	0 ^s	0	0 ^s	4

1. Includes the extramural expenditures of the National Capital Region.

Note(s): Due to rounding, components may not add to the totals.

Table 5-8

Federal expenditures by provinces and territories — Extramural expenditures in the other¹ Canadian performer sector on science and technology, by type of science and activity, 2010/2011

	N.L.	P.E.I.	N.S.	N.B.	Que. ²	Ont. ²	Man.	Sask.	Alta.	B.C.	Y.T., N.W.T. and Nvt.	Unallocated within Canada	Canada
millions of dollars													
Total sciences													
Total science and technology	17	3	19	11	150	437	50	23	56	67	30	27	889
Grants and contributions	14	3	17	10	147	425	49	22	54	60	29	10	839
Contracts	4	0 ^s	3	1	3	12	1	1	1	6	1	17	50
Total research and development	11	2	16	8	115	332	41	21	48	53	26	8	682
Grants and contributions	11	2	15	8	114	330	41	21	47	53	26	2	670
Contracts	0 ^s	0 ^s	2	0 ^s	1	2	0 ^s	0 ^s	1	1	0 ^s	6	12
Total related scientific activities	6	1	3	3	35	105	9	2	8	13	3	19	207
Grants and contributions	3	1	2	2	33	94	8	2	7	8	2	7	169
Contracts	4	0 ^s	1	1	2	11	1	1	1	6	1	11	38
Natural sciences													
Total science and technology	14	2	18	10	127	262	44	21	52	59	27	13	650
Grants and contributions	11	2	16	9	124	255	43	20	51	53	26	3	613
Contracts	4	0 ^s	3	1	3	7	1	1	1	6	1	10	37
Total research and development	9	2	16	8	108	224	39	19	47	50	24	7	554
Grants and contributions	9	2	14	8	107	223	39	19	46	50	24	1	543
Contracts	0 ^s	0 ^s	2	0 ^s	1	1	0 ^s	0 ^s	1	1	0 ^s	6	12
Total related scientific activities	5	1	2	2	19	38	5	2	5	8	3	6	96
Grants and contributions	2	0 ^s	1	1	17	32	4	1	5	3	2	2	70
Contracts	4	0 ^s	1	1	2	6	1	1	1	5	1	4	26
Social sciences													
Total science and technology	3	1	1	1	23	175	6	2	4	8	3	13	239
Grants and contributions	3	1	1	1	23	170	6	2	3	8	3	6	227
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	5	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	7	13
Total research and development	2	1	0^s	0^s	7	108	2	2	1	3	2	1	128
Grants and contributions	2	1	0 ^s	0 ^s	7	107	2	2	1	3	2	1	128
Contracts	0 ^s	0	0	0	0 ^s	0 ^s	0 ^s	0	0 ^s	0 ^s	0	0 ^s	1
Total related scientific activities	1	0^s	0^s	1	16	67	4	0^s	3	5	1	12	111
Grants and contributions	1	0 ^s	0 ^s	1	16	63	4	0 ^s	3	5	1	5	99
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	4	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	7	12

1. Includes Canadian non-profit institutions, provincial and municipal governments and other Canadian performers.

2. Includes the extramural expenditures of the National Capital Region.

Note(s): Due to rounding, components may not add to the totals.

Table 6-1
Federal expenditures by socio-economic objectives — On science and technology

	2008/2009		2009/2010		2010/2011	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
millions of dollars						
Science and technology expenditures	5,134	5,075	5,440	5,781	5,643	5,955
Exploration and exploitation of the Earth	409	90	445	107	413	101
Infrastructure and general planning of land use						
Transport	170	50	164	67	167	69
Telecommunication	51	38	51	46	48	53
Other	150	36	155	72	164	90
Control and care of the environment	531	359	534	360	514	358
Protection and improvement of human health	587	1,641	656	1,651	657	1,750
Production, distribution and rational utilization of energy	492	148	577	193	744	304
Agricultural production and technology						
Agriculture	442	208	485	313	465	268
Fishing	147	40	138	40	142	45
Forestry	91	74	103	96	102	158
Industrial production and technology	280	904	317	893	295	852
Social structures and relationships	1,065	399	1,031	422	1,082	420
Exploration and exploitation of space	141	218	148	257	142	282
Non-oriented research	292	576	342	1,050	328	1,006
Other civil research	28	132	35	91	43	95
Defence	257	161	257	122	335	103
Other	0	0	0	0	0	0

1. Non-program (indirect) costs are excluded.

Note(s): Due to rounding, components may not add to the totals.

Table 6-2
Federal expenditures by socio-economic objectives — On research and development

	2008/2009		2009/2010		2010/2011	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
millions of dollars						
Science and technology expenditures	2,477	4,056	2,628	4,694	2,863	4,820
Exploration and exploitation of the Earth	87	64	95	87	90	77
Infrastructure and general planning of land use						
Transport	61	40	63	55	64	56
Telecommunication	48	37	48	43	46	52
Other	44	31	44	32	44	76
Control and care of the environment	205	217	207	223	200	227
Protection and improvement of human health	243	1,406	274	1,443	280	1,514
Production, distribution and rational utilization of energy	458	126	544	164	717	269
Agricultural production and technology						
Agriculture	348	137	390	213	360	179
Fishing	8	20	8	26	7	29
Forestry	64	60	66	62	70	90
Industrial production and technology	195	853	227	843	206	801
Social structures and relationships	124	224	106	232	156	222
Exploration and exploitation of space	129	213	81	197	78	228
Non-oriented research	221	533	254	990	247	938
Other civil research	16	9	23	5	21	4
Defence	227	87	198	79	276	57
Other	0	0	0	0	0	0

1. Non-program (indirect) costs are excluded.

Note(s): Due to rounding, components may not add to the totals.

Table 6-3

Federal expenditures by socio-economic objectives — On related scientific activities

	2008/2009		2009/2010		2010/2011	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
	millions of dollars					
Science and technology expenditures	2,657	1,019	2,812	1,087	2,780	1,135
Exploration and exploitation of the Earth	322	26	350	20	323	23
Infrastructure and general planning of land use						
Transport	109	10	102	11	103	13
Telecommunication	4	2	3	2	2	1
Other	106	5	111	41	120	14
Control and care of the environment	325	143	327	137	314	131
Protection and improvement of human health	344	235	382	208	377	236
Production, distribution and rational utilization of energy	35	22	33	29	26	34
Agricultural production and technology						
Agriculture	94	72	96	100	105	90
Fishing	140	20	131	14	135	16
Forestry	27	14	37	34	32	68
Industrial production and technology	86	52	90	51	88	51
Social structures and relationships	941	175	925	190	926	198
Exploration and exploitation of space	12	4	67	61	65	54
Non-oriented research	71	43	88	60	81	68
Other civil research	13	124	12	86	22	91
Defence	30	74	59	44	59	46
Other	0	0	0	0	0	0

1. Non-program (indirect) costs are excluded.

Note(s): Due to rounding, components may not add to the totals.

Bibliography

Organization for Economic Cooperation and Development (OECD). 2002. *Frascati Manual* (6th ed.). OECD: Paris.

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Methodology

The Federal Government is a principal funder of science and technology in Canada. This report presents information on the disposition of monies and human resources for science and technology (S&T) by federal departments and agencies. The information has been assembled to serve as a reference document for program managers, government officials, the media and the general public. It records the allocation of S&T resources for the last five years.

The statistics are collected through the survey of Federal Science Expenditures and Personnel, which records past, current and preliminary expenditures for activities in the natural and social sciences. The survey is designed to correspond as much as possible to the system of budgetary estimates used by the federal government. This is done to ease the response burden, assist in editing and, most importantly, to produce comparable data for policy planning and program evaluation. Thus, the questionnaire covers the same time span as the estimates including: actual expenditures for the past fiscal year, e.g., 2010/2011; forecast expenditures for the current fiscal year, e.g., 2011/2012; and proposed estimates for the fiscal year, e.g., 2012/2013 (as also reported in the Public Accounts).

Sixty-seven different federal government departments and agencies either perform science and technology (S&T) activities or have a budgetary allocation to fund S&T. In addition to the expenditures attributable to program budgets, there are additional costs attributable to scientific activities which must be included if a full picture of the resources devoted to science activities is to be obtained. These include other sources of funds and other S&T costs which are defined below:

Transfers into the program from other federal government departments and agencies, net of transfers out;

Income from external sources such as industry and provincial governments;

Other S&T costs: Non-program costs (indirect costs) are costs that are not part of the budgets of scientific programs and include services provided by other departments, such as:

- accommodation by Public Works and Government Services Canada and own department;
- employer's share of health and employment insurance premiums paid by Treasury Board;
- employee compensation under Workers Compensation Acts paid by Human Resources and Social Development Canada;
- cost of legal services provided by the Department of Justice;
- cheques issue cost by Public Works and Government Services Canada.

Indirect costs are included in departmental totals; however, these costs have not been included in expenditures classified by socio-economic objective.

According to international convention, science and technology activities are divided into two fields; natural sciences and engineering (NSE) and social sciences and humanities (SSH). These fields of science are further divided into research and development (R&D) and related scientific activities (RSA). The Federal Government may choose to perform S&T in its own laboratories (intramural expenditures) or may pay another organization to perform S&T (extramural expenditures). Data are presented in this article on S&T activities funded by the federal government for R&D and RSA and distinguished by performer (that is, intramurally by the government itself or extramurally, by business enterprises (industry), higher education, provincial and municipal governments, Canadian non-profit organizations, other Canadian performers and foreign performers). Definitions of these terms are provided in the

Technical Notes section. Crown corporations which have an industrial function are not included. They are treated as commercial enterprises and the crown corporation expenditures in aggregate are included in the Statistics Canada report, Industrial Research and Development, Catalogue No. 88-202-X

Considerable effort has been expended to maintain the continuity and compatibility of the data series to permit analysis and study of the impact of scientific activities. Efforts of the departments and agencies in ensuring accurate and complete information are gratefully acknowledged.

Technical notes

Scope and limitations of the data

The expenditures data for scientific activities controlled by federal departments and agencies provided in this document correspond to the budgetary expenditures by program presented in Main Estimates for the approval of Parliament. The following kinds of non-budgetary costs or expenditures are not included:

- loans or advances to and investments in Crown Corporations; loans or advances for specific purposes to other governments and international organizations or persons or corporations in the private sector.

Reliability of the data

All the possible sources of error were examined. Definitions have been taken from a compendium of methods of error evaluation in censuses and surveys, Statistics Canada, catalogue no. 13-564E.

- A complete enumeration is carried out of all federal departments and agencies involved in scientific activities.
- Being a census, coverage and non-response are very minor causes of error.
- No imputation, coding, or sampling is done by Statistics Canada for this exercise.

Data capture

The data capture operation in a census or survey consists of converting the data received on questionnaires (e.g., respondent answers) or coding forms to a machine readable format.

All data capture for science statistics is through manual intervention, at a computer terminal.

Significant uncorrected data capture errors are unlikely because of the examination of numerous tables and listings prepared for data analysis before publication tables are created. Mistakes in expenditures due to coding error are believed to be less than 1%.

Edit

The edit procedures usually consist of:

- checking each field of every record to ascertain whether it contains a valid code or entry;
- checking codes or entries in certain predetermined combinations of fields to ascertain whether codes or entries are consistent with one another. Although there are a number of edits, all cases of failed edit checks are corrected after consideration by editors.

Definitions

Scope and limitations of the data

According to international convention, science and technology activities are divided into two fields; natural sciences and engineering (NSE) and social sciences and humanities (SSH). These fields of science are further divided into research and development (R&D) and related scientific activities (RSA). The federal government may choose to perform S&T in its own laboratories (intramural expenditures) or may pay another organization to perform S&T (extramural expenditures). Data are presented in this article on S&T activities funded by the federal government for R&D and RSA and distinguished by performer (that is, intramurally by the government itself or extramurally, by business enterprises (industry), the higher education sector, provincial and municipal governments, Canadian non-profit organizations, other performers and foreign performers).

Definitions applicable to both Natural sciences and engineering and Social science and humanities

Scientific research and experimental development (R&D)

Creative work undertaken on a systematic basis in order to increase the stock of scientific and technical knowledge and to use this knowledge in new applications.

The central characteristic of R&D is an appreciable element of novelty and of uncertainty. New knowledge, products or processes are sought. New knowledge involves the integration of newly acquired information into existing hypotheses, the formulation and testing of new hypotheses or the re-evaluation of existing observations.

An R&D project generally has three characteristics:

- a substantial element of uncertainty, novelty and innovation;
- a well-defined project design; and
- a report on the procedures and results of the projects.

Related scientific activities (RSA)

Those activities which complement and extend R&D by contributing to the generation, dissemination and application of scientific and technological knowledge.

Intramural performance

Where the science and technology (S&T) activities are managed and carried out primarily by federal government employees, they are classified as intramural S&T. Even where major components of the project are provided by outside agencies, such as computer services, laboratory construction, testing of prototype equipment, if the planning, supervision, reporting, and key operating functions are performed by federal personnel, then the activity is considered to be intramural. This also applies to S&T activities carried out by a department or agency on behalf of another federal department or agency on a cost recovery basis.

The intramural expenditures reported for scientific activities are those direct costs, including salaries, associated with scientific programs. These costs include that portion of a program's contribution to employee benefit plans (e.g., superannuation) which is applicable to the scientific personnel within the program.

Non-program ("indirect") costs, such as the value of services provided by other departments without charge, are to be excluded. Support services (i.e., administration, finance) provided by the reporting program, proportional to S&T expenditures should be included.

Extramural performance

The management and conduct of an S&T activity is entrusted to a non-federal organization. The six extramural performance sectors used in surveying S&T expenditures by the federal government are:

Business enterprise

This sector is composed of business and government enterprises, including public utilities and government-owned firms. Incorporated consultants providing scientific and engineering services are also included. Industrial research institutes located at Canadian universities are considered to be in the Higher education sector.

Higher education

This sector is composed of all universities, colleges of technology and other institutes of post-secondary education, whatever their source of finance or legal status. It also includes all research institutes, experimental stations and clinics operating under the direct control of, or administered by, or associated with, the higher education establishments.

Canadian non-profit institutions

Charitable foundations, voluntary health organizations, scientific and professional societies, and other organizations not established to earn profits comprise this sector. Canadian non-profit institutions primarily serving or controlled by another sector should be included in that sector.

Provincial and municipal governments

Departments and agencies of these governments form this sector. Government enterprises, such as provincial utilities are included in the Business enterprise sector, and hospitals in the Canadian non-profit institutions.

Foreign performers

All foreign government agencies, foreign companies (including foreign subsidiaries of Canadian firms), international organizations, non resident foreign nationals and Canadians studying or teaching abroad, are included in this sector.

Other performers

This sector includes provincial research councils, and individuals or organizations in Canada not belonging to any of the above sectors.

Type of payment

Contracts

These are payments to organizations or individuals outside the federal government for the conduct of S&T by the recipient or to provide support for the federal government's in-house S&T programs.

Grants and contributions

Awards to organizations or individuals for the conduct of S&T and intended to benefit the recipients rather than provide the program with goods, services or information.

Research fellowships

Awards to individuals for advanced research training and experience. Awards intended primarily to support the education of the recipients are reported as education support.

Socio-economic objectives

Socio-economic objectives allow departments to classify their S&T resource allocations according to the purpose for which the expenditure is intended. The objectives are listed on the questionnaire at the highest level of aggregation with sub-levels given for clarification of categories. In many cases, projects have multiple objectives and a department should assign its expenditures consistent with the stated objectives of the department. Care must be taken to avoid “double counting”.

The objectives are based on the Nomenclature for the Analysis and Comparison of Scientific Programmes and Budgets (NABS) produced by the Statistical Office of the European Communities (Eurostat).

- **Exploration and exploitation of the Earth**

Scientific activities with objectives related to the exploration of the Earth’s crust and mantle, seas, oceans and atmosphere, and scientific activities on their exploitation. It also includes climatic and meteorological research, polar exploration and hydrology.

- **Infrastructure and general planning of land use**

Scientific activities on infrastructure and land development, including research on the construction of buildings. More generally, it covers all scientific activities relating to the general planning of land-use. This includes scientific activities into protection against harmful effects in town and country planning but not scientific activities into other types of pollution.

- **Control and care of the environment**

Covers scientific activities into the control of pollution, aimed at the identification and analysis of the sources of pollution and their causes, and all pollutants, including their dispersal in the environment and the effects on man, species (fauna, flora, microorganisms) and biosphere. Development of monitoring facilities for the measurement of all kinds of pollution is included. The same is valid for the elimination and prevention of all forms of pollution in all types of environment.

- **Protection and improvement of human health**

Scientific activities aimed at protecting, promoting and restoring human health broadly interpreted to include health aspects of nutrition and food hygiene. It ranges from preventative medicine, including all aspects of medical and surgical treatment, both for individuals and groups, and the provision of hospital and home care, to social medicine and pediatric and geriatric research.

- **Production, distribution and rational utilization of energy**

Covers scientific activities into the production, storage, transportation, distribution and rational use of all forms of energy. It also includes scientific activities on processes designed to increase the efficiency of energy production and distribution, and the study of energy conservation.

- **Agricultural production and technology**

Covers all scientific activities on the promotion of agriculture, forestry, fisheries and foodstuff production. It includes: scientific research on chemical fertilizers, biocides, biological pest control and the mechanization of agriculture; research on the impact of scientific activities in the field of developing food productivity and technology.

- **Industrial production and technology**

Covers scientific activities on the improvement of industrial production and technology. It includes scientific activities on industrial products and their manufacturing processes except where they form an integral part of the pursuit of other objectives (e.g., defence, space, energy, agriculture).

- **Social structures and relationships**

Scientific activities on social objectives, as analysed in particular by social and human sciences, which have no obvious connection with other objectives. This analysis includes quantitative, qualitative, organizational and forecasting aspects of social problems.

- **Exploration and exploitation of space**

All civil space scientific activities. Corresponding scientific activities in the defence field is classified in the Defence objective. (Although civil space research is not, in general, concerned with particular objectives, it frequently has a specific goal, such as the increase of general knowledge (e.g., astronomy), or relates to particular applications (e.g., telecommunications satellites).

- **Non-oriented research**

Basic activities motivated by scientific curiosity with the objective of increasing scientific knowledge. It also includes funding used to support postgraduate studies and fellowships.

- **Other civil research**

Civil scientific activities which cannot (yet) be classified to a particular objective.

- **Defence**

Covers scientific activities for military purposes. It also includes basic research and nuclear and space research financed by ministries of defence. Civil scientific activities financed by ministries of defence, for example, in the fields of meteorology, telecommunications and health, should be classified in the relevant objectives.

Personnel

Intramural expenditure data should be supported by data on the personnel devoted to scientific activities by all the employees engaged in these activities.

Scientific and professional

People in jobs that require at least one academic degree or nationally recognized professional qualification, as well as those with equivalent experience.

Technical

People in jobs that require specialized vocational or technical training beyond the secondary level (e.g., community colleges and technical institutes) as well as those with experience equivalent to this training.

Other

Clerical, secretarial, administrative, operational and other support personnel.

In regard to personnel resources, there are two caveats:

- where the S&T activities are a part of the program being reported, only the auxiliary staff relevant to the S&T activities are reported on a prorated basis; and
- whenever financial and administrative support is provided from another program, that support is allocated to the S&T resources for the program being reported.

Full-time equivalent (FTE)

A measure of the time actually devoted to the conduct of scientific activities. An employee who is engaged in scientific activities for a half a year has a full-time equivalence of 0.5. Personnel data reported should be consistent with expenditure data.

Administration of extramural programs (AEP)

AEP identifies the FTEs engaged in the administration of contracts and grants and contributions for scientific activities that are to be performed outside the federal government. These FTEs are broken down by the type of scientific activity supported, i.e., R&D or RSA.

Definitions specific to natural sciences and engineering

The natural sciences and engineering (NSE) field consists of disciplines concerned with understanding, exploring, developing or utilizing the natural world. Included are the engineering, mathematical, life and physical sciences.

Related scientific activities (RSA)

The kinds of related scientific activities for the natural sciences are described below.

Scientific data collection

The gathering, processing, collating and analyzing of data on natural phenomena. These data are normally the results of surveys, routine laboratory analyses or compilations of operating records.

Data collected as part of an existing or proposed R&D project are charged to research. Similarly, the costs of analyzing existing data as part of a research project are R&D costs, even when the data were originally collected for some other purpose. The development of new techniques for data collection is also to be considered to be a research activity. Examples of scientific data collection are: routine geological, hydrographic, oceanographic and topographic surveys; routine astronomical observations; maintenance of meteorological records; and wildlife and fisheries surveys.

Information services

All work directed to recording, classifying, translating and disseminating scientific and technological information as well as museum services. Included are the operations of scientific and technical libraries, S&T consulting and advisory services, the Patent Office, the publication of scientific journals and monographs, and the organizing of scientific conferences. Grants for the publication of scholarly works are also included.

General purpose information services or information services directed primarily towards the general public are excluded, as are general departmental and public libraries. When individual budgets exist, the costs of libraries which belong to institutions otherwise entirely classified to another activity, such as R&D, should be assigned to information services. The costs of printing and distributing reports from another activity, such as R&D, are normally attributable to that activity.

Sub category under 'Information services'

- **Museum services**

The collecting, cataloguing, and displaying of specimens of the natural world or of representations of natural phenomena. The activity involves a systematic attempt to preserve and display items from the natural world; in some ways it could be considered an extension of information services. The scientific activities of natural history museums, zoological and botanical gardens, aquaria, planetaria and nature reserves are included. Parks which are not primarily restricted reserves for certain fauna or flora are excluded. In all cases the costs of providing entertainment and recreation to visitors should be excluded (e.g. restaurants, children's gardens and museums).

When a museum also covers not only natural history but also aspects of human cultural activities, the museum's resources should be appropriated between the natural and social sciences. However, museums of science and technology, war, etc., which display synthetic or artificial objects and may also illustrate the operations of certain technologies, should be considered as engaged in museum services in social sciences.

Special services and studies

Work directed towards the establishment of national and provincial standards for materials, devices, products and processes; the calibration of secondary standards; non-routine quality testing; feasibility studies and demonstration projects.

Sub categories under 'Special services and studies' include:

- **Testing and standardization**

Work directed towards the establishment of national and international standards for materials, devices, products and processes, the calibration of secondary standards and non-routine quality testing. The development of new measures for standards, or of new methods of measuring or testing, is R&D and should be reported as such. Exclude routine testing such as monitoring radioactivity levels or soil tests before construction.

- **Feasibility studies**

Technical investigations of proposed engineering projects to provide additional information required to reach decisions on implementation. Besides feasibility studies per se, the related activity of demonstration projects are to be included. Demonstration projects involve the operation of scaled-up versions of a facility or process, or data on factors such as costs, operational characteristics, market demand and public acceptance. Projects called 'demonstration projects' but which conform to the definition of R&D should be considered R&D. Once a facility or process is operated primarily to provide a service or to gain revenue, rather than as a demonstration, it should no longer be included with feasibility studies. In all demonstration projects, only the net costs should be considered.

Education support

Grants to individuals or institutions on behalf of individuals which are intended to support the post-secondary education of students in technology and the natural sciences. General operating or capital grants are excluded. The activity includes the support of foreign students in their studies of the natural sciences at Canadian or foreign institutions. Grants intended primarily to support the research of individuals at universities are either R&D grants or research fellowships.

Definitions specific to Social sciences and humanities

The social sciences and humanities (SSH) field embraces all disciplines involving the study of human actions and conditions and the social, economic and institutional mechanisms affecting humans. Included are such disciplines as anthropology, business administration and commerce, information and knowledge management, criminology, demography, economics, geography, history, languages, literature and linguistics, law, library science, philosophy, political science, psychology, religious studies, social work, sociology, and urban and regional studies.

Related scientific activities (RSA)

The kinds of related scientific activities for the social sciences and humanities are described below.

General purpose data collection

The routine gathering, processing, collating, analysis and publication of information on human phenomena using surveys, regular and special investigations and compilations of existing records. It excludes data collected primarily

for internal administrative purposes (e.g., departmental personnel statistics) as well as the collection of data as part of an R&D project.

Data collected as part of an existing or proposed research project are charged to research. Similarly the costs of analyzing existing data as part of a research project are R&D costs, even when the data were originally collected for some other purpose. The development of new techniques for data collection is also considered a research activity. The institutions involved are generally the statistical bureaus of Canadian governments and the statistical sections of departments and agencies. If there are units whose principal activity is R&D, their costs and personnel should be assigned to R&D; specialized libraries with separate budgets should be assigned to information services.

Information services

All work related to recording, classifying, translating and disseminating scientific and technological information as well as museum services. Included are the operations of scientific and technical libraries, S&T consulting and advisory services, the Patent Office, the publication of scientific journals and monographs, and the organizing of scientific conferences. Grants for the publication of scholarly works are also included.

General purpose information services or information services directed primarily towards the general public are excluded, as are general departmental and public libraries. When individual budgets exist, the costs of libraries which belong to institutions otherwise entirely classified to another activity, such as R&D, should be assigned to information services. The costs of printing and distributing reports from another activity, such as R&D, are normally attributable to that activity.

Sub category under 'Information services' include:

- **Museum services**

The collecting, cataloguing, and displaying of specimens and representations relating to human history, social organization and creations. The activity involves a systematic attempt to preserve and display the works of human beings and to provide information on their works, history, and nature. The scientific activities of historical museums, archaeological displays, and art galleries are included. In all cases, the costs of providing entertainment and recreation to visitors should be excluded (e.g. restaurants, children's gardens and museums).

When a museum also covers aspects of natural history, the museum's operation should be divided between the social and natural sciences. However, museums of science and technology, war, etc., which display synthetic or artificial objects and may also illustrate the operations of certain technologies, should be considered as engaged in museum services in social sciences.

Special services and studies

Systematic investigations carried out in order to provide information needed for planning or policy formulation. Demonstration projects are also included.

The work is usually carried out by specialized units in some government departments, by consultants, by royal commissions, and by task forces. The activity is similar to R&D since it may require innovative analyses and a high degree of scientific ability. However, such studies are not intended to acquire new knowledge but to provide specific answers to specific problems (generally immediate, localized and perhaps temporary). The day-to-day operations of units concerned with departmental planning, organization or management are not normally included (i.e. administrative records kept by departments of education) but special projects may be relevant.

Sub categories under 'Special services and studies' include:

- **Economic and feasibility studies**

Investigations of the socio-economic characteristics and implications of specific situations. Such studies are generally limited to a specific problem and involve the application of established social science techniques and methodologies.

- **Operations and policy studies**

The analysis and assessment of departmental programs, policies and operations, the activities of units concerned with the continuing analysis and monitoring of external phenomena (e.g., foreign economic statistics, defence and security information) as well as studies to provide an information base for policy development. The work is carried out by specialized units in some government departments, by consultants, by royal commissions and by task forces.

Education support

Grants to individuals or institutions on behalf of individuals which are intended to support the post-secondary education of students in technology and the social sciences. General purpose grants to educational institutions are excluded. The activity includes the support of foreign students in their studies of the social sciences at Canadian or foreign institutions. Grants intended primarily to support the research of individuals at universities are either R&D grants or research fellowships.