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Federal Scientific Activities

2011/2012



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2011/2012

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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 ($p < 0.05$)

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Highlights

- Spending on science and technology (S&T) by federal government departments and agencies in 2009/2010 increased by 9.8% on a current dollar basis, to \$11.6 billion from the \$10.6 billion reported in 2008/2009 (table 1-1).
- Accounting for inflation, federal government S&T spending reached a high of \$9.8 billion in 2009/2010, an increase of 46.5% over the ten-year period from 1999/2000 to 2009/2010 (table 1-1).
- In 2009/2010, the majority, \$7.5 billion or 64%, of federal S&T spending was dedicated to research and development (R&D) activities, while related scientific activities (RSA) accounted for the remainder (table 1-5).
- About one-half (\$5.8 billion) of the 2009/2010 expenditures on S&T activities was performed by federal government departments and agencies. Over half (53%) of this expenditure was directed to RSA, with the remainder being spent on R&D (table 1-9).
- Over the past decade, the federal government began directing a higher proportion of its S&T expenditures to extramural performers. In 1998/1999, about \$4 of every \$10 of federal S&T expenditures were paid to extramural performers. By 2009/2010, this proportion had increased to about \$5 (table 3-1).
- In 2009/2010, federal departments and agencies had a total of 38,968 full-time equivalent positions engaged in S&T activities. Of these positions, 17,896 were classified as scientific and professional, 9,577 as technical and 11,495 as other positions engaged in support activities (table 4-5).

Note:

The Federal Science Expenditures and Personnel, Activities in the Social Sciences and Natural Sciences is an annual survey of all federal government departments and agencies believed to be performing or funding S&T activities. Data for this release cycle were collected between December 10, 2010 and March 31, 2011 from 64 federal government departments and agencies.

Responding departments and agencies to the Federal Science Expenditures and Personnel survey are requested to authorize Statistics Canada to publish any or all portions of the data supplied to this survey that could identify them. Information is not published for departments and agencies which have not authorized the disclosure.

Analysis

Powered by the inflow of funds for science and technology (S&T) activities related to stimulus spending, federal expenditures on S&T in 2009/2010 increased by 9.8% on a current dollar basis, to \$11.6 billion from the \$10.6 billion reported in 2008/2009 (table 1-1).

Reflecting continued investment in S&T activities, forecast spending for 2010/2011 increased by 2.2% over 2009/2010 expenditures, reaching a record high of \$11.9 billion. On the other hand, planned spending on S&T for 2011/2012 is forecast to decline by 2.9% to \$11.3 billion, compared to 2009/2010, due to the intended winding down of the stimulus spending for S&T activities (table 1-1).

Data for 2011/2012 are planned expenditures by departments and are provisional and subject to change. Data for 2010/2011 are planned spending for the fiscal period that was almost closed at the time of data collection; these data are preliminary and subject to change. Data for 2009/2010 are actual expenditures incurred by the reporting departments and agencies, and, as such, are not subject to change.

Accounting for inflation, federal government S&T spending reached a high of \$9.8 billion in 2009/2010, an increase of 46.5% over the ten-year period from 1999/2000 to 2009/2010 (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 and information services, as well as administration of extramural RSA activities, all of which support R&D activities.

In 2009, the majority, \$7.5 billion or 64%, of federal S&T spending was dedicated to R&D activities, while RSA accounted for the remainder (table 1-5).

S&T expenditures are available for two science types: natural sciences and engineering; and social sciences and humanities. Over three-quarters (76%) of all federal government S&T spending was directed to natural sciences and engineering and the rest was spent on social sciences and humanities in 2009/2010 (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, the business sector, private non-profit organizations and foreign and other entities are known as extramural expenditures.

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

In 2009/2010, about one-half (\$5.8 billion) of the expenditures on S&T activities was performed by federal government departments and agencies. Over half (53%) of this expenditure was directed to RSA, with the remainder being spent on R&D (table 1-9).

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

Over the past decade, the federal government began directing a higher proportion of its S&T expenditures to extramural performers. In 1998/1999, about \$4 of every \$10 of federal S&T expenditures were paid to extramural performers. By 2009/2010, this proportion had increased to about \$5 (table 3-1).

Federal payments to extramural performers increased to \$5.8 billion in 2009/2010, representing a noticeable increase (13.9%) from the \$5.1 billion of extramural expenditures reported for 2008/2009 (table 3-1). This rise in extramural expenditures is related to the increased payments to provincial governments for S&T activities under the stimulus program.

In 2009/2010, as the leading beneficiary of the federal government's extramural S&T spending, the higher education sector received \$3.1 billion in federal payments. Eighty nine percent of these funds were directed to R&D activities and the remaining 11% for RSA (table 3-1).

About \$8 of every \$10 in funding for extramural R&D activities originated from the three granting councils: Canadian Institutes of Health Research (\$868 million), Natural Sciences and Engineering Research Council (\$818 million), and the Social Sciences and Humanities Research Council (\$520 million) (table 3-3).

Based on the higher education research and development (HERD) expenditures to gross domestic product (GDP) ratio, in 2009, Canada ranked fourth (0.72) in the OECD, behind Denmark (0.9), Finland (0.75), and the Netherlands (0.73) (OECD, 2011).

Regions: Federal science and technology (S&T) investment up in most regions

In 2009/2010, in current dollars, federal expenditures on S&T in all provinces and territories except for Prince Edward Island showed increases from 2008/2009 spending levels. The National Capital Region (NCR) composed mainly of Ottawa, Ontario and Gatineau, Quebec also experienced an increase (table 5-1).

The largest dollar increases were in Ontario, the NCR and British Columbia. In Ontario (excluding the NCR), federal science expenditures increased by 17.4% to almost \$3 billion (table 5-1). This is in large part due to increased federal intramural expenditures and increased payments to "other"¹ performers.

In the NCR, federal science expenditures (includes only intramural expenditures) also increased by 4.0% to about \$3.2 billion (table 5-1). In British Columbia, total S&T expenditures reached \$920 million (the highest level to date) up by 26.0% due to increased federal payments to universities and other higher education institutions (table 5-1).

Federal science and technology (S&T) personnel

In 2009/2010, federal departments and agencies had a total of 38,968 full-time equivalent positions engaged in S&T activities. Of these positions, 17,896 were classified as scientific and professional, 9,577 as technical and 11,495 as other positions engaged in support activities (table 4-5).

Almost seven in 10 of all federal S&T personnel were engaged in S&T activities related to natural sciences and engineering with the remaining allocated to social sciences and humanities (table 4-1).

In 2009/2010, the majority of spending on federal S&T activities occurred in the NCR (\$3.2 billion), the area generally recognized as having the highest concentration of federal government personnel (table 5-1). Of the total 38,968 full time equivalent positions involved in S&T in 2009/2010, 22,289 (57.2%) were located in the NCR (table 4-8).

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

Objectives of research and development (R&D) activities

In terms of R&D funding, the three most important objectives for federal extramural spending in 2009/2010 were: protection and improvement of human health (\$1.4 billion), non-oriented research (\$990 million) and industrial production and technology (\$843 million) (table 6-2).

The three most important socio-economic objectives that tend to be researched within government departments were: energy (\$544 million), agriculture (\$390 million) and protection and improvement of human health (\$274 million) (table 6-2).

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
358-0143	Federal expenditures on science and technology and its components, by type of science and performing sector
358-0144	Federal expenditures on science and technology and its components, by activity and performing sector

358-0145	Federal intramural expenditures on science and technology and its components, by type of science for the National Capital Region
358-0146	Federal personnel engaged in science and technology activities, by type of science and personnel category
358-0147	Federal personnel engaged in science and technology and its components, by type of science and personnel category
358-0148	Federal personnel engaged in science and technology and its components, by type of science, personnel category, Canada, provinces and territories
358-0149	Federal expenditures on science and technology and its components, by type of science, performing sector, Canada, provinces and territories
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
358-0151	Federal expenditures on science and technology and its components, by socio-economic objectives

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				
1999/2000	151,559	6,252	3,890	2,362	93.9	161,405	6,658	4,142	2,516
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	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	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 r	236,135	11,613	7,456	4,157	119.1	198,266	9,751	6,260	3,491
2010/2011 r	261,200	11,869	7,592	4,277	122.6	213,051	9,681	6,192	3,489
2011/2012 p	250,800	11,281	7,133	4,148

1. Part 1, Government Expenditure Plan, 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total	10,176	10,573	11,613	11,869	11,281
Agriculture and Agri-Food Canada	366 ¹	377	409 ²	416	401
Atomic Energy of Canada Limited	329	393	470 ³	634 ⁴	491 ⁴
Canada Foundation for Innovation	310	385	392 ⁵	467 ⁵	558 ⁵
Canadian Institutes of Health Research	988	980	998	1,055	1,018
Canadian International Development Agency	354	435	410	407	183 ⁶
Canadian Space Agency	283	294	329	371	411
Environment Canada	660	742 ⁷	732 ⁷	726 ⁷	599
Fisheries and Oceans Canada	292	289	283	283	281
Health Canada	493	515	566	563	585
Industry Canada	549 ⁸	460	820 ⁹	726 ⁹	554
National Defence	412	433	395	382	416
National Research Council Canada	840	781	1,027 ¹⁰	857 ¹⁰	709
Natural Resources Canada	584	585	692	816 ¹¹	775 ¹¹
Natural Sciences and Engineering Research Council of Canada	1,018 ¹²	1,036	1,057	1,078	1,073
Social Sciences and Humanities Research Council of Canada	684 ^{13,14}	683 ¹⁵	690 ¹⁶	694 ¹⁷	684 ¹⁷
Statistics Canada	639	684	679	740 ¹⁸	939 ¹⁸
Total of major departments and agencies	8,801	9,071	9,950	10,215	9,676
Other	1,374	1,502	1,663	1,654	1,606

1. Includes funding of the new Business Risk Management Suite which replaces the Agriculture Income Stabilization Program by Agriculture and Agri-Food Canada.

2. Includes \$8 million for the Cost shared Growing Forward programs, and \$13 million for the Agricultural Bioproducts Innovation Program (ABIP).

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

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

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

6. Decrease in expenditures is related to changes in the department's accounting principles.

7. 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.

8. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Industry Canada.

9. Includes \$831 million allocated to S&T activities from the Knowledge Infrastructure Program (KIP), a \$2 billion two-year program which started in 2009/2010.

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

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

12. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Natural Sciences and Engineering Research Council of Canada.

13. Includes \$300 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

14. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Social Sciences and Humanities Research Council of Canada.

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

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

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

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

Note(s): Represents departments and agencies that contributed 2% or more to the total 2009/2010 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

	2007/2008	2008/2009	2009/2010 ^f	2010/2011 ^f	2011/2012 ^p
	millions of dollars				
Total	6,602	6,655	7,456	7,592	7,133
Agriculture and Agri-Food Canada	307 ¹	329	363 ²	364	350
Atomic Energy of Canada Limited	329	393	470 ³	634 ⁴	491 ⁴
Canada Foundation for Innovation	310	385	392 ⁵	467 ⁵	558 ⁵
Canadian Institutes of Health Research	970	957	957	1,012	976
Canadian Space Agency	276	285	208	246	285
Environment Canada	240	270	266 ⁶	264 ⁶	218 ⁶
Health Canada	161	155	166	169	160
Industry Canada	477 ⁷	384	737 ⁸	639 ⁸	469
National Defence	307	326	288	268	310
National Research Council Canada	772	719	967 ⁹	807 ⁹	655
Natural Resources Canada	276	282	338	490 ¹⁰	471 ¹⁰
Natural Sciences and Engineering Research Council of Canada	891 ¹¹	896	911	930	923
Social Sciences and Humanities Research Council of Canada	540 ¹²	559 ¹³	555 ¹⁴	558 ¹⁵	549 ¹⁵
Total of major departments and agencies	5,857	5,942	6,619	6,848	6,415
Other	745	713	837	744	718

1. Includes funding of the new Business Risk Management Suite which replaces the Agriculture Income Stabilization Program by Agriculture and Agri-Food Canada.
2. Includes \$8 million for the Cost shared Growing Forward programs, and \$13 million for the Agricultural Bioproducts Innovation Program (ABIP).
3. Includes cost of repairs to AECL's research reactor (the National Research Universal (NRU) reactor).
4. Includes cost related to Advanced Candu Reactor (ACR) development and licensing.
5. Includes funds for the Research Hospital Fund (RHF) Project.
6. 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.
7. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Industry Canada.
8. Includes \$831 million allocated to S&T activities from the Knowledge Infrastructure Program (KIP), a \$2 billion two-year program which started in 2009/2010.
9. Includes about \$140 million to fund various programs under the Economic Action Plan.
10. Includes \$795 million for the Clean Energy Fund Program, a 5 year program starting in 2010/2011.
11. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Natural Sciences and Engineering Research Council of Canada.
12. Includes \$300 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
13. Includes \$315 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
14. Includes \$325 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
15. Includes \$322 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 2009/2010 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total	3,573	3,918	4,157	4,277	4,148
Canadian International Development Agency	303	387	320	365	165 ¹
Canadian Space Agency	7	9	122 ²	125 ²	126 ²
Environment Canada	420	472 ³	466 ³	462 ³	382
Fisheries and Oceans Canada	217	277	270	271	269
Health Canada	332	360	400	395	425
Library and Archives Canada	97	115	115	100	108
National Defence	105	106	107	113	106
Natural Resources Canada	308	302	353	326	305
Natural Sciences and Engineering Research Council of Canada	126	140	146	148	150
Parks Canada	92	107	113	114	108
Public Health Agency of Canada	67	90	85	88	86
Social Sciences and Humanities Research Council of Canada	144 ⁴	124	135	136	135
Statistics Canada	582	622	612	672 ⁵	885 ⁵
Total of major departments and agencies	2,800	3,111	3,243	3,315	3,248
Other	773	807	914	963	900

1. Decrease in expenditures is related to changes in the department's accounting principles.

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

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 several Centres of Excellence in Commercialization and Research (CECR) funded by Social Sciences and Humanities Research Council of Canada.

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

Note(s): Represents departments and agencies that contributed 2% or more to the total 2009/2010 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Science and technology	10,176	10,573	11,613	11,869	11,281
Research and development	6,602	6,655	7,456	7,592	7,133
Current expenditures	6,170	6,107	6,907	6,945	6,631
Administration of extramural programs	294	321	319	319	311
Capital expenditures	139	228	230	328	192
Related scientific activities	3,573	3,918	4,157	4,277	4,148
Data collection	1,759	2,049	2,100	2,109	2,264
Information services	639	613	734	735	677
Special services and studies	743	802	801	864	647
Education support	286	300	326	349	382
Administration of extramural programs	70	75	83	91	72
Capital expenditures	77	79	113	130	106

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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total sciences	10,176	10,573	11,613	11,869	11,281
Intramural	5,196	5,498	5,832	5,945	5,765
Business enterprises	936	910	1,081	1,153	1,227
Higher education	2,990	3,066	3,107	3,282	3,260
Canadian non-profit institutions	548	469	521	542	499
Provincial and municipal governments	28	45	486 ¹	370 ¹	149
Foreign performers	445	556	553	542	349
Other Canadian performers	34	29	33	37	33
Natural sciences	7,594	7,805	8,815	8,932	8,289
Intramural	3,790	3,971	4,301	4,327	3,960
Business enterprises	898	870	1,031	1,101	1,176
Higher education	2,301	2,345	2,376	2,511	2,522
Canadian non-profit institutions	326	282	304	322	317
Provincial and municipal governments	17	21	448 ¹	338 ¹	129
Foreign performers	241	300	344	319	170
Other Canadian performers	22	15	11	15	16
Social sciences	2,582	2,768	2,798	2,937	2,992
Intramural	1,406	1,527	1,531	1,618	1,805
Business enterprises	38	40	50	52	51
Higher education	689	721	730	771	738
Canadian non-profit institutions	221	186	217	220	182
Provincial and municipal governments	11	24	38	31	20
Foreign performers	204	256	209	223	179
Other Canadian performers	12	14	22	22	18

1. Includes \$831 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total sciences	6,602	6,655	7,456	7,592	7,133
Intramural	2,532	2,599	2,762	2,839	2,547
Business enterprises	758	732	868	925	1,020
Higher education	2,709	2,769	2,765	2,894	2,893
Canadian non-profit institutions	376	324	356	372	354
Provincial and municipal governments	15	14	448 ¹	339 ¹	127
Foreign performers	192	200	239	200	169
Other Canadian performers	20	17	17	23	23
Natural sciences	5,686	5,667	6,455	6,588	6,131
Intramural	2,360	2,388	2,546	2,615	2,327
Business enterprises	752	729	861	920	1,014
Higher education	2,152	2,188	2,194	2,320	2,318
Canadian non-profit institutions	270	217	245	260	246
Provincial and municipal governments	11	8	437 ¹	331 ¹	123
Foreign performers	127	128	165	132	92
Other Canadian performers	13	8	6	10	11
Social sciences	916	988	1,001	1,004	1,003
Intramural	172	211	216	224	220
Business enterprises	6	3	7	5	6
Higher education	557	582	572	574	576
Canadian non-profit institutions	105	106	111	111	108
Provincial and municipal governments	4	6	11	8	5
Foreign performers	65	72	73	68	76
Other Canadian performers	7	9	11	13	12

1. Includes \$831 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 1-8

Federal expenditures — On related scientific activities, by science and by performing sector

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total sciences	3,573	3,918	4,157	4,277	4,148
Intramural	2,664	2,899	3,070	3,106	3,217
Business enterprises	177	178	213	228	207
Higher education	281	297	341	387	367
Canadian non-profit institutions	172	145	164	170	145
Provincial and municipal governments	13	31	38	30	22
Foreign performers	253	356	315	342	180
Other Canadian performers	13	13	16	13	10
Natural sciences	1,908	2,138	2,360	2,344	2,158
Intramural	1,430	1,583	1,755	1,712	1,632
Business enterprises	146	141	170	181	162
Higher education	148	158	183	191	205
Canadian non-profit institutions	56	65	58	62	71
Provincial and municipal governments	5	12	11	8	7
Foreign performers	114	172	179	187	78
Other Canadian performers	9	7	5	5	4
Social sciences	1,665	1,780	1,797	1,933	1,990
Intramural	1,234	1,316	1,315	1,395	1,585
Business enterprises	31	37	43	47	45
Higher education	133	139	159	196	162
Canadian non-profit institutions	116	80	106	108	74
Provincial and municipal governments	8	19	27	23	15
Foreign performers	138	184	136	155	102
Other Canadian performers	5	6	11	8	6

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, 2009/2010^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	5,832	1,081	3,107	521	486	553	33	11,613
Total research and development	2,762	868	2,765	356	448	239	17	7,456
In-house research and development	1,993	1,993
Research and development contracts	34	225	28	7	3	16	5	318
Supporting contracts	176	176
Research and development grants and contributions	...	633	2,691	349	445	205	3	4,325
Research fellowships	10	10	47	0 ^s	0 ^s	19	9	95
Administration of extramural programs	319	319
Capital expenditures	230	230
Total related scientific activities	3,070	213	341	164	38	315	16	4,157
Data collection	1,895	125	18	32	10	17	4	2,100
Information services	654	22	17	23	3	14	0 ^s	734
Special services and studies	323	62	29	94	21	264	8	801
Education support	2	4	278	15	4	20	4	326
Administration of extramural programs	83	83
Capital expenditures	113	113

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, 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	5,945	1,153	3,282	542	370	542	37	11,869
Total research and development	2,839	925	2,894	372	339	200	23	7,592
In-house research and development	1,979	1,979
Research and development contracts	34	225	20	6	2	10	4	300
Supporting contracts	166	166
Research and development grants and contributions	...	695	2,819	366	337	171	11	4,399
Research fellowships	12	5	55	0 ^s	0	19	9	100
Administration of extramural programs	319	319
Capital expenditures	328	328
Total related scientific activities	3,106	228	387	170	30	342	13	4,277
Data collection	1,899	130	21	32	7	16	4	2,109
Information services	649	23	19	27	2	14	1	735
Special services and studies	337	70	47	92	19	295	5	864
Education support	1	5	301	19	2	17	4	349
Administration of extramural programs	91	91
Capital expenditures	130	130

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, 2011/2012^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	5,765	1,227	3,260	499	149	349	33	11,281
Total research and development	2,547	1,020	2,893	354	127	169	23	7,133
In-house research and development	1,770	1,770
Research and development contracts	30	285	24	8	2	14	4	366
Supporting contracts	231	231
Research and development grants and contributions	...	730	2,814	346	126	138	10	4,163
Research fellowships	14	5	56	0 ^s	0	17	9	101
Administration of extramural programs	311	311
Capital expenditures	192	192
Total related scientific activities	3,217	207	367	145	22	180	10	4,148
Data collection	2,067	127	18	28	6	16	4	2,264
Information services	603	19	18	20	2	14	0 ^s	677
Special services and studies	353	57	9	75	14	137	3	647
Education support	18	4	322	22	0	14	4	382
Administration of extramural programs	72	72
Capital expenditures	106	106

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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Science and technology	5,196	5,498	5,832	5,945	5,765
Research and development	2,532	2,599	2,762	2,839	2,547
Current expenditures	2,099	2,051	2,212	2,191	2,044
Administration of extramural programs	294	321	319	319	311
Capital expenditures	139	228	230	328	192
Related scientific activities	2,664	2,899	3,070	3,106	3,217
Data collection	1,606	1,885	1,895	1,899	2,067
Information services	587	526	654	649	603
Special services and studies	315	324	323	337	353
Education support	10	9	2	1	18
Administration of extramural programs	70	75	83	91	72
Capital expenditures	77	79	113	130	106

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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total	5,196	5,498	5,832	5,945	5,765
Agriculture and Agri-Food Canada	351	356	367 ¹	356	353
Atomic Energy of Canada Limited	329	393	468 ²	633 ³	490
Environment Canada	577	649 ⁴	636 ⁴	630 ⁴	516
Fisheries and Oceans Canada	269	266	270	270	268
Health Canada	354	354	392	384	416
Industry Canada	118	122	133	136	128
National Defence	248	272	273	280	300
National Research Council Canada	691	635	729	640	558
Natural Resources Canada	464	494	544	529 ⁵	491 ⁵
Statistics Canada	631	675	665	723	923
Total of major departments and agencies	4,031	4,216	4,475	4,582	4,444
Other	1,165	1,281	1,357	1,363	1,321

1. Includes \$8 million for the Cost shared Growing Forward programs, and \$13 million for the Agricultural Bioproducts Innovation Program (ABIP).

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

Note(s): Represents departments and agencies that contributed 2% or more to the total 2009/2010 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

	2007/2008	2008/2009	2009/2010 ^f	2010/2011 ^f	2011/2012 ^p
	millions of dollars				
Total	2,532	2,599	2,762	2,839	2,547
Agriculture and Agri-Food Canada	297	311	331 ¹	315	312
Atomic Energy of Canada Limited	329	393	468 ²	633 ³	490
Canadian Institutes of Health Research	60	62	66	62	60
Environment Canada	208	234 ⁴	230 ⁴	227 ⁴	185 ⁴
Health Canada	72	55	63	63	62
National Defence	216	240	210	213	239
National Research Council Canada	623	574	669 ⁵	590	505
Natural Resources Canada	192	205	223	233 ⁶	215 ⁶
Statistics Canada	57	62	67	68	53
Total of major departments and agencies	2,054	2,134	2,327	2,406	2,122
Other	477	465	435	433	426

1. Includes \$8 million for the Cost shared Growing Forward programs, and \$13 million for the Agricultural Bioproducts Innovation Program (ABIP).

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

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

Note(s): Represents departments and agencies that contributed 2% or more to the total 2009/2010 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

	2007/2008	2008/2009	2009/2010 ^f	2010/2011 ^f	2011/2012 ^p
	millions of dollars				
Total	2,664	2,899	3,070	3,106	3,217
Canadian Museum of Civilization	72	74	72	79	70
Canadian Space Agency	6	8	63 ¹	66 ¹	67 ¹
Environment Canada	369	415 ²	406 ²	403 ²	332
Fisheries and Oceans Canada	195	254	257	257	255
Health Canada	282	299	329	320	354
Industry Canada	70	73	82	85	83
Library and Archives Canada	94	112	112	99	106
National Defence	31	32	63	67	61
Natural Resources Canada	271	290	320	296	276
Parks Canada	92	106	112	114	107
Public Health Agency of Canada	48	58	64	65	64
Statistics Canada	574	614	598	655	870 ³
Total of major departments and agencies	2,105	2,336	2,478	2,506	2,646
Other	559	563	592	600	571

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): Represents departments and agencies that contributed 2% or more to the total 2009/2010 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

	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
	millions of dollars				
National Capital Region (total)					
Science and technology	2,912	2,989	2,922	3,104	3,228
Natural sciences	1,628	1,649	1,664	1,727	1,868
Social sciences	1,283	1,340	1,258	1,377	1,360
Research and development	1,123	1,105	1,134	1,146	1,264
Natural sciences	1,002	953	968	944	1,058
Social sciences	121	153	166	202	206
Related scientific activities	1,788	1,884	1,788	1,958	1,964
Natural sciences	626	696	697	783	810
Social sciences	1,162	1,188	1,092	1,175	1,154
National Capital Region (Ontario)					
Science and technology	2,546	2 632¹	2582¹	2,584	2,572
Natural sciences	1,416	1,445	1,498	1,404	1,408
Social sciences	1,129	1,186	1,084	1,181	1,164
Research and development	1,040	1,021	1,076	1,041	1,090
Natural sciences	930	878	919	851	896
Social sciences	110	143	157	191	194
Related scientific activities	1,506	1,611	1,506	1,543	1,482
Natural sciences	486	568	579	553	512
Social sciences	1,019	1,043	927	990	970
National Capital Region (Quebec)					
Science and technology	366	358¹	340¹	520	656
Natural sciences	212	204	166	323	460
Social sciences	154	154	174	196	196
Research and development	83	85	58	105	174
Natural sciences	72	75	48	93	162
Social sciences	11	9	10	12	12
Related scientific activities	282	273	282	415	482
Natural sciences	140	128	117	230	298
Social sciences	143	145	164	185	184

1. This value has been revised due to a redistribution of personnel figures from the National Capital region (Quebec) to the National Capital Region (Ontario). The total number of full time equivalents involved in science and technology remains unchanged.

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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total science and technology	4,980	5,075	5,781	5,924	5,517
Business enterprises	936	910	1,081	1,153	1,227
Higher education	2,990	3,066	3,107	3,282	3,260
Canadian non-profit institutions	548	469	521	542	499
Provincial and municipal governments	28	45	486 ¹	370 ¹	149
Foreign performers	445	556	553	542	349
Other performers	34	29	33	37	33
Total research and development	4,071	4,056	4,694	4,753	4,586
Business enterprises	758	732	868	925	1,020
Higher education	2,709	2,769	2,765	2,894	2,893
Canadian non-profit institutions	376	324	356	372	354
Provincial and municipal governments	15	14	448 ¹	339 ¹	127
Foreign performers	192	200	239	200	169
Other performers	20	17	17	23	23
Total related scientific activities	909	1,019	1,087	1,171	930
Business enterprises	177	178	213	228	207
Higher education	281	297	341	387	367
Canadian non-profit institutions	172	145	164	170	145
Provincial and municipal governments	13	31	38	30	22
Foreign performers	253	356	315	342	180 ²
Other performers	13	13	16	13	10

1. Includes \$831 million allocated to S&T activities from the Knowledge Infrastructure Program (KIP), a \$2 billion two-year program which started in 2009/2010.

2. Decrease in expenditures is related to changes in the department's accounting principles.

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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total science and technology	936	910	1,081	1,153	1,227
Atlantic Canada Opportunities Agency	45	57	65	63	63
Canadian Space Agency	128	131	167	189	242
Environment Canada	48	54	48	48	38
Industry Canada	295	290	223	238	316
National Defence	139	136	103	86	96
National Research Council Canada	86	87	233 ¹	157 ¹	92
Natural Resources Canada	72	64	120	252	243
Other	122	90	122	120	136
Total research and development	758	732	868	925	1,020
Atlantic Canada Opportunities Agency	45	57	65	63	63
Canadian Space Agency	128	130	116	138	191
Industry Canada	294	289	223	237	316
National Defence	70	66	63	44	56
National Research Council Canada	86	87	233 ¹	157 ¹	92
Natural Resources Canada	58	59	100	231 ²	225 ²
Other	77	43	69	54	77
Total related scientific activities	177	178	213	228	207
Canadian International Development Agency	22	21	17	24	20
Canadian Space Agency	0 ^s	0 ^s	51 ³	51 ³	51 ³
Economic Development Agency of Canada for the Regions of Quebec	2	1	5	4	2
Environment Canada	31	35	34	34	28
National Defence	69	71	39	43	40
Natural Resources Canada	15	5	21	20	18
Statistics Canada	6	6	13	16	14
Other	32	38	34	37	32

1. Includes \$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 2009/2010 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total science and technology	2,990	3,066	3,107	3,282	3,260
Canada Foundation for Innovation	298	372	353 ¹	423 ¹	505 ¹
Canadian Institutes of Health Research	901	891	905	964	930
Natural Sciences and Engineering Research Council of Canada	853	921	943	967	967
Social Sciences and Humanities Research Council of Canada	604 ²	623 ³	629 ⁴	633 ⁵	625
Other	334	260	278	295	233
Total research and development	2,709	2,769	2,765	2,894	2,893
Canada Foundation for Innovation	298	372	353 ¹	423 ¹	505
Canadian Institutes of Health Research	884	869	868	924	892
Natural Sciences and Engineering Research Council of Canada	743	801	818	840	837
Social Sciences and Humanities Research Council of Canada	512 ²	524 ³	520 ⁴	522 ⁵	514
Other	272	203	206	186	145
Total related scientific activities	281	297	341	387	367
Aboriginal Affairs and Northern Development Canada	2	2	16	31	3
Canadian Institutes of Health Research	17	22	37	39	38
Canadian International Development Agency	5	7	7	5	3
Health Canada	24	23	19	24	26
Natural Sciences and Engineering Research Council of Canada	110	119	124	127	130
Public Health Agency of Canada	7	7	7	9	8
Social Sciences and Humanities Research Council of Canada	92	99	108	111	110
Other	23	17	23	42	49

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

2. Includes \$300 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

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

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

5. Includes \$322 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 2009/2010 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total science and technology payments	936	910	1,081	1,153	1,227
Total research and development payments	758	732	868	925	1,020
Total contracts	229	231	225	225	285
Aboriginal Affairs and Northern Development Canada	5	6	5
Canadian Space Agency	121	127	114	136	189
Environment Canada	17	19	14	14	10
Health Canada	1	4	7	8	6
National Defence	70	66	63	44	56
Transport Canada	7	5	9	7	5
Other	13	10	13	11	13
Total grants and contributions	526	498	633	695 ¹	730 ¹
Atlantic Canada Opportunities Agency	45	57	65	63	63
Industry Canada	294	289	223	237	316
National Research Council Canada	86	87	229 ¹	154 ¹	89
Natural Resources Canada	55	56	97	229 ²	223 ²
Other	46	8	19	12	40
Total research fellowships	4	4	10	5	5
Total related scientific activities payments	177	178	213	228	207
Canadian International Development Agency	22	21	17	24	20
Canadian Space Agency	0 ^s	0 ^s	51 ³	51 ³	51 ³
Economic Development Agency of Canada for the Regions of Quebec	2	1	5	4	2
Environment Canada	31	35	34	34	28
National Defence	69	71	39	43	40
Natural Resources Canada	15	5	21	20	18
Statistics Canada	6	6	13	16	14
Other	32	38	34	37	32

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 2009/2010 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total science and technology payments	2,990	3,066	3,107	3,282	3,260
Total research and development payments	2,709	2,769	2,765	2,894	2,893
Total contracts	31	30	28	20	24
Canadian Space Agency	12	12	7	7	7
Environment Canada	4	4	4	4	3
Health Canada	1	2	2	3	2
National Defence	7	7	4	4	5
National Research Council Canada	1	2	5	0 ^s	6
Natural Resources Canada	4	1	2	0 ^s	0 ^s
Public Health Agency of Canada	1	1	3	1	1
Other	2	2	2	1	1
Total grants and contributions	2,622	2,697	2,691	2,819	2,814
Canada Foundation for Innovation	298	372	353 ¹	423 ¹	505 ¹
Canadian Institutes of Health Research	835	834	828	882	851
Natural Sciences and Engineering Research Council of Canada	736	795	811	832	828
Social Sciences and Humanities Research Council of Canada	512 ²	524 ³	520 ⁴	522 ⁵	514 ⁵
Other	242	173	178	160	115
Total research fellowships	57	42	47	55	56
Total related scientific activities payments	281	297	341	387	367
Total education support payments	238	251	278	301	322
Canadian Institutes of Health Research	17	22	37	39	38
Health Canada	21	20	17	21	24
Natural Sciences and Engineering Research Council of Canada	110	119	124	127	130
Social Sciences and Humanities Research Council of Canada	81	86	97	99	98
Other	9	4	4	14	31
Total other related scientific activities	43	46	64	87	45

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

2. Includes \$300 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

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

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

5. Includes \$322 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 2009/2010 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total science and technology	548	469	521	542	499
Aboriginal Affairs and Northern Development Canada	1	2	15	10	2
Agriculture and Agri-Food Canada	4	16	17	32	30
Canada Foundation for Innovation	0 ^s	1	27	32	38
Canadian Institutes of Health Research	14	16	15	16	15
Canadian International Development Agency	53	47	34	35	33
Economic Development Agency of Canada for the Regions of Quebec	19	18	19	25	5
Environment Canada	10	11	19	20	21
Foreign Affairs and International Trade Canada	14	15	12	19	1
Genome Canada	92	76	76	53	56
Health Canada	95	105	119	113	110
Industry Canada	50 ¹	33	33	30	5
Natural Resources Canada	20	12	15	25	32
Natural Sciences and Engineering Research Council of Canada	70 ²	37	28	27	27
Social Sciences and Humanities Research Council of Canada	36 ³	10	12	11	12
Other	69	69	81	94	112
Total research and development	376	324	356	372	354
Agriculture and Agri-Food Canada	1	15	8	22	22
Atlantic Canada Opportunities Agency	7	6	10	7	7
Canada Foundation for Innovation	0 ^s	1	27	32	38
Canadian Institutes of Health Research	14	16	14	15	15
Economic Development Agency of Canada for the Regions of Quebec	11	11	15	14	3
Environment Canada	3	3	8	9	11
Genome Canada	92	76	76	53	56
Health Canada	82	89	89	87	87
Industry Canada	50 ¹	33	33	30	5
Natural Resources Canada	9	7	9	20	25
Natural Sciences and Engineering Research Council of Canada	68 ²	35	27	26	25
Other	38	31	41	57	60
Total related scientific activities	172	145	164	170	145
Aboriginal Affairs and Northern Development Canada	0 ^s	1	14	8	1
Agriculture and Agri-Food Canada	3	1	8	9	8
Canadian International Development Agency	52	47	33	34	32
Economic Development Agency of Canada for the Regions of Quebec	8	7	4	11	1
Environment Canada	7	8	11	11	10
FedNor (Federal Economic Development Initiative in Northern Ontario)	3	3	2
Fisheries and Oceans Canada	10	10	8	8	8
Foreign Affairs and International Trade Canada	14	15	12	19	1
Health Canada	13	16	30	26	23
Human Resources and Social Development Canada	3	5	4	7	6
Natural Resources Canada	11	5	5	5	8
Public Health Agency of Canada	5	11	6	8	8
Social Sciences and Humanities Research Council of Canada	35 ³	6	8	7	7
Other	11	13	16	13	29

1. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Industry Canada.

2. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Natural Sciences and Engineering Research Council of Canada.

3. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Social Sciences and Humanities Research Council of Canada.

Note(s): Represents departments and agencies that contributed 2% or more to the total 2009/2010 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 performer sector, by major funding departments and agencies

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	millions of dollars				
Total science and technology	445	556	553	542	349
Canadian International Development Agency	236	320	316	307	109 ¹
Canadian Space Agency	37	36	32	47	32
Foreign Affairs and International Trade Canada	28	31	30	26	41
Health Canada	2	17	17	16	15
International Development Research Centre	74	80	84	79	92
National Research Council Canada	10	12	14	14	7
Natural Sciences and Engineering Research Council of Canada	13	17	20	18	16
Other	45	44	40	35	35
Total research and development	192	200	239	200	169
Canadian Institutes of Health Research	11	8	8	9	8
Canadian International Development Agency	43	42	82	37	15
Canadian Space Agency	36	36	31	45	30
International Development Research Centre	65	71	76	71	83
National Defence	14	14	9	6	9
National Research Council Canada	10	12	14	14	7
Natural Sciences and Engineering Research Council of Canada	8	9	10	10	8
Other	6	8	9	8	7
Total related scientific activities	253	356	315	342	180
Canadian International Development Agency	193	278	234	270	94 ¹
Foreign Affairs and International Trade Canada	28	31	30	26	41
Health Canada	0 ^s	14	14	13	13
International Development Research Centre	9	9	8	8	9
Natural Sciences and Engineering Research Council of Canada	5	8	10	8	8
Other	17	17	19	16	15

1. Decrease in expenditures is related to changes in the department's accounting principles.

Note(s): Represents departments and agencies that contributed 2% or more to the total 2009/2010 expenditures. Due to rounding, components may not add to the totals.

Table 4-1

Federal personnel — Engaged in science and technology activities

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total science and technology	36,037	37,333	38,968	38,576	39,052
Research and development	13,729	14,172	15,110	14,789	14,636
Administration of extramural research and development programs	1,904	2,100	2,162	2,237	2,192
Related scientific activities	19,821	20,459	20,983	20,809	21,511
Administration of extramural related scientific activity programs	583	602	713	741	712
Natural sciences	25,113	25,977	27,340	26,682	26,395
Research and development	13,072	13,240	13,981	13,693	13,445
Administration of extramural research and development programs	1,600	1,762	1,745	1,764	1,722
Related scientific activities	10,164	10,659	11,223	10,810	10,826
Administration of extramural related scientific activity programs	276	316	392	414	403
Social sciences	10,924	11,356	11,628	11,894	12,656
Research and development	657	932	1,129	1,096	1,191
Administration of extramural research and development programs	304	338	417	473	470
Related scientific activities	9,657	9,800	9,760	9,999	10,685
Administration of extramural related scientific activity programs	307	286	321	327	310

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

Table 4-2

Federal personnel — Scientific and professional engaged in science and technology activities

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total science and technology	16,419	17,249	17,896	17,916	18,028
Research and development	6,295	6,532	6,790	6,738	6,683
Administration of extramural research and development programs	806	786	877	933	904
Related scientific activities	9,146	9,768	10,023	10,026	10,234
Administration of extramural related scientific activity programs	171	162	205	219	207
Natural sciences	12,309	12,475	12,884	12,634	12,616
Research and development	5,952	5,942	6,158	6,080	5,970
Administration of extramural research and development programs	690	650	696	692	655
Related scientific activities	5,589	5,794	5,925	5,750	5,882
Administration of extramural related scientific activity programs	79	88	105	111	109
Social sciences	4,110	4,774	5,012	5,282	5,412
Research and development	343	590	633	658	712
Administration of extramural research and development programs	117	136	181	241	249
Related scientific activities	3,558	3,974	4,098	4,276	4,352
Administration of extramural related scientific activity programs	92	74	100	107	98

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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total science and technology	9,137	8,897	9,577	9,327	9,373
Research and development	4,595	4,601	5,081	4,933	4,861
Administration of extramural research and development programs	65	104	85	78	91
Related scientific activities	4,437	4,181	4,372	4,279	4,383
Administration of extramural related scientific activity programs	40	12	39	37	38
Natural sciences	6,862	7,054	7,609	7,376	7,231
Research and development	4,429	4,511	4,933	4,790	4,714
Administration of extramural research and development programs	61	101	80	74	86
Related scientific activities	2,352	2,433	2,578	2,487	2,404
Administration of extramural related scientific activity programs	20	9	18	26	27
Social sciences	2,275	1,844	1,967	1,951	2,142
Research and development	166	90	148	144	147
Administration of extramural research and development programs	4	3	5	5	5
Related scientific activities	2,085	1,748	1,794	1,792	1,979
Administration of extramural related scientific activity programs	20	3	21	11	11

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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total science and technology	10,481	11,187	11,495	11,333	11,651
Research and development	2,839	3,039	3,239	3,118	3,092
Administration of extramural research and development programs	1,032	1,210	1,200	1,226	1,197
Related scientific activities	6,238	6,511	6,588	6,504	6,895
Administration of extramural related scientific activity programs	372	428	468	486	467
Natural sciences	5,941	6,449	6,847	6,672	6,548
Research and development	2,691	2,787	2,889	2,824	2,760
Administration of extramural research and development programs	849	1,011	969	998	981
Related scientific activities	2,224	2,432	2,719	2,573	2,540
Administration of extramural related scientific activity programs	177	218	269	277	267
Social sciences	4,539	4,738	4,648	4,660	5,103
Research and development	148	251	349	294	332
Administration of extramural research and development programs	183	199	231	228	217
Related scientific activities	4,014	4,079	3,869	3,931	4,355
Administration of extramural related scientific activity programs	195	209	200	208	200

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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total science and technology personnel	36,037	37,333	38,968	38,576	39,052
Scientific and professional	16,419	17,249	17,896	17,916	18,028
Technical	9,137	8,897	9,577	9,327	9,373
Other	10,481	11,187	11,495	11,333	11,651
Total research and development personnel	15,633	16,272	17,272	17,026	16,828
Scientific and professional	7,102	7,319	7,667	7,671	7,586
Technical	4,660	4,705	5,166	5,011	4,953
Other	3,871	4,248	4,439	4,344	4,289
Total related scientific activities personnel	20,404	21,061	21,696	21,550	22,224
Scientific and professional	9,318	9,930	10,229	10,245	10,441
Technical	4,477	4,192	4,411	4,316	4,420
Other	6,610	6,939	7,056	6,989	7,362

Note(s): Personnel counts are reported as full-time equivalents, includes administrative and foreign service, administrative support, operational and military personnel. 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total science and technology personnel	25,113	25,977	27,340	26,682	26,395
Scientific and professional	12,309	12,475	12,884	12,634	12,616
Technical	6,862	7,054	7,609	7,376	7,231
Other	5,941	6,449	6,847	6,672	6,548
Total research and development personnel	14,672	15,003	15,725	15,458	15,167
Scientific and professional	6,642	6,593	6,854	6,772	6,625
Technical	4,491	4,612	5,013	4,863	4,800
Other	3,540	3,798	3,859	3,822	3,741
Total related scientific activities personnel	10,441	10,975	11,615	11,224	11,229
Scientific and professional	5,667	5,882	6,030	5,862	5,991
Technical	2,372	2,442	2,596	2,513	2,431
Other	2,402	2,651	2,988	2,850	2,807

Note(s): Personnel counts are reported as full-time equivalents, includes administrative and foreign service, administrative support, operational and military personnel. 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total science and technology personnel	10,924	11,356	11,628	11,894	12,656
Scientific and professional	4,110	4,774	5,012	5,282	5,412
Technical	2,275	1,844	1,967	1,951	2,142
Other	4,539	4,738	4,648	4,660	5,103
Total research and development personnel	961	1,269	1,546	1,568	1,661
Scientific and professional	460	726	814	899	961
Technical	170	93	153	148	152
Other	331	450	580	521	548
Total related scientific activities personnel	9,963	10,087	10,081	10,326	10,995
Scientific and professional	3,650	4,048	4,198	4,383	4,451
Technical	2,105	1,750	1,815	1,803	1,990
Other	4,208	4,288	4,068	4,139	4,555

Note(s): Personnel counts are reported as full-time equivalents, includes administrative and foreign service, administrative support, operational and military personnel. 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, 2009/2010

	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	213	57	632	305	1,532	2,357	493	260	628	834	169	10,418	17,896
Research and development	89	43	215	198	849	1,776	244	194	373	349	18	3,320	7,667
Related scientific activities	124	14	417	107	683	581	248	66	255	486	151	7,098	10,229
Total Personnel													
Science and technology	459	138	1,329	520	3,196	5,426	1,443	702	1,345	1,818	302	22,289	38,968
Research and development	188	108	492	330	1,649	3,912	716	512	793	739	28	7,804	17,272
Related scientific activities	271	30	837	190	1,547	1,514	727	190	552	1,079	274	14,485	21,696
Natural Sciences													
Scientific and professional personnel													
Science and technology	201	54	601	246	1,347	2,239	472	257	598	801	164	5,906	12,884
Research and development	89	43	213	140	800	1,749	244	194	371	347	18	2,645	6,854
Related scientific activities	112	11	387	106	546	490	228	63	227	454	146	3,261	6,030
Total Personnel													
Science and technology	427	130	1,195	454	2,846	5,078	1,343	688	1,262	1,732	277	11,909	27,340
Research and development	188	107	490	272	1,589	3,877	716	512	790	735	28	6,422	15,725
Related scientific activities	239	23	705	182	1,258	1,201	628	176	473	996	249	5,487	11,615
Social Sciences													
Scientific and professional personnel													
Science and technology	13	3	31	59	185	118	20	3	31	34	5	4,512	5,012
Research and development	0	0	1	58	49	27	0	0	2	2	0	675	814
Related scientific activities	13	3	30	1	136	90	20	3	29	32	5	3,838	4,198
Total Personnel													
Science and technology	32	8	134	66	350	349	100	15	83	86	25	10,380	11,628
Research and development	0	1	2	58	61	35	1	0	3	4	1	1,382	1,546
Related scientific activities	32	8	132	8	289	314	99	15	80	83	25	8,998	10,081

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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total	36,037	37,333	38,968	38,576	39,052
Agriculture and Agri-Food Canada	2,362	2,190	2,387	2,447	2,334
Atomic Energy of Canada Limited	1,400	2,061	2,422	2,300	2,247
Environment Canada	3,439	3,453	3,640	3,634	3,251
Fisheries and Oceans Canada	1,803	1,861	1,851	1,827	1,827
Health Canada	3,168	3,078	3,138	3,060	3,333
Industry Canada	1,010	956	1,034	1,025	1,022
National Defence	1,898	1,879	2,130	2,183	2,203
National Research Council Canada	4,281	4,436	4,644	4,365	4,305
Natural Resources Canada	3,123	3,052	3,024	2,872	2,922
Statistics Canada	5,676	5,652	5,545	5,629	6,461
Total of major departments and agencies	28,160	28,618	29,815	29,342	29,904
Other	7,877	8,715	9,152	9,233	9,147

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 2009/2010 full time equivalent counts. 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total	16,419	17,249	17,896	17,916	18,028
Agriculture and Agri-Food Canada	805	775	786	785	778
Atomic Energy of Canada Limited	588	845	993	943	921
Environment Canada	1,681	1,688	1,780	1,776	1,589
Fisheries and Oceans Canada	873	822	794	784	785
Health Canada	2,278	2,236	2,151	2,106	2,325
Industry Canada	677	663	723	729	731
National Defence	966	896	1,081	1,129	1,138
National Research Council Canada	1,632	1,732	1,857	1,816	1,756
Natural Resources Canada	1,924	1,924	1,878	1,794	1,804
Statistics Canada	1,465	1,511	1,502	1,541	1,768
Total of major departments and agencies	12,888	13,090	13,544	13,401	13,597
Other	3,531	4,158	4,352	4,515	4,431

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 2009/2010 full time equivalent counts. 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total	9,137	8,897	9,577	9,327	9,373
Agriculture and Agri-Food Canada	999	907	976	992	937
Atomic Energy of Canada Limited	696	1,030	1,211	1,150	1,124
Environment Canada	1,026	1,030	1,085	1,084	970
Fisheries and Oceans Canada	749	695	711	702	702
Health Canada	337	274	338	319	333
Industry Canada	55	58	59	57	56
National Defence	433	472	459	459	463
National Research Council Canada	1,119	1,125	1,192	1,151	1,151
Natural Resources Canada	811	766	748	695	728
Statistics Canada	1,361	1,255	1,235	1,234	1,417
Total of major departments and agencies	7,588	7,612	8,013	7,844	7,881
Other	1,550	1,286	1,564	1,483	1,492

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 2009/2010 full time equivalent counts. 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total	10,481	11,187	11,495	11,333	11,651
Agriculture and Agri-Food Canada	558	508	626	670	619
Atomic Energy of Canada Limited	115	185	218	207	202
Environment Canada	732	735	775	774	692
Fisheries and Oceans Canada	181	345	347	341	340
Health Canada	553	568	650	636	674
Industry Canada	279	235	253	239	235
National Defence	499	512	589	595	601
National Research Council Canada	1,530	1,579	1,596	1,398	1,398
Natural Resources Canada	388	362	398	384	390
Statistics Canada	2,850	2,887	2,808	2,854	3,276
Total of major departments and agencies	7,685	7,916	8,259	8,098	8,427
Other	2,796	3,271	3,236	3,235	3,224

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 2009/2010 full time equivalent counts. Personnel counts are reported as full-time equivalents. 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total	15,633	16,272	17,272	17,026	16,828
Agriculture and Agri-Food Canada	2,076	1,982	2,148	2,173	2,067
Atomic Energy of Canada Limited	1,400	2,061	2,422	2,300	2,247
Canadian Institutes of Health Research	354	393	380	412	412
Environment Canada	962	966	1,018	1,016	909
Health Canada	469	458	440	454	453
National Defence	1,679	1,678	1,887	1,920	1,943
National Research Council Canada	3,833	3,989	4,249	4,113	4,053
Natural Resources Canada	1,464	1,411	1,357	1,349	1,386
Statistics Canada	317	426	461	393	427
Total of major departments and agencies	12,554	13,363	14,362	14,131	13,897
Other	3,079	2,909	2,909	2,895	2,931

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 2009/2010 full time equivalent counts. 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

	2007/2008	2008/2009	2009/2010 ^r	2010/2011 ^r	2011/2012 ^p
	number				
Total	20,404	21,061	21,696	21,550	22,224
Canadian Museum of Civilization	400	390	333	370	370
Canadian Space Agency	36	31	410 ¹	440 ¹	440 ¹
Environment Canada	2,477	2,487	2,622	2,618	2,342
Fisheries and Oceans Canada	1,314	1,777	1,765	1,741	1,742
Health Canada	2,699	2,620	2,698	2,607	2,880
Industry Canada	660	625	690	688	688
Library and Archives Canada	717	885	901	883	883
National Defence	219	201	242	263	260
Natural Resources Canada	1,659	1,641	1,667	1,523	1,536
Parks Canada	587	597	626	613	613
Public Health Agency of Canada	336	593	539	574	583
Statistics Canada	5,359	5,226	5,084	5,236	6,034
Total of major departments and agencies	16,463	17,073	17,577	17,555	18,369
Other	3,941	3,988	4,120	3,995	3,855

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

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2009/2010 full time equivalent counts. Due to rounding, components may not add to the totals.

Table 5-1

Federal expenditures by provinces and territories — On science and technology

	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
	millions of dollars				
Total	9,449	9,633	10,176	10,573	11,613
Canada	9,143	9,332	9,730	10,017	11,060
Newfoundland and Labrador	128	119	126	118	138
Prince Edward Island	47	47	41	53	45
Nova Scotia	261	303	307	317	377
New Brunswick	93	107	130	111	151
Quebec ¹	1,485	1,468	1,517	1,623	1,715
Ontario ¹	2,101	2,045	2,382	2,548	2,992
Manitoba	254	235	266	306	368
Saskatchewan	193	208	193	216	249
Alberta	484	499	471	515	613
British Columbia	673	681	822	730	920
Yukon Territory, Northwest Territories and Nunavut	51	42	42	51	62
National Capital Region ²	2,912	2,989	2,922	3,104	3,228
Unallocated (within Canada)	461	587	511	324	201
Foreign (outside Canada)	306	301	445	556	553

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

2. 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, 2009/2010

	Intramural	Business enterprises	Higher education	Other performers ¹	Total
millions of dollars					
Total sciences	5,832	1,081	3,107	1,593	11,613
Total sciences - Canada	5,832	1,081	3,107	1,040	11,060
Newfoundland and Labrador	61	31	34	12	138
Prince Edward Island	19	11	10	5	45
Nova Scotia	204	39	101	33	377
New Brunswick	64	30	40	17	151
Quebec ²	468	309	744	194	1,715
Ontario ²	938	377	1,158	519	2,992
Manitoba	224	13	81	50	368
Saskatchewan	101	10	112	25	249
Alberta	197	85	263	68	613
British Columbia	272	113	454	80	920
Yukon, Northwest Territories and Nunavut	56	0	2	4	62
National Capital Region ³	3,228	3,228
Unallocated (within Canada)	...	63	107	31	201
Foreign (outside Canada)	553	553
Natural sciences	4,301	1,031	2,376	1,107	8,815
Natural sciences - Canada	4,301	1,031	2,376	763	8,471
Newfoundland and Labrador	58	31	25	8	123
Prince Edward Island	18	11	8	4	41
Nova Scotia	180	39	74	31	323
New Brunswick	61	29	27	14	131
Quebec ²	432	302	559	167	1,459
Ontario ²	883	351	859	323	2,416
Manitoba	210	12	61	43	325
Saskatchewan	98	10	95	22	225
Alberta	181	80	205	65	531
British Columbia	261	111	359	66	797
Yukon, Northwest Territories and Nunavut	51	0	0	1	53
National Capital Region ³	1,868	1,868
Unallocated (within Canada)	...	54	105	19	179
Foreign (outside Canada)	344	344
Social sciences	1,531	50	730	487	2,798
Social sciences - Canada	1,531	50	730	277	2,589
Newfoundland and Labrador	2	0	9	3	15
Prince Edward Island	1	0	2	2	4
Nova Scotia	24	0	27	2	53
New Brunswick	3	0	14	4	21
Quebec ²	36	7	185	27	255
Ontario ²	55	26	299	196	576
Manitoba	14	1	20	7	43
Saskatchewan	3	0	18	3	24
Alberta	16	5	58	3	82
British Columbia	11	2	95	14	123
Yukon, Northwest Territories and Nunavut	5	0	2	3	10
National Capital Region ³	1,360	1,360
Unallocated (within Canada)	...	8	1	12	22
Foreign (outside Canada)	209	209

1. Includes Canadian non-profit institutions, provincial and municipal governments, and other 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, 2009/2010

	Intramural	Business enterprises	Higher education	Other performers ¹	Total
millions of dollars					
Total sciences	2,762	868	2,765	1,060	7,456
Canada	2,762	868	2,765	822	7,217
Newfoundland and Labrador	25	29	31	8	92
Prince Edward Island	15	11	9	5	40
Nova Scotia	67	38	90	30	226
New Brunswick	37	27	33	13	110
Quebec ²	222	260	675	159	1,316
Ontario ²	721	284	1,001	401	2,407
Manitoba	112	9	74	43	239
Saskatchewan	72	6	106	22	206
Alberta	108	75	235	64	482
British Columbia	115	103	406	61	685
Yukon, Northwest Territories and Nunavut	5	0	2	2	10
National Capital Region ³	1,264	1,264
Unallocated (within Canada)	...	25	103	14	142
Foreign (outside Canada)	239	239
Natural sciences	2,546	861	2,194	854	6,455
Canada	2,546	861	2,194	689	6,290
Newfoundland and Labrador	25	29	24	5	82
Prince Edward Island	15	11	8	3	37
Nova Scotia	67	38	68	29	202
New Brunswick	36	27	24	12	99
Quebec ²	219	259	521	151	1,149
Ontario ²	715	280	784	296	2,074
Manitoba	112	9	57	40	219
Saskatchewan	72	6	90	20	188
Alberta	108	75	186	63	433
British Columbia	115	102	329	57	603
Yukon, Northwest Territories and Nunavut	5	0	0	0	6
National Capital Region ³	1,058	1,058
Unallocated (within Canada)	...	25	103	12	140
Foreign (outside Canada)	165	165
Social sciences	216	7	572	206	1,001
Canada	216	7	572	133	928
Newfoundland and Labrador	0	0	8	3	10
Prince Edward Island	0	0	2	1	3
Nova Scotia	0	0	22	1	24
New Brunswick	1	0	9	1	11
Quebec ²	3	1	154	8	167
Ontario ²	5	5	217	106	333
Manitoba	0	0	17	3	20
Saskatchewan	0	0	16	2	18
Alberta	0	0	49	1	50
British Columbia	0	0	77	4	81
Yukon, Northwest Territories and Nunavut	0	0	0	0	1
National Capital Region ³	206	206
Unallocated (within Canada)	...	0	0	2	2
Foreign (outside Canada)	73	73

1. Includes Canadian non-profit institutions, provincial and municipal governments, and other 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, 2009/2010

	Intramural	Business enterprises	Higher education	Other performers ¹	Total
millions of dollars					
Total sciences	3,070	213	341	533	4,157
Canada	3,070	213	341	218	3,843
Newfoundland and Labrador	36	2	3	4	45
Prince Edward Island	4	0	1	1	5
Nova Scotia	137	1	11	2	151
New Brunswick	27	2	8	4	42
Quebec ²	246	49	69	35	399
Ontario ²	217	93	157	118	585
Manitoba	112	3	7	7	130
Saskatchewan	30	4	6	3	43
Alberta	89	10	28	4	131
British Columbia	158	11	48	19	236
Yukon, Northwest Territories and Nunavut	50	0	0	2	52
National Capital Region ³	1,964	1,964
Unallocated (within Canada)	...	38	4	18	59
Foreign (outside Canada)	315	315
Natural sciences	1,755	170	183	253	2,360
Canada	1,755	170	183	74	2,181
Newfoundland and Labrador	33	2	2	3	41
Prince Edward Island	3	0	0	0	4
Nova Scotia	113	1	6	2	121
New Brunswick	26	2	3	1	32
Quebec ²	213	43	38	16	310
Ontario ²	167	71	75	28	342
Manitoba	98	2	3	3	106
Saskatchewan	27	4	4	2	37
Alberta	73	5	18	2	99
British Columbia	146	9	30	9	194
Yukon, Northwest Territories and Nunavut	46	0	0	0	46
National Capital Region ³	810	810
Unallocated (within Canada)	...	30	2	7	39
Foreign (outside Canada)	179	179
Social sciences	1,315	43	159	280	1,797
Canada	1,315	43	159	144	1,661
Newfoundland and Labrador	2	0	2	1	5
Prince Edward Island	1	0	0	0	1
Nova Scotia	24	0	5	1	30
New Brunswick	2	0	5	3	10
Quebec ²	33	6	31	19	88
Ontario ²	50	21	82	91	244
Manitoba	14	1	4	4	23
Saskatchewan	3	0	2	1	6
Alberta	16	5	10	2	32
British Columbia	11	2	18	11	42
Yukon, Northwest Territories and Nunavut	5	0	0	0	5
National Capital Region ³	1,154	1,154
Unallocated (within Canada)	...	8	1	11	20
Foreign (outside Canada)	136	136

1. Includes Canadian non-profit institutions, provincial and municipal governments, and other 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, 2009/2010

	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
millions of dollars														
Total Sciences														
Total science and technology	77	26	173	87	1,247	2,054	144	148	416	648	6	201	5,228	553
Grants and contribution	70	26	163	77	1,172	1,801	135	141	399	577	6	119	4,686	528
Contracts	7	1	9	10	75	253	9	7	17	71	1	82	542	26
Total research and development	68	25	159	73	1,094	1,686	126	134	374	570	4	142	4,455	239
Grants and contribution	66	25	153	72	1,052	1,570	123	133	364	516	4	106	4,184	222
Contracts	1	0 ^s	5	1	42	116	3	2	10	54	0 ^s	36	271	16
Total related scientific activities	10	1	14	14	153	368	18	13	42	78	2	59	773	315
Grants and contribution	4	1	10	5	120	231	12	8	35	61	1	13	502	305
Contracts	6	0 ^s	4	9	33	137	6	5	7	17	1	46	271	9
Natural sciences														
Total science and technology	65	23	144	69	1,028	1,533	115	127	350	537	1	179	4,170	344
Grants and contribution	58	22	136	65	967	1,351	110	121	334	471	1	106	3,743	321
Contracts	7	0 ^s	7	4	60	182	5	6	16	65	0 ^s	73	427	23
Total research and development	57	22	135	63	931	1,359	107	117	325	489	0^s	140	3,744	165
Grants and contribution	56	22	130	62	891	1,250	104	115	315	435	0 ^s	104	3,484	150
Contracts	1	0 ^s	5	1	40	109	3	2	10	54	0 ^s	35	260	15
Total related scientific activities	7	1	9	6	97	174	9	10	25	48	1	39	426	179
Grants and contribution	2	1	6	3	77	102	6	6	19	36	1	2	260	171
Contracts	6	0 ^s	2	3	20	73	2	5	6	12	0 ^s	38	167	8
Social Sciences														
Total science and technology	13	4	29	18	219	521	29	21	66	112	5	22	1,058	209
Grants and contribution	13	3	27	12	205	450	25	20	65	106	5	13	943	207
Contracts	0 ^s	0 ^s	2	6	15	71	4	0 ^s	1	6	0 ^s	9	115	2
Total research and development	10	3	24	10	164	327	20	18	50	81	4	2	712	73
Grants and contribution	10	3	24	9	161	320	19	17	50	81	4	2	701	72
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	2	7	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	11	1
Total related scientific activities	2	0^s	6	8	56	194	9	3	16	31	1	20	346	136
Grants and contribution	2	0 ^s	4	2	43	129	6	3	15	25	1	12	242	135
Contracts	0 ^s	0 ^s	2	6	12	64	3	0 ^s	1	5	0 ^s	8	104	1

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 business enterprise on science and technology, by type of science and activity, 2009/2010

	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	31	11	39	30	309	377	13	10	85	113	0^s	63	1,081
Grants and contribution	28	11	35	27	252	191	7	6	76	56	0 ^s	0 ^s	688
Contracts	3	0 ^s	4	3	57	186	6	4	9	58	0 ^s	62	394
Total research and development	29	11	38	27	260	284	9	6	75	103	0^s	25	868
Grants and contribution	28	11	35	27	224	183	7	6	70	52	0 ^s	0 ^s	643
Contracts	1	0 ^s	3	1	36	101	3	0 ^s	5	50	0 ^s	25	225
Total related scientific activities	2	0^s	1	2	49	93	3	4	10	11	0^s	38	213
Grants and contribution	0 ^s	0 ^s	0 ^s	0 ^s	28	7	0 ^s	0 ^s	5	3	0 ^s	0 ^s	45
Contracts	2	0 ^s	1	2	21	85	3	4	4	8	0 ^s	38	169
Natural sciences													
Total science and technology	31	11	39	29	302	351	12	10	80	111	0^s	54	1,031
Grants and contribution	28	11	35	27	250	187	7	6	72	55	0 ^s	0 ^s	677
Contracts	3	0 ^s	4	2	52	164	5	4	9	57	0 ^s	54	354
Total research and development	29	11	38	27	259	280	9	6	75	102	0^s	25	861
Grants and contribution	28	11	35	27	224	180	7	6	70	52	0 ^s	0 ^s	640
Contracts	1	0 ^s	3	1	35	99	2	0 ^s	5	50	0 ^s	24	221
Total related scientific activities	2	0^s	1	2	43	71	2	4	5	9	0^s	30	170
Grants and contribution	0 ^s	0 ^s	0 ^s	0 ^s	26	7	0 ^s	0 ^s	1	2	0 ^s	0 ^s	37
Contracts	2	0 ^s	1	2	17	65	2	4	4	7	0 ^s	30	133
Social Sciences													
Total science and technology	0^s	0^s	0^s	0^s	7	26	1	0^s	5	2	0^s	8	50
Grants and contribution	0 ^s	0 ^s	0 ^s	0 ^s	1	4	0 ^s	0 ^s	4	1	0 ^s	0 ^s	10
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	5	22	1	0 ^s	0 ^s	1	0 ^s	8	40
Total research and development	0^s	0^s	0^s	0^s	1	5	0^s	0^s	0^s	0^s	0^s	0^s	7
Grants and contribution	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	3	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	3
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	1	2	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	4
Total related scientific activities	0^s	0^s	0^s	0^s	6	21	1	0^s	5	2	0^s	8	43
Grants and contribution	0 ^s	0 ^s	0 ^s	0 ^s	1	0 ^s	0 ^s	0 ^s	4	1	0 ^s	0 ^s	7
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	4	21	1	0 ^s	0 ^s	1	0 ^s	8	36

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 higher education sector on science and technology, by type of science and activity, 2009/2010

	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	34	10	101	40	744	1,158	81	112	263	454	2	107	3,107
Grants and contribution	33	10	97	36	736	1,129	80	111	256	450	2	99	3,040
Contracts	1	0 ^s	3	4	7	29	1	1	7	4	0	8	67
Total research and development	31	9	90	33	675	1,001	74	106	235	406	2	103	2,765
Grants and contribution	30	9	89	32	671	989	74	105	231	404	2	97	2,735
Contracts	1	0 ^s	1	1	4	11	0 ^s	1	4	2	0 ^s	6	30
Total related scientific activities	3	1	11	8	69	157	7	6	28	48	0^s	4	341
Grants and contribution	3	0 ^s	8	4	65	140	6	6	25	46	0 ^s	1	305
Contracts	0 ^s	0 ^s	2	4	4	17	1	1	3	2	0 ^s	2	36
Natural sciences													
Total science and technology	25	8	74	27	559	859	61	95	205	359	0^s	105	2,376
Grants and contribution	24	8	72	26	555	848	61	93	198	357	0 ^s	97	2,339
Contracts	1	0 ^s	2	1	4	12	0 ^s	1	6	2	0 ^s	8	37
Total research and development	24	8	68	24	521	784	57	90	186	329	0^s	103	2,194
Grants and contribution	23	8	67	23	518	776	57	90	182	327	0 ^s	97	2,168
Contracts	1	0 ^s	1	1	3	8	0 ^s	1	4	2	0 ^s	6	26
Total related scientific activities	2	0^s	6	3	38	75	3	4	18	30	0^s	2	183
Grants and contribution	1	0 ^s	5	2	37	72	3	4	16	30	0 ^s	0 ^s	172
Contracts	0 ^s	0 ^s	1	0 ^s	0 ^s	4	0 ^s	1	2	1	0 ^s	2	11
Social Sciences													
Total science and technology	9	2	27	14	185	299	20	18	58	95	2	1	730
Grants and contribution	9	2	25	10	181	282	20	18	58	93	2	1	701
Contracts	0 ^s	0 ^s	2	3	4	17	1	0 ^s	1	2	0	0 ^s	30
Total research and development	8	2	22	9	154	217	17	16	49	77	2	0^s	572
Grants and contribution	7	2	22	9	153	213	17	16	49	77	2	0 ^s	567
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	1	3	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	4
Total related scientific activities	2	0^s	5	5	31	82	4	2	10	18	0^s	1	159
Grants and contribution	2	0 ^s	3	1	28	68	3	2	9	16	0 ^s	1	133
Contracts	0 ^s	0 ^s	2	3	3	14	1	0 ^s	1	2	0 ^s	0 ^s	25

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 other¹ Canadian performer sector on science and technology, by type of science and activity, 2009/2010

	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	12	5	33	17	194	519	50	25	68	80	4	31	1,040
Grants and contributions	9	5	31	14	184	481	48	24	67	71	4	20	958
Contracts	3	0 ^s	2	3	10	38	2	1	1	9	0 ^s	11	81
Total research and development	8	5	30	13	159	401	43	22	64	61	2	14	822
Grants and contributions	8	5	30	13	157	397	43	22	63	59	2	8	806
Contracts	0 ^s	0 ^s	1	0 ^s	2	4	0 ^s	0 ^s	1	2	0 ^s	6	15
Total related scientific activities	4	1	2	4	35	118	7	3	4	19	2	18	218
Grants and contributions	1	1	2	1	27	84	5	3	4	12	1	12	152
Contracts	3	0 ^s	1	3	8	34	2	0 ^s	0 ^s	8	0 ^s	6	66
Natural sciences													
Total science and technology	8	4	31	14	167	323	43	22	65	66	1	19	763
Grants and contributions	5	3	29	13	162	317	43	22	64	60	1	8	726
Contracts	3	0 ^s	2	1	5	6	0 ^s	1	1	6	0 ^s	11	36
Total research and development	5	3	29	12	151	296	40	20	63	57	0^s	12	689
Grants and contributions	5	3	28	12	149	294	40	20	62	56	0 ^s	7	676
Contracts	0 ^s	0 ^s	1	0 ^s	2	2	0 ^s	0 ^s	1	2	0 ^s	5	13
Total related scientific activities	3	0^s	2	1	16	28	3	2	2	9	1	7	74
Grants and contributions	0 ^s	0 ^s	1	1	13	23	3	2	2	4	1	2	51
Contracts	3	0 ^s	1	1	3	4	0 ^s	0 ^s	0 ^s	5	0 ^s	6	23
Social sciences													
Total science and technology	3	2	2	4	27	196	7	3	3	14	3	12	277
Grants and contributions	3	2	2	1	22	165	5	3	3	11	3	12	232
Contracts	0 ^s	0 ^s	0 ^s	3	5	32	2	0 ^s	0 ^s	3	0 ^s	0 ^s	45
Total research and development	3	1	1	1	8	106	3	2	1	4	2	2	133
Grants and contributions	3	1	1	0 ^s	8	104	3	2	1	3	2	1	130
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	2	2	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	3
Total related scientific activities	1	0^s	1	3	19	91	4	1	2	11	1	11	144
Grants and contributions	1	0 ^s	1	1	14	61	3	1	2	8	1	10	101
Contracts	0 ^s	0 ^s	0 ^s	2	5	30	1	0 ^s	0 ^s	3	0 ^s	0 ^s	43

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

	2007/2008		2008/2009		2009/2010	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
millions of dollars						
Science and technology expenditures	4,885	4,980	5,134	5,075	5,440	5,781
Exploration and exploitation of the earth	441	91	409	90	445	107
Infrastructure and general planning of land use						
Transport	92	40	170	50	164	67
Telecommunication	48	30	51	38	51	46
Other	152	38	150	36	155	72
Control and care of the environment	486	295	531	359	534	360
Protection and improvement of human health	576	1,573	587	1,641	656	1,651
Production, distribution and rational utilization of energy	419	144	492	148	577	193
Agricultural production and technology						
Agriculture	438	185	442	208	485	313
Fishing	162	43	147	40	138	40
Forestry	88	90	91	74	103	96
Industrial production and technology	297	936	280	904	317	893
Social structures and relationships	974	377	1,065	399	1,031	422
Exploration and exploitation of space	132	211	141	218	148	257
Non-oriented research	316	652	292	576	342	1,050
Other civil research	31	110	28	132	35	91
Defence	235	165	257	161	257	122
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

	2007/2008		2008/2009		2009/2010	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
millions of dollars						
Science and technology expenditures	2,421	4,071	2,477	4,055	2,628	4,694
Exploration and exploitation of the earth	102	72	87	64	95	87
Infrastructure and general planning of land use						
Transport	52	33	61	40	63	55
Telecommunication	44	28	48	37	48	43
Other	44	33	44	31	44	32
Control and care of the environment	203	198	205	217	207	223
Protection and improvement of human health	258	1,364	243	1,406	274	1,443
Production, distribution and rational utilization of energy	387	107	458	126	544	164
Agricultural production and technology						
Agriculture	337	128	348	137	390	213
Fishing	45	21	8	20	8	26
Forestry	61	65	64	60	66	62
Industrial production and technology	203	875	195	853	227	843
Social structures and relationships	100	228	124	224	106	232
Exploration and exploitation of space	123	208	129	213	81	197
Non-oriented research	239	609	221	533	254	990
Other civil research	18	10	16	9	23	5
Defence	205	91	227	87	198	79
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

	2007/2008		2008/2009		2009/2010	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
	millions of dollars					
Science and technology expenditures	2,464	909	2,657	1,019	2,812	1,087
Exploration and exploitation of the earth	339	19	322	26	350	20
Infrastructure and general planning of land use						
Transport	39	7	109	10	102	11
Telecommunication	4	1	4	2	3	2
Other	109	5	106	5	111	41
Control and care of the environment	282	98	325	143	327	137
Protection and improvement of human health	317	209	344	235	382	208
Production, distribution and rational utilization of energy	32	37	35	22	33	29
Agricultural production and technology						
Agriculture	101	57	94	72	96	100
Fishing	117	22	140	20	131	14
Forestry	26	25	27	14	37	34
Industrial production and technology	94	60	86	52	90	51
Social structures and relationships	875	149	941	175	925	190
Exploration and exploitation of space	9	3	12	4	67	61
Non-oriented research	77	43	71	43	88	60
Other civil research	13	101	13	124	12	86
Defence	30	74	30	74	59	44
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. 2007/2008; forecast expenditures for the current fiscal year, e.g. 2008/2009; and proposed estimates for the fiscal year, e.g. 2009/2010 (as also reported in the Public Accounts).

Sixty-four 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.

The values for non program costs (cost of services without charge) are no longer publicly available through the Government Expense Plan and Main estimates due to a change in the structure of government reporting. Statistics Canada is currently investigating alternative sources for these values. If suitable alternative avenues are not forthcoming, commencing in 2011/2012, Statistics Canada will discontinue the inclusion of non program costs in the dissemination of Science and Technology (S&T) expenditures of Federal government departments and agencies.

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), universities, provincial and municipal governments, Canadian non-profit organizations, other 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;
- 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 and accommodation provided by the reporting program 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;
- 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.