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Federal Scientific Activities

2010/2011



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Federal Scientific Activities

2010/2011

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User information

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

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Highlights

- Federal departments and agencies anticipate spending \$11.7 billion (current dollars) in 2010/2011 on science and technology (S&T), a small increase from the \$11.3 billion in planned spending the year before, but a 10.4 % increase over the \$10.6 billion spent in 2008/2009, where actual, or final, data are available. (Table 1-1)
- Of the total S&T expenditures of \$11.7 billion, \$5.9 billion is anticipated to be spent within the federal departments and agencies (Table 2-1) and \$5.8 billion will be directed to other sectors such as higher education, the business sector, private non-profit organizations and foreign and other entities, to support their S&T activities. (Table 3-1)
- Canada's federal government intends to spend \$7.4 billion on research and development in 2010/2011. Related scientific activities (which include the gathering, processing and analyzing of data, information services, museum services, feasibility and policy studies, and education support) are expected to receive \$4.3 billion. (Table 1-5)
- S&T expenditures are available for two science types, natural science and engineering (NSE) and social sciences and humanities (SSH). About three-quarters of all federal government S&T spending is allocated to NSE and one quarter to SSH in 2010/2011. (Table 1-6)
- In 2010/2011, over half (54%) of the \$5.9 billion in S&T activities to be performed by federal government departments and agencies, is expected to be directed to RSA, with the remainder being spent on R&D. (Table 2-1)
- In 2010/2011, federal departments and agencies anticipate a total of 39,182 full-time equivalent employees engaged in S&T activities. Of these employees, 18,028 will be classified as "scientific and professional", 9,280 as "technical" and 11,874 as "other" engaged in support activities. (Table 4-5)

Analysis

Federal departments and agencies anticipate spending \$11.7 billion (current dollars) in 2010/2011 on science and technology (S&T), a small increase from the \$11.3 billion in planned spending the year before, but a 10.4% increase over the \$10.6 billion spent in 2008/2009, where actual, or final, data are available. (Table 1-1)

Data for 2010/2011 are forecasts of expenditure by departments and thus are provisional and subject to change. Data for 2009/2010 are planned spending for the fiscal period that was almost closed at the time of data collection; these data are provisional, but change only rarely. Data for 2008/2009 are actual expenditures incurred by the reporting departments and agencies, and, as such, are not subject to change.

Of the \$11.7 billion, \$5.9 billion is anticipated to be spent within the departments and agencies (Table 2-1) and \$5.8 billion has been directed to other sectors such as higher education, the business sector, private non-profit organizations and foreign and other entities, to support their S&T activities. (Table 3-1)

Measured in constant dollars, to account for the impacts of inflation, actual federal government S&T spending increased by 38.5% over the ten-year period from 1998/1999 to 2008/2009. (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”.¹ Related scientific activities include activities such as scientific data collection, information services, special services and studies and education support, as well as administration of extramural RSA activities, all of which support R&D activities.

The majority, \$7.4 billion or 64%, of federal S&T spending is anticipated to be dedicated to R&D activities, while RSA accounts for the remainder; \$4.3 billion. (Table 1-5)

S&T expenditures are available for two science types, “natural science and engineering” and “social sciences and humanities”. About three-quarters of all federal government S&T spending has been directed to natural sciences and engineering and one quarter to social sciences and humanities throughout the period from 2006/2007 to 2010/2011. (Table 1-6)

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

In 2010/2011, over half (54%) of the \$5.9 billion in S&T activities to be performed by federal government departments and agencies, is expected to be directed to RSA, with the remainder being spent on R&D. (Table 2-1)

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

The federal government funds S&T activities through grants, contributions and contracts. Grants or contributions are not intended to secure a particular deliverable, but rather to promote the undertaking of the activity being supported. Contracts, by contrast, are connected to a particular deliverable sought by a department. The distribution of this funding through these channels has been stable from year to year.

In 2010/2011, it is expected that the federal government will channel \$5.8 billion to other sectors to perform S&T activities. The vast majority (81%) of extramural dollars are anticipated to be directed to R&D activities. (Table 3-1)

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

The higher education sector is anticipated to receive \$3.2 billion in federal extramural payments in the same year. Ninety percent of these funds will be for R&D activities and the remaining ten percent for RSA (Table 3-1). Ninety five percent of the funds for R&D activities will come from the four granting councils: Natural Sciences and Engineering Research Council, Social Sciences and Humanities Research Council, Canadian Institutes of Health Research, and the Canada Foundation for Innovation. (Table 3-3)

The second most significant recipient of federal government S&T funding is the business sector, expected to receive \$1.1 billion in 2010/2011. (Table 3-1)

The business sector is anticipated to receive funds as follows: 25% through R&D contracts, 57% through grants and contributions for R&D and 18% for RSA activities. (Table 3-4)

Personnel

In 2010/2011, federal departments and agencies will have a total of 39,182 full-time equivalent employees engaged in S&T activities. Of these employees, 18,028 are expected to be classified as “scientific and professional”, 9,280 as “technical” and 11,874 as “other” engaged in support activities. (Table 4-5)

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

Objectives of science and technology (S&T) and research and development (R&D) activities

Protection and improvement of human health was the socio-economic objective receiving the highest level of federal government S&T funding at \$2.2 billion in 2008/2009, the most recent year for which data are available. (Table 6-1)

In terms of R&D funding, the three most significant objectives for federal funds were: protection and improvement of human health (\$1.6 billion), industrial production and technology (\$1 billion) and non-oriented research (\$754 million). (Table 6-2)

Overall, 38% of all R&D was performed intramurally, but certain socio-economic objectives were more likely to be researched within government departments than others. Energy-related R&D, along with R&D related to agriculture were at least 70% undertaken in-house, while health-related and industrial production-related R&D were the most likely to be funded by the federal government but performed by other sectors. (Table 6-2)

Notice to users

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.

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 (S&T), research and development (R&D) and related scientific activities (RSA) 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			
1998/1999	145,457	5,802	3,578	2,224	92.3	157,592	6,286	3,876	2,410
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	100.0	170,367	8,014	4,927	3,087
2003/2004	175,937	8,765	5,462	3,303	103.3	170,317	8,485	5,288	3,197
2004/2005	183,290	8,934	5,454	3,480	106.6	171,942	8,381	5,116	3,265
2005/2006	194,863	9,449	6,042	3,407	110.1	176,987	8,582	5,488	3,094
2006/2007	207,986	9,633	6,073	3,560	113.0	184,058	8,525	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 ^r	241,308	10,573	6,655	3,918	121.4	198,771	8,709	5,482	3,227
2009/2010 ^p	248,388	11,285	7,183	4,102	118.8	209,081	9,499	6,046	3,453
2010/2011 ^p	278,400	11,675	7,419	4,256	...	...	...	...	...

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total	9,633	10,176	10,573	11,285	11,675
Agriculture and Agri-Food Canada	408 ^{1,2}	366 ²	377	425 ³	420
Atomic Energy of Canada Limited	289	329	393	476 ⁴	435
Canada Foundation for Innovation	367	310	385	395 ⁵	488 ⁵
Canadian Institutes of Health Research	853	988	980	980	977
Canadian International Development Agency	344	354	435	453	409
Canadian Space Agency	305	283	294	356	391
Environment Canada	588	660	742 ⁶	748 ⁶	742 ⁶
Fisheries and Oceans Canada	317	292	289	287	286
Health Canada	330	493	515	550	555
Industry Canada	444	549 ⁷	460	847 ⁸	884 ⁸
National Defence	450	412	433	426	441
National Research Council Canada	769	840	781	718	767
Natural Resources Canada	580	584	585	599	772 ⁹
Natural Sciences and Engineering Research Council of Canada	900	1,018 ¹⁰	1,036	1,058	1,087
Social Sciences and Humanities Research Council of Canada	628 ¹¹	684 ^{12,13}	683 ¹⁴	692 ¹⁵	683 ¹⁶
Statistics Canada	798	639	684	713	790
Total of major departments and agencies	8,373	8,801	9,071	9,723	10,126
Other	1,260	1,374	1,502	1,562	1,549

1. Includes \$30 million for the Agriculture Development Fund project funded by Agriculture and Agri-Food Canada.
 2. Includes funding of the new Business Risk Management Suite which replaces the Agriculture Income Stabilization Program by Agriculture and Agri-Food Canada.
 3. Includes \$8 million for the Cost shared Growing Forward programs, and \$13 million for the Agricultural Bioproducts Innovation Program (ABIP).
 4. Includes cost of repairs to AECL's research reactor, the National Research Universal (NRU) reactor.
 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 \$795 million for the Clean Energy Fund Program, a 5 year program starting in 2010/2011.
 10. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Natural Sciences and Engineering Research Council of Canada.
 11. Includes \$260 million for indirect costs of university research funded by the Social Sciences and Humanities 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 several Centres of Excellence in Commercialization and Research (CECR) funded by Social Sciences and Humanities Research Council of Canada.
 14. Includes \$315 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
 15. Includes \$325 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
 16. 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 2008/2009 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

	2006/2007	2007/2008	2008/2009 ^f	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total	6,073	6,602	6,655	7,183	7,419
Agriculture and Agri-Food Canada	359 ^{1,2}	307 ²	329	382 ³	381
Atomic Energy of Canada Limited	289	329	393	476 ⁴	435
Canada Foundation for Innovation	367	310	385	395 ⁵	488 ⁵
Canadian Institutes of Health Research	838	970	957	957	954
Canadian Space Agency	290	276	285	345	380
Environment Canada	214	240	270 ⁶	272 ⁶	269 ⁶
Health Canada	49	161	155	173	172
Industry Canada	372	477 ⁷	384	764 ⁸	800 ⁸
National Defence	343	307	326	316	331
National Research Council Canada	700	772	719	652	704
Natural Resources Canada	259	276	282	289	373 ⁹
Natural Sciences and Engineering Research Council of Canada	788	891 ¹⁰	896	908	936
Social Sciences and Humanities Research Council of Canada	523 ¹¹	540 ¹²	559 ¹³	556 ¹⁴	547 ¹⁵
Total of major departments and agencies	5,391	5,857	5,942	6,485	6,769
Other	682	745	713	698	650

1. Includes \$30 million for the Agriculture Development Fund project funded by Agriculture and Agri-Food Canada.
2. Includes funding of the new Business Risk Management Suite which replaces the Agriculture Income Stabilization Program by Agriculture and Agri-Food Canada.
3. Includes \$8 million for the Cost shared Growing Forward programs, and \$13 million for the Agricultural Bioproducts Innovation Program (ABIP)
4. Includes cost of repairs to AECL's research reactor the National Research Universal (NRU) reactor.
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 \$795 million for the Clean Energy Fund Program, a 5 year program starting in 2010/2011.
10. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Natural Sciences and Engineering Research Council of Canada.
11. Includes \$260 million for indirect costs of university research funded by the Social Sciences and Humanities 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 2008/2009 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

	2006/2007	2007/2008	2008/2009 ^f	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total	3,560	3,573	3,918	4,102	4,256
Canadian International Development Agency	273	303	387	404	364
Environment Canada	374	420	472 ¹	476	473
Fisheries and Oceans Canada	232	217	277	275	274
Health Canada	281	332	360	377	383
Library and Archives Canada	94	97	115	115	119
National Defence	107	105	106	110	110
Natural Resources Canada	321	308	302	310	399
Natural Sciences and Engineering Research Council of Canada	112	126	140	150	151
Parks Canada	89	92	107	113	113
Public Health Agency of Canada	34	67	90	98	101
Social Sciences and Humanities Research Council of Canada	105	144 ²	124	136	136
Statistics Canada	748	582	622	658	732
Total of major departments and agencies	2,770	2,793	3,102	3,221	3,353
Other	789	780	815	882	903

1. 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.
 2. 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 2008/2009 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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Science and technology (S&T)	9,633	10,176	10,573	11,285	11,675
Research and development (R&D)	6,073	6,603	6,655	7,183	7,419
Current expenditures	5,642	6,170	6,107	6,641	6,901
Administration of extramural programs	279	294	321	328	337
Capital expenditures	152	139	228	214	180
Related scientific activities (RSA)	3,560	3,573	3,918	4,102	4,256
Data collection	1,870	1,759	2,049	2,035	2,168
Information services	669	639	613	733	750
Special services and studies	576	743	802	829	811
Education support	298	286	300	324	328
Administration of extramural programs	64	70	75	78	75
Capital expenditures	83	77	79	105	122

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total sciences	9,633	10,176	10,573	11,285	11,675
Intramural	5,244	5,196	5,498	5,582	5,852
Canadian business enterprises	902	936	910	1,019	1,105
Higher education institutions	2,660	2,990	3,066	3,078	3,169
Canadian non-profit institutions	305	548	469	485	454
Provincial and municipal governments	90	28	45	486	481
Foreign organizations	301	445	556	581	560
Other Canadian performers	13,111	34	29	54	53
Natural sciences	7,166	7,594	7,805	8,425	8,730
Intramural	3,729	3,790	3,971	3,989	4,167
Canadian business enterprises	850	898	870	969	1,057
Higher education institutions	1,991	2,301	2,345	2,376	2,468
Canadian non-profit institutions	243	326	282	277	243
Provincial and municipal governments	82	17	21	462	460
Foreign organizations	155	241	300	313	296
Other Canadian performers	115	22	15	39	39
Social sciences	2,467	2,582	2,768	2,861	2,945
Intramural	1,515	1,406	1,527	1,593	1,685
Canadian business enterprises	52	38	40	51	47
Higher education institutions	668	689	721	702	701
Canadian non-profit institutions	61	221	186	209	212
Provincial and municipal governments	8	11	24	24	21
Foreign organizations	146	204	256	268	264
Other Canadian performers	16	12	14	14	14

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total sciences	6,073	6,603	6,655	7,183	7,419
Intramural	2,496	2,532	2,599	2,573	2,690
Canadian business enterprises	642	758	732	831	906
Higher education	2,379	2,709	2,769	2,772	2,848
Canadian non-profit institutions	224	376	324	311	273
Provincial and municipal government	47	15	14	453	444
Foreign organizations	167	192	200	206	220
Other Canadian performers	118	20	17	37	39
Natural sciences	5,329	5,686	5,667	6,185	6,413
Intramural	2,340	2,360	2,388	2,355	2,461
Canadian business enterprises	638	752	729	827	903
Higher education	1,864	2,152	2,188	2,197	2,276
Canadian non-profit institutions	212	270	217	204	171
Provincial and municipal government	45	11	8	443	436
Foreign organizations	118	127	128	130	134
Other Canadian performers	112	13	8	28	31
Social sciences	744	916	988	998	1,006
Intramural	156	172	211	218	229
Canadian business enterprises	3	6	3	4	2
Higher education	514	557	582	575	572
Canadian non-profit institutions	13	105	106	106	102
Provincial and municipal government	1	4	6	10	7
Foreign organizations	49	65	72	76	85
Other Canadian performers	7	7	9	9	9

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total sciences	3,560	3,573	3,918	4,102	4,256
Intramural	2,748	2,664	2,899	3,009	3,162
Canadian business enterprises	261	177	178	188	199
Higher education	281	281	297	306	321
Canadian non-profit institutions	81	1,721	145	175	182
Provincial and municipal government	43	13	31	33	37
Foreign organizations	134	253	356	376	341
Other Canadian performers	12	13	13	16	13
Natural sciences	1,837	1,908	2,138	2,240	2,317
Intramural	1,389	1,430	1,583	1,634	1,706
Canadian business enterprises	212	146	141	142	154
Higher education	127	148	158	179	192
Canadian non-profit institutions	32	56	65	72	72
Provincial and municipal government	36	5	12	19	23
Foreign organizations	37	114	172	183	162
Other Canadian performers	3	9	7	11	8
Social sciences	1,723	1,665	1,780	1,862	1,939
Intramural	1,358	1,234	1,316	1,375	1,457
Canadian business enterprises	49	31	37	47	45
Higher education	154	133	139	127	129
Canadian non-profit institutions	49	116	80	102	110
Provincial and municipal government	7	8	19	14	14
Foreign organizations	97	138	184	192	178
Other Canadian performers	9	5	6	6	5

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, 2008/2009^a**

	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	5,498	910	3,066	469	45	556	29	10,573
Total research and development	2,599	732	2,769	324	14	200	17	6,655
In-house research and development	1,805	...	...	...	...	...	...	1,805
Research and development contracts	47	231	30	4	2	19	3	336
Supporting contracts	189	...	...	...	...	...	...	189
Research and development grants and contributions	...	498	2,697	318	12	163	5	3,693
Research fellowships	9	4	42	1	0 ^s	18	9	83
Administration of extramural programs	321	...	...	...	...	...	...	321
Capital expenditures	228	...	...	...	...	...	...	228
Total related scientific activities	2,899	178	297	145	31	356	13	3,918
Data collection	1,885	88	11	38	6	16	5	2,049
Information services	526	25	20	19	9	14	0 ^s	613
Special services and studies	324	60	15	73	16	309	4	802
Education support	9	4	251	15	0 ^s	17	4	300
Administration of extramural programs	75	...	...	...	...	...	...	75
Capital expenditures	79	...	...	...	...	...	...	79

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, 2009/2010^a**

	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	5,582	1,019	3,078	485	486	581	54	11,285
Total research and development	2,573	831	2,772	311	453	206	37	7,183
In-house research and development	1,747	...	...	...	...	...	...	1,747
Research and development contracts	51	250	27	12	2	11	19	372
Supporting contracts	223	...	...	...	...	...	...	223
Research and development grants and contributions	...	576	2,703	231	451	176	10	4,146
Research fellowships	10	5	43	67	0	19	9	153
Administration of extramural programs	328	...	...	...	...	...	...	328
Capital expenditures	214	...	...	...	...	...	...	214
Total related scientific activities	3,009	188	306	175	33	376	16	4,102
Data collection	1,868	97	10	29	9	17	5	2,035
Information services	640	31	21	16	9	16	1	733
Special services and studies	309	56	27	91	15	324	7	829
Education support	10	4	248	38	0 ^s	20	4	324
Administration of extramural programs	78	...	...	...	...	...	...	78
Capital expenditures	105	...	...	...	...	...	...	105

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, 2010/2011^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	5,852	1,105	3,169	454	481	560	53	11,675
Total research and development	2,690	906	2,848	273	444	220	39	7,419
In-house research and development	1,876	...	...	...	...	...	...	1,876
Research and development contracts	54	272	31	14	3	13	20	407
Supporting contracts	232	...	...	...	...	...	...	232
Research and development grants and contributions	...	628	2,772	258	441	187	11	4,296
Research fellowships	10	6	45	1	0	20	9	90
Administration of extramural programs	337	...	...	...	...	...	...	337
Capital expenditures	180	...	...	...	...	...	...	180
Total related scientific activities	3,162	199	321	182	37	341	13	4,256
Data collection	1,996	98	11	31	9	18	5	2,168
Information services	649	33	21	22	8	16	1	750
Special services and studies	311	63	38	83	19	292	4	811
Education support	9	4	252	46	0 ^S	14	4	328
Administration of extramural programs	75	...	...	...	...	...	...	75
Capital expenditures	122	...	...	...	...	...	...	122

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^P	2010/2011 ^P
millions of dollars					
Science and technology	5,244	5,196	5,498	5,582	5,852
Research and development	2,496	2,532	2,599	2,573	2,690
Current expenditures	2,065	2,099	2,051	2,031	2,172
Administration of extramural programs	279	294	321	328	337
Capital expenditures	152	139	228	214	180
Related scientific activities	2,748	2,664	2,899	3,009	3,162
Data collection	1,730	1,606	1,885	1,868	1,996
Information services	579	587	526	640	649
Special services and studies	281	315	324	309	311
Education support	10	10	9	10	9
Administration of extramural programs	64	70	75	78	75
Capital expenditures	83	77	79	105	122

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total	5,244	5,196	5,498	5,582	5,852
Agriculture and Agri-Food Canada	352	351	356	388 ¹	369
Atomic Energy of Canada Limited	288	329	393	475 ²	434
Canadian Space Agency	150	101	112	123	135
Environment Canada	517	577	649 ³	656 ³	651 ³
Fisheries and Oceans Canada	307	269	266	264	263
Health Canada	289	354	354	372	370
Industry Canada	117	118	122	135	136
Library and Archives Canada	92	94	112	112	117
National Defence	311	248	272	292	293
National Research Council Canada	643	691	635	444	552
Natural Resources Canada	475	464	494	507	652 ⁴
Statistics Canada	777	631	675	699	778
Total of major departments and agencies	4,318	4,226	4,441	4,466	4,751
Other	926	969	1,057	1,115	1,101

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 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 \$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 2008/2009 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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total	2,496	2,532	2,599	2,573	2,690
Agriculture and Agri-Food Canada	307	297	311	348 ¹	332
Atomic Energy of Canada Limited	288	329	393	475 ²	434
Canadian Institutes of Health Research	55	60	62	59	59
Canadian Space Agency	137	95	104	114	126
Environment Canada	186	208	234 ³	236 ³	234 ³
Health Canada	44	72	55	62	58
National Defence	271	216	240	254	258
National Research Council Canada	574	623	574	378	489
Natural Resources Canada	205	192	205	210	270 ⁴
Statistics Canada	51	57	62	55	58
Total of major departments and agencies	2,119	2,149	2,238	2,192	2,317
Other	377	382	361	381	373

1. Includes \$8 million for the Cost shared Growing Forward programs, and \$13 million for the Agricultural Bioproducts Innovation Program (ABIP).
 2. Includes (in 2009/2010) repairs to AECL's research reactor the National Research Universal (NRU) reactor.
 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 \$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 2008/2009 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

	2006/2007	2007/2008	2008/2009 ^f	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total	2,748	2,664	2,899	3,009	3,162
Canadian Museum of Civilization	72	72	74	76	72
Environment Canada	331	369	415 ¹	420 ¹	417 ¹
Fisheries and Oceans Canada	222	195	254	252	251
Health Canada	244	282	299	310	312
Industry Canada	68	70	73	82	83
Library and Archives Canada	92	94	112	112	117
National Research Council Canada	69	68	61	66	64
Natural Resources Canada	270	271	290	297	382
Parks Canada	88	92	106	112	113
Statistics Canada	726	574	614	644	721
Treasury Board of Canada Secretariat	49	56	59	56	56
Total of major departments and agencies	2,233	2,143	2,358	2,428	2,587
Other	515	521	540	581	576

1. 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.

Note(s): Represents departments and agencies that contributed 2% or more to the total 2008/2009 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

	2004/2005	2005/2006	2006/2007 ^f	2007/2008 ^f	2008/2009
	millions of dollars				
National Capital Region (total)					
Science and technology (total)	2,709	2,912	2,989	2,922	3,104
Social sciences and humanities	1,222	1,283	1,340	1,258	1,377
Natural sciences and engineering	1,486	1,628	1,649	1,664	1,727
Research and development	961	1,123	1,105	1,134	1,146
Social sciences and humanities	116	121	153	166	202
Natural sciences and engineering	845	1,002	953	968	944
Related scientific activities	1,748	1,788	1,884	1,788	1,958
Social sciences and humanities	1,106	1,162	1,188	1,092	1,175
Natural sciences and engineering	642	626	696	697	783
National Capital Region (Ontario)					
Science and technology (total)	2,398	2,546	2,632¹	2,582¹	2,584
Social sciences and humanities	1,060	1,129	1,186	1,084	1,181
Natural sciences and engineering	1,338	1,416	1,445	1,498	1,404
Research and development	913	1,040	1,021	1,076	1,041
Social sciences and humanities	107	110	143	157	191
Natural sciences and engineering	806	930	878	919	851
Related scientific activities	1,485	1,506	1,611	1,506	1,543
Social sciences and humanities	953	1,019	1,043	927	990
Natural sciences and engineering	532	486	568	579	553
National Capital Region (Quebec)					
Science and technology (total)	310	366	358¹	340¹	520
Social sciences and humanities	162	154	154	174	196
Natural sciences and engineering	148	212	204	166	323
Research and development	48	83	85	58	105
Social sciences and humanities	9	11	9	10	12
Natural sciences and engineering	38	72	75	48	93
Related scientific activities	263	282	273	282	415
Social sciences and humanities	153	143	145	164	185
Natural sciences and engineering	110	140	128	117	230

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 FTEs involved in S&T 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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total science and technology	4,389	4,980	5,075	5,704	5,822
Business enterprises	902	936	910	1,019	1,105
Higher education	2,660	2,990	3,066	3,078	3,169
Canadian non-profit institutions	305	548	469	485	454
Provincial and municipal governments	90	28	45	486	481
Foreign performers	301	445	556	581	560
Other performers	131	34	29	54	53
Total research and development	3,577	4,071	4,056	4,610	4,729
Business enterprises	642	758	732	831	906
Higher education	2,379	2,709	2,769	2,772	2,848
Canadian non-profit institutions	224	376	324	311	273
Provincial and municipal governments	47	15	14	453	444
Foreign performers	167	192	200	206	220
Other performers	118	20	17	37	39
Total related scientific activities	812	909	1,019	1,094	1,093
Business enterprises	261	177	178	188	199
Higher education	281	281	297	306	321
Canadian non-profit institutions	81	172	145	175	182
Provincial and municipal governments	43	13	31	33	37
Foreign performers	134	253	356	376	341
Other performers	12	13	13	16	13

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total science and technology	902	936	910	1,019	1,105
Atlantic Canada Opportunities Agency	50	45	57	66	66
Canadian International Development Agency	119	24	21	22	20
Canadian Space Agency	100	128	131	158	174
Environment Canada	43	48	54	54	53
Industry Canada	301	295	290	232	299
National Defence	118	139	136	117	130
National Research Council Canada	66	86	87	217	183
Natural Resources Canada	31	72	64	65	85
Other	74	98	69	89	95
Total research and development	642	758	732	831	906
Atlantic Canada Opportunities Agency	50	45	57	66	66
Canadian Space Agency	98	128	130	157	173
Environment Canada	15	17	19	19	19
Industry Canada	300	294	289	232	299
National Defence	58	70	66	51	59
National Research Council Canada	66	86	87	217	183
Natural Resources Canada	28	58	59	60	78
Other	27	60	24	30	30
Total related scientific activities	261	177	178	188	199
Canadian International Development Agency	118	22	21	22	19
Environment Canada	28	31	35	35	34
Fisheries and Oceans Canada	5	6	6	6	6
Health Canada	5	9	5	10	12
National Defence	60	69	71	65	72
Natural Resources Canada	4	15	5	5	6
Public Health Agency of Canada	2	2	6	11	13
Statistics Canada	17	6	6	13	10
Other	22	17	22	21	27

Note(s): Represents departments and agencies that contributed 2% or more to the total 2008/2009 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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total science and technology	2,660	2,990	3,066	3,078	3,169
Canada Foundation for Innovation	326	298	372	382 ¹	473 ¹
Canadian Institutes of Health Research	682	901	891	893	891
Natural Sciences and Engineering Research Council of Canada	816	853	921	937	970
Social Sciences and Humanities Research Council of Canada	584 ²	604 ³	623 ⁴	630 ⁵	624 ⁶
Other	252	334	260	236	211
Total research and development	2,379	2,709	2,769	2,772	2,848
Canada Foundation for Innovation	326	298	372	382 ¹	473 ¹
Canadian Institutes of Health Research	668	884	869	871	869
Natural Sciences and Engineering Research Council of Canada	720	743	801	810	840
Social Sciences and Humanities Research Council of Canada	496 ²	512 ³	524 ⁴	519 ⁵	512 ⁶
Other	169	272	203	190	154
Total related scientific activities	281	281	297	306	321
Canadian Institutes of Health Research	14	17	22	22	22
Canadian International Development Agency	41	5	7	7	6
Health Canada	18	24	23	1	3
Natural Sciences and Engineering Research Council of Canada	97	110	119	127	130
Public Health Agency of Canada	1	7	7	6	6
Social Sciences and Humanities Research Council of Canada	87	92	99	111	112
Other	23	26	20	32	42

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

2. Includes \$260 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

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

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

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

6. 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 2008/2009 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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total science and technology payments	902	936	910	1,019	1,105
Total research and development payments	642	758	732	831	906
Total contracts	169	229	231	250	272
Canadian Space Agency	82	121	127	152	167
Environment Canada	15	17	19	19	18
National Defence	58	70	66	51	59
Transport Canada	3	7	5	10	10
Other	12	14	15	18	19
Total grants and contributions	468	526	498	576	628
Atlantic Canada Opportunities Agency	50	45	57	66	66
Industry Canada	300	294	289	232	299
National Research Council Canada	66	86	87	216	182
Natural Resources Canada	26	55	56	57	74
Other	26	46	8	6	7
Total research fellowships	4	4	4	5	6
Total related scientific activities payments	261	177	178	188	199
Canadian International Development Agency	118	22	21	22	19
Environment Canada	28	31	35	35	34
Fisheries and Oceans Canada	5	6	6	6	6
Health Canada	5	9	5	10	12
National Defence	60	69	71	65	72
Natural Resources Canada	4	15	5	5	6
Public Health Agency of Canada	2	2	6	11	13
Statistics Canada	17	6	6	13	10
Other	22	17	22	21	27

Note(s): Represents departments and agencies that contributed 2% or more to the total 2008/2009 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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total science and technology payments	2,660	2,990	3,066	3,078	3,169
Total research and development payments	2,379	2,709	2,769	2,772	2,848
Total contracts	37	31	30	27	31
Canadian Space Agency	13	12	12	13	14
Environment Canada	3	4	4	4	4
Health Canada	0 ^s	1	2	1	2
National Defence	9	7	7	4	6
National Research Council Canada	0 ^s	1	2	1	1
Natural Resources Canada	0 ^s	4	1	1	1
Public Health Agency of Canada	0 ^s	1	1	2	2
Royal Canadian Mounted Police	0 ^s	0 ^s	1	0	0
Other	11	1	1	1	1
Total grants and contributions	2,279	2,622	2,697	2,703	2,772
Canada Foundation for Innovation	326	298	372	382 ¹	473 ¹
Canadian Institutes of Health Research	625	835	834	836	834
Natural Sciences and Engineering Research Council of Canada	713	736	795	803	830
Social Sciences and Humanities Research Council of Canada	496 ²	512 ³	524 ⁴	519 ⁵	512 ⁶
Other	120	242	173	163	122
Total research fellowships	63	57	42	43	45
Total related scientific activities payments	281	281	297	306	321
Total education support payments	242	238	251	248	252
Canadian Institutes of Health Research	14	17	22	22	22
Health Canada	16	21	20	0 ^s	0
Natural Sciences and Engineering Research Council of Canada	97	110	119	127	130
Social Sciences and Humanities Research Council of Canada	79	81	86	96	97
Other	37	9	4	3	3
Total other related scientific activities	39	43	46	58	70

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

2. Includes \$260 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

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

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

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

6. 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 2008/2009 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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total science and technology	305	548	469	485	454
Agriculture and Agri-Food Canada	12	4	16	24	35
Canadian Institutes of Health Research	6	14	16	16	16
Canadian International Development Agency	19	53	47	49	44
Economic Development Agency of Canada for the Regions of Quebec	18	19	18	6	19
Environment Canada	8	10	11	11	11
Fisheries and Oceans Canada	1	10	10	10	10
Foreign Affairs and International Trade Canada	15	14	15	11	18
Genome Canada	85	92	76	68	38
Health Canada	9	95	105	133	135
Industry Canada	24	50 ¹	33	33	5
Natural Resources Canada	20	20	12	12	16
Natural Sciences and Engineering Research Council of Canada	17	70 ²	37	38	36
Public Health Agency of Canada	4	6	12	13	14
Social Sciences and Humanities Research Council of Canada	4	36 ³	10	11	10
Western Economic Diversification Canada	7	15	11	5	8
Other	54	39	38	44	40
Total research and development	224	376	324	311	273
Agriculture and Agri-Food Canada	9	1	15	23	34
Canadian Institutes of Health Research	6	14	16	16	16
Economic Development Agency of Canada for the Regions of Quebec	13	11	11	2	13
Genome Canada	85	92	76	68	38
Health Canada	2	82	89	94	95
Industry Canada	24	50 ¹	33	33	5
Natural Resources Canada	12	9	7	7	10
Natural Sciences and Engineering Research Council of Canada	15	68 ²	35	36	34
Western Economic Diversification Canada	7	15	8	4	7
Other	50	33	33	26	21
Total related scientific activities	81	172	145	175	182
Canadian International Development Agency	18	52	47	49	44
Economic Development Agency of Canada for the Regions of Quebec	5	8	7	5	7
Environment Canada	6	7	8	8	8
Fisheries and Oceans Canada	1	10	10	10	10
Foreign Affairs and International Trade Canada	15	14	15	11	18
Health Canada	8	13	16	39	40
Human Resources and Social Development Canada	1	3	5	7	12
Natural Resources Canada	8	11	5	5	6
Public Health Agency of Canada	3	5	11	11	13
Social Sciences and Humanities Research Council of Canada	3	35 ³	6	6	6
Other	14	14	15	24	18

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 2008/2009 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 sector, by major funding departments and agencies

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	millions of dollars				
Total science and technology	301	445	556	581	560
Canadian International Development Agency	107	236	320	335	302
Canadian Space Agency	37	37	36	42	46
Foreign Affairs and International Trade Canada	29	28	31	31	28
Health Canada	1	2	17	19	19
International Development Research Centre	60	74	80	86	99
National Defence	10	16	15	10	8
National Research Council Canada	14	10	12	13	12
Natural Sciences and Engineering Research Council of Canada	13	13	17	20	19
Other	31	29	29	27	28
Total research and development	167	192	200	206	220
Canadian Institutes of Health Research	11	11	8	8	8
Canadian International Development Agency	37	43	42	44	39
Canadian Space Agency	36	36	36	42	46
International Development Research Centre	51	65	71	76	88
National Defence	5	14	14	6	8
National Research Council Canada	14	10	12	13	12
Natural Sciences and Engineering Research Council of Canada	8	8	9	10	10
Other	5	6	8	7	8
Total related scientific activities	134	253	356	376	341
Canadian International Development Agency	70	193	278	291	262
Foreign Affairs and International Trade Canada	29	28	31	31	28
Health Canada	0 ^s	0 ^s	14	15	15
International Development Research Centre	9	9	9	10	12
Natural Sciences and Engineering Research Council of Canada	5	5	8	10	8

Note(s): Represents departments and agencies that contributed 2% or more to the total 2008/2009 expenditures. Due to rounding, components may not add to the totals.

Table 4-1

Federal personnel — Engaged in science and technology activities

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	number				
Total science and technology	36,027	36,037	37,333	38,513	39,182
Research and development	13,166	13,729	14,172	14,624	14,604
Administration of extramural research and development programs	1,978	1,904	2,100	2,248	2,291
Related scientific activities	20,337	19,821	20,459	20,989	21,608
Administration of extramural related scientific activities programs	548	583	602	653	679
Natural sciences and engineering	24,288	25,113	25,977	27,100	27,141
Research and development	12,445	13,072	13,240	13,756	13,663
Administration of extramural research and development programs	1,709	1,600	1,762	1,837	1,889
Related scientific activities	9,848	10,164	10,659	11,169	11,236
Administration of extramural related scientific activities programs	286	276	316	339	353
Social sciences and humanities	11,739	10,924	11,356	11,413	12,041
Research and development	720	657	932	868	941
Administration of extramural research and development programs	269	304	338	411	402
Related scientific activities	10,489	9,657	9,800	9,821	10,372
Administration of extramural related scientific activities programs	262	307	286	314	326

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	number				
Total science and technology	16,096	16,419	17,249	17,741	18,028
Research and development	5,984	6,295	6,532	6,598	6,682
Administration of extramural research and development programs	766	806	786	852	874
Related scientific activities	9,170	9,146	9,768	10,104	10,278
Administration of extramural related scientific activities programs	176	171	162	188	193
Natural sciences and engineering	11,952	12,309	12,475	12,838	12,960
Research and development	5,651	5,952	5,942	6,055	6,080
Administration of extramural research and development programs	668	690	650	686	712
Related scientific activities	5,547	5,589	5,794	6,000	6,071
Administration of extramural related scientific activities programs	86	79	88	97	97
Social sciences and humanities	4,144	4,110	4,774	4,903	5,068
Research and development	334	343	590	543	603
Administration of extramural research and development programs	98	117	136	165	162
Related scientific activities	3,623	3,558	3,974	4,104	4,207
Administration of extramural related scientific activities programs	90	92	74	91	96

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

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	number				
Total science and technology	8,822	9,137	8,897	9,197	9,280
Research and development	4,118	4,595	4,601	4,806	4,776
Administration of extramural research and development programs	70	65	104	106	111
Related scientific activities	4,613	4,437	4,181	4,253	4,366
Administration of extramural related scientific activities programs	20	40	12	32	28
Natural sciences and engineering	6,497	6,862	7,054	7,362	7,303
Research and development	3,986	4,429	4,511	4,713	4,682
Administration of extramural research and development programs	70	61	101	103	107
Related scientific activities	2,425	2,352	2,433	2,516	2,491
Administration of extramural related scientific activities programs	17	20	9	30	24
Social sciences and humanities	2,325	2,275	1,844	1,836	1,977
Research and development	132	166	90	93	94
Administration of extramural research and development programs	0	4	3	4	4
Related scientific activities	2,189	2,085	1,748	1,737	1,875
Administration of extramural related scientific activities programs	4	20	3	2	4

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

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	number				
Total science and technology	11,109	10,481	11,187	11,575	11,874
Research and development	3,063	2,839	3,039	3,220	3,146
Administration of extramural research and development programs	1,141	1,032	1,210	1,290	1,306
Related scientific activities	6,554	6,238	6,511	6,632	6,964
Administration of extramural related scientific activities programs	351	372	428	433	458
Natural sciences and engineering	5,839	5,941	6,449	6,901	6,878
Research and development	2,809	2,691	2,787	2,987	2,902
Administration of extramural research and development programs	970	849	1,011	1,048	1,070
Related scientific activities	1,876	2,224	2,432	2,653	2,674
Administration of extramural related scientific activities programs	184	177	218	213	232
Social sciences and humanities	5,270	4,539	4,738	4,674	4,996
Research and development	254	148	251	233	244
Administration of extramural research and development programs	171	183	199	242	236
Related scientific activities	4,677	4,014	4,079	3,979	4,290
Administration of extramural related scientific activities programs	168	195	209	220	227

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

Table 4-5
Federal personnel — Engaged in science and technology activities, by category and activity

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	number				
Total science and technology personnel	36,027	36,037	37,333	38,513	39,182
Scientific and professional	16,096	16,419	17,249	17,741	18,028
Technical	8,822	9,137	8,897	9,197	9,280
Other	11,109	10,481	11,187	11,575	11,874
Total research and development personnel	15,143	15,633	16,272	16,872	16,896
Scientific and professional	6,751	7,102	7,319	7,450	7,557
Technical	4,188	4,660	4,705	4,912	4,887
Other	4,204	3,871	4,248	4,510	4,452
Total related scientific activities personnel	20,884	20,404	21,061	21,642	22,287
Scientific and professional	9,346	9,318	9,930	10,292	10,471
Technical	4,634	4,477	4,192	4,285	4,393
Other	6,905	6,610	6,939	7,065	7,422

Note(s): Due to rounding, components may not add to the totals. Personnel counts are reported as full-time equivalents, includes administrative and foreign service, administrative support, operational and military personnel.

Table 4-6
Federal personnel — Engaged in science and technology activities in the natural sciences and engineering, by category and activity

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	number				
Total science and technology personnel	24,288	25,113	25,977	27,100	27,141
Scientific and professional	11,952	12,309	12,475	12,838	12,960
Technical	6,497	6,862	7,054	7,362	7,303
Other	5,839	5,941	6,449	6,901	6,878
Total research and development personnel	14,154	14,672	15,003	15,592	15,552
Scientific and professional	6,319	6,642	6,593	6,742	6,792
Technical	4,056	4,491	4,612	4,816	4,788
Other	3,779	3,540	3,798	4,035	3,972
Total related scientific activities personnel	10,134	10,441	10,975	11,508	11,589
Scientific and professional	5,633	5,667	5,882	6,097	6,168
Technical	2,441	2,372	2,442	2,546	2,515
Other	2,060	2,402	2,651	2,866	2,906

Note(s): Due to rounding, components may not add to the totals. Personnel counts are reported as full-time equivalents, includes administrative and foreign service, administrative support, operational and military personnel.

Table 4-7
Federal personnel — Engaged in science and technology activities in the social sciences and humanities, by category and activity

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	number				
Total science and technology personnel	11,739	10,924	11,356	11,413	12,041
Scientific and professional	4,144	4,110	4,774	4,903	5,068
Technical	2,325	2,275	1,844	1,836	1,977
Other	5,270	4,539	4,738	4,674	4,996
Total research and development personnel	989	961	1,269	1,279	1,343
Scientific and professional	432	460	726	708	765
Technical	132	170	93	96	99
Other	425	331	450	475	480
Total related scientific activities personnel	10,750	9,963	10,087	10,134	10,698
Scientific and professional	3,713	3,650	4,048	4,195	4,303
Technical	2,192	2,105	1,750	1,740	1,878
Other	4,845	4,208	4,288	4,199	4,516

Note(s): Due to rounding, components may not add to the totals. Personnel counts are reported as full-time equivalents, includes administrative and foreign service, administrative support, operational and military personnel.

Table 4-8
Federal personnel — Engaged in science and technology activities, by type of science, activity, category and by provinces and territories, 2008/2009

	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
millions of dollars													
Total Sciences													
Scientific and professional personnel													
Science and technology	199	53	593	237	1,530	2,092	451	268	635	806	143	10,243	17,249
Research and development	78	40	215	134	1,037	1,565	205	203	393	322	14	3,113	7,319
Related scientific activities	122	13	378	103	493	527	245	64	242	484	129	7,130	9,930
Total Personnel													
Science and technology	454	131	1,326	436	3,428	4,750	1,159	695	1,399	1,707	260	21,590	37,333
Research and development	175	100	533	251	2,311	3,421	548	501	906	666	21	6,837	16,272
Related scientific activities	279	31	792	184	1,117	1,329	610	193	493	1,042	239	14,753	21,061
Natural Sciences													
Scientific and professional personnel													
Science and technology	186	49	556	229	1,440	1,979	422	264	595	766	138	5,850	12,475
Research and development	78	40	213	134	1,029	1,543	205	203	389	318	14	2,426	6,593
Related scientific activities	108	9	344	95	411	436	217	61	205	447	124	3,424	5,882
Total Personnel													
Science and technology	414	122	1,181	417	3,189	4,407	1,050	677	1,308	1,624	233	11,356	25,977
Research and development	175	100	530	251	2,286	3,390	548	501	902	661	21	5,638	15,003
Related scientific activities	239	22	651	166	903	1,017	502	176	406	963	212	5,718	10,975
Social Sciences													
Scientific and professional personnel													
Science and technology	14	4	37	8	90	113	29	3	40	40	5	4,392	4,774
Research and development	0	0	2	0	8	22	0	0	3	4	0	687	726
Related scientific activities	14	4	35	8	81	91	29	3	37	37	5	3,706	4,048
Total Personnel													
Science and technology	40	9	145	18	239	343	109	18	91	83	28	10,235	11,356
Research and development	0	0	3	0	25	31	1	0	5	5	1	1,199	1,269
Related scientific activities	40	9	141	18	214	311	108	18	87	79	27	9,035	10,087

Note(s): Due to rounding, components may not add to the totals. Quebec and Ontario figures exclude federal government expenditures performed in the National Capital Region.

Table 4-9
Federal personnel — Engaged in science and technology activities, by major departments and agencies

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
number					
Total	36,027	36,037	37,333	38,513	39,182
Agriculture and Agri-Food Canada	2,300	2,362	2,190	2,251	2,212
Atomic Energy of Canada Limited	1,362	1,400	2,061	2,422	2,300
Canadian Space Agency	609	604	621	663	721
Environment Canada	3,577	3,439	3,453	3,681	3,681
Fisheries and Oceans Canada	1,796	1,803	1,861	1,913	1,920
Health Canada	2,688	3,168	3,078	3,317	3,370
Industry Canada	960	1,010	956	1,046	1,070
Library and Archives Canada	729	717	885	901	901
National Defence	1,873	1,898	1,879	1,878	2,002
National Research Council Canada	4,190	4,281	4,436	4,436	4,436
Natural Resources Canada	3,032	3,123	3,052	3,072	3,061
Statistics Canada	6,330	5,676	5,652	5,567	6,115
Total of major departments and agencies	29,446	29,481	30,124	31,146	31,788
Other	6,582	6,556	7,209	7,367	7,394

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2008/2009 expenditures. Due to rounding, components may not add to the totals. Personnel counts are reported as full-time equivalents.

Table 4-10

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	number				
Total	16,096	16,419	17,249	17,741	18,028
Agriculture and Agri-Food Canada	790	805	775	735	766
Atomic Energy of Canada Limited	603	588	845	993	943
Canadian Space Agency	280	326	286	306	333
Environment Canada	1,748	1,681	1,688	1,798	1,798
Fisheries and Oceans Canada	867	873	822	846	850
Health Canada	2,040	2,278	2,236	2,236	2,281
Industry Canada	677	677	663	738	761
Library and Archives Canada	278	281	451	447	447
National Defence	977	966	896	898	937
National Research Council Canada	1,640	1,632	1,732	1,732	1,732
Natural Resources Canada	1,908	1,924	1,924	1,912	1,918
Statistics Canada	1,396	1,465	1,511	1,526	1,676
Total of major departments and agencies	13,205	13,495	13,827	14,167	14,441
Other	2,891	2,924	3,422	3,574	3,586

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2008/2009 expenditures. Due to rounding, components may not add to the totals. Personnel counts are reported as full-time equivalents.

Table 4-11

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	number				
Total	8,822	9,137	8,897	9,197	9,280
Agriculture and Agri-Food Canada	971	999	907	890	900
Atomic Energy of Canada Limited	349	696	1,030	1,211	1,150
Canadian Space Agency	40	39	42	45	49
Environment Canada	1,068	1,026	1,030	1,098	1,098
Fisheries and Oceans Canada	750	749	695	715	717
Health Canada	265	337	274	327	329
Industry Canada	51	55	58	58	59
Library and Archives Canada	279	269	90	118	118
National Defence	438	433	472	474	492
National Research Council Canada	1,124	1,119	1,125	1,125	1,125
Natural Resources Canada	865	811	766	764	748
Statistics Canada	1,438	1,361	1,255	1,219	1,339
Total of major departments and agencies	7,638	7,896	7,743	8,045	8,124
Other	1,184	1,241	1,154	1,152	1,157

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2008/2009 expenditures. Due to rounding, components may not add to the totals. Personnel counts are reported as full-time equivalents.

Table 4-12

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	number				
Total	11,109	10,481	11,187	11,575	11,874
Agriculture and Agri-Food Canada	539	558	508	625	545
Atomic Energy of Canada Limited	410	115	185	218	207
Canadian Space Agency	288	239	292	312	340
Environment Canada	761	732	735	785	785
Fisheries and Oceans Canada	178	181	345	352	353
Health Canada	383	553	568	753	761
Industry Canada	232	279	235	250	250
Library and Archives Canada	172	166	345	335	335
National Defence	459	499	512	507	573
National Research Council Canada	1,426	1,530	1,579	1,579	1,579
Natural Resources Canada	259	388	362	396	396
Statistics Canada	3,496	2,850	2,887	2,822	3,100
Total of major departments and agencies	8,602	8,089	8,553	8,935	9,223
Other	2,507	2,391	2,634	2,640	2,651

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2008/2009 expenditures. Due to rounding, components may not add to the totals. Personnel counts are reported as full-time equivalents.

Table 4-13

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

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	number				
Total	15,143	15,633	16,272	16,872	16,896
Agriculture and Agri-Food Canada	2,040	2,076	1,982	2,039	1,993
Atomic Energy of Canada Limited	1,362	1,400	2,061	2,422	2,300
Canadian Institutes of Health Research	341	354	393	400	400
Canadian Space Agency	539	568	589	630	685
Environment Canada	1,001	962	966	1,029	1,029
Health Canada	342	469	458	458	456
National Defence	1,538	1,679	1,678	1,676	1,761
National Research Council Canada	3,684	3,833	3,989	3,989	3,989
Natural Resources Canada	1,435	1,464	1,411	1,384	1,373
Statistics Canada	393	317	426	348	387
Total of major departments and agencies	12,674	13,122	13,953	14,374	14,373
Other	2,469	2,511	2,319	2,497	2,523

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2008/2009 expenditures. Due to rounding, components may not add to the totals. Personnel counts are reported as full-time equivalents.

Table 4-14
Federal personnel — Engaged in related scientific activities, by major departments and agencies

	2006/2007	2007/2008	2008/2009 ^r	2009/2010 ^p	2010/2011 ^p
	number				
Total	20,884	20,404	21,061	21,642	22,287
Canadian Museum of Civilization	398	400	390	333	386
Environment Canada	2,576	2,477	2,487	2,652	2,652
Fisheries and Oceans Canada	1,306	1,314	1,777	1,826	1,833
Health Canada	2,346	2,699	2,620	2,859	2,915
Industry Canada	605	660	625	688	707
Library and Archives Canada	729	717	885	901	901
National Research Council Canada	506	448	447	447	447
Natural Resources Canada	1,597	1,659	1,641	1,689	1,689
Parks Canada	798	587	597	539	539
Statistics Canada	5,937	5,359	5,226	5,219	5,728
Treasury Board of Canada Secretariat	368	405	457	459	444
Total of major departments and agencies	17,165	16,725	17,152	17,610	18,238
Other	3,720	3,679	3,909	4,031	4,048

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2008/2009 expenditures. Due to rounding, components may not add to the totals. Personnel counts are reported as full-time equivalents.

Table 5-1
Federal expenditures by provinces and territories — On science and technology

	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009
	millions of dollars				
Total	8,859	9,448	9,649	10,177	10,572
Canada	8,517	9,142	9,347	9,732	10,016
Newfoundland and Labrador	137	128	119	126	118
Prince Edward Island	39	47	47	41	53
Nova Scotia	294	260	304	307	317
New Brunswick	122	93	108	130	111
Quebec ¹	1,352	1,484	1,470	1,517	1,623
Ontario ¹	1,966	2,101	2,046	2,383	2,548
Manitoba	226	254	237	266	306
Saskatchewan	157	193	211	193	216
Alberta	474	484	505	471	515
British Columbia	645	674	681	822	730
Yukon Territory, Northwest Territories and Nunavut	35	51	43	43	51
National Capital Region ²	2,709	2,912	2,989	2,922	3,104
Unallocated (within Canada)	361	461	587	511	324
Foreign (outside Canada)	342	306	302	445	556

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, 2008/2009

	Federal government	Business enterprises	Higher education	Other performers ¹	Total
millions of dollars					
Total sciences	5,498	910	3,066	1,099	10,573
Total sciences - Canada	5,498	910	3,066	543	10,017
Newfoundland and Labrador	54	19	39	7	119
Prince Edward Island	27	10	11	5	53
Nova Scotia	189	26	88	14	317
New Brunswick	49	17	39	5	110
Quebec ²	489	298	753	83	1,623
Ontario ²	831	292	1,134	291	2,548
Manitoba	173	7	113	13	306
Saskatchewan	93	9	103	11	216
Alberta	201	23	265	26	515
British Columbia	245	96	347	41	730
Yukon, Northwest Territories and Nunavut	42	1	3	4	50
National Capital Region ³	3,104	...	...	...	3,104
Unallocated (within Canada)	...	113	169	42	324
Foreign (outside Canada)	...	...	...	556	556
Natural sciences	3,971	870	2,345	618	7,804
Natural sciences - Canada	3,971	870	2,345	318	7,504
Newfoundland and Labrador	51	18	30	5	104
Prince Edward Island	26	10	9	4	49
Nova Scotia	171	26	62	13	272
New Brunswick	47	16	25	4	92
Quebec ²	459	291	563	57	1,370
Ontario ²	779	277	858	129	2,043
Manitoba	161	5	91	10	267
Saskatchewan	90	9	85	9	193
Alberta	188	18	205	22	433
British Columbia	234	95	261	30	620
Yukon, Northwest Territories and Nunavut	39	0 ^s	1	3	43
National Capital Region ³	1,727	...	...	...	1,727
Unallocated (within Canada)	...	104	155	33	292
Foreign (outside Canada)	...	...	...	300	300
Social sciences	1,527	40	721	481	2,769
Social sciences - Canada	1,527	40	721	225	2,513
Newfoundland and Labrador	3	0 ^s	9	2	14
Prince Edward Island	1	0 ^s	1	1	3
Nova Scotia	19	0 ^s	26	1	46
New Brunswick	2	1	14	1	18
Quebec ²	30	7	190	26	253
Ontario ²	52	14	276	162	504
Manitoba	13	2	22	3	40
Saskatchewan	3	0 ^s	18	2	23
Alberta	13	5	60	4	82
British Columbia	10	1	87	12	110
Yukon, Northwest Territories and Nunavut	4	0 ^s	3	2	9
National Capital Region ³	1,377	...	...	...	1,377
Unallocated (within Canada)	...	9	14	9	32
Foreign (outside Canada)	...	...	...	256	256

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, 2008/2009

	Federal government	Business enterprises	Higher education	Other performers ¹	Total
millions of dollars					
Total sciences	2,599	732	2,769	554	6,654
Canada	2,599	732	2,769	354	6,454
Newfoundland and Labrador	19	18	36	3	76
Prince Edward Island	14	10	10	5	39
Nova Scotia	77	24	77	11	189
New Brunswick	36	16	32	4	88
Quebec ²	308	274	688	47	1,317
Ontario ²	627	208	1,013	198	2,046
Manitoba	85	3	106	8	202
Saskatchewan	64	9	98	8	179
Alberta	126	14	239	18	397
British Columbia	93	86	304	27	510
Yukon, Northwest Territories and Nunavut	4	0 ^s	2	2	8
National Capital Region ³	1,146	...	...	...	1,146
Unallocated (within Canada)	...	71	164	24	259
Foreign (outside Canada)	...	...	...	200	200
Natural sciences	2,388	729	2,188	362	5,667
Canada	2,388	729	2,188	234	5,539
Newfoundland and Labrador	19	18	28	1	66
Prince Edward Island	14	10	9	3	36
Nova Scotia	77	23	56	11	167
New Brunswick	36	16	23	3	78
Quebec ²	306	274	529	39	1,148
Ontario ²	622	207	796	102	1,727
Manitoba	85	3	87	7	182
Saskatchewan	64	9	82	7	162
Alberta	126	14	188	18	346
British Columbia	93	86	234	24	437
Yukon, Northwest Territories and Nunavut	4	0 ^s	1	1	6
National Capital Region ³	944	...	...	...	944
Unallocated (within Canada)	...	69	155	17	241
Foreign (outside Canada)	...	...	...	128	128
Social sciences	211	3	582	193	989
Canada	211	3	582	121	917
Newfoundland and Labrador	0	0	8	2	10
Prince Edward Island	0	0 ^s	1	1	2
Nova Scotia	0 ^s	0 ^s	21	0 ^s	21
New Brunswick	1	0 ^s	9	1	11
Quebec ²	2	0 ^s	160	7	169
Ontario ²	5	1	217	97	320
Manitoba	0 ^s	0 ^s	19	1	20
Saskatchewan	0	0 ^s	16	1	17
Alberta	0 ^s	0 ^s	50	1	51
British Columbia	0 ^s	0 ^s	70	3	73
Yukon, Northwest Territories and Nunavut	0 ^s	0	2	1	3
National Capital Region ³	202	...	...	...	202
Unallocated (within Canada)	...	1	9	6	16
Foreign (outside Canada)	...	...	...	72	72

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, 2008/2009

	Federal government	Business enterprises	Higher education	Other performers ¹	Total
millions of dollars					
Total sciences	2,899	178	297	545	3,919
Canada	2,899	178	297	189	3,563
Newfoundland and Labrador	34	1	3	5	43
Prince Edward Island	13	0 ^s	1	1	15
Nova Scotia	112	2	11	3	128
New Brunswick	13	1	7	2	23
Quebec ²	181	24	65	36	306
Ontario ²	204	84	122	93	503
Manitoba	88	4	7	5	104
Saskatchewan	29	0 ^s	5	2	36
Alberta	75	9	27	8	119
British Columbia	152	10	43	14	219
Yukon, Northwest Territories and Nunavut	39	0 ^s	1	2	42
National Capital Region ³	1,958	...	...	...	1,958
Unallocated (within Canada)	...	42	5	18	65
Foreign (outside Canada)	...	...	...	356	356
Natural sciences	1,583	141	158	256	2,138
Canada	1,583	141	158	84	1,966
Newfoundland and Labrador	32	1	2	4	39
Prince Edward Island	12	0 ^s	0 ^s	1	13
Nova Scotia	94	2	7	2	105
New Brunswick	11	0 ^s	2	1	14
Quebec ²	153	17	35	18	223
Ontario ²	156	71	62	27	316
Manitoba	76	2	3	3	84
Saskatchewan	26	0 ^s	3	2	31
Alberta	62	5	17	5	89
British Columbia	142	9	26	6	183
Yukon, Northwest Territories and Nunavut	35	0 ^s	0 ^s	1	36
National Capital Region ³	783	...	...	...	783
Unallocated (within Canada)	...	34	0 ^s	16	50
Foreign (outside Canada)	...	...	...	172	172
Social sciences	1,316	37	139	288	1,780
Canada	1,316	37	139	104	1,596
Newfoundland and Labrador	3	0 ^s	1	0 ^s	4
Prince Edward Island	1	0	0 ^s	0 ^s	1
Nova Scotia	18	0 ^s	5	1	24
New Brunswick	1	1	5	1	8
Quebec ²	28	6	30	18	82
Ontario ²	47	13	60	66	186
Manitoba	13	2	4	2	21
Saskatchewan	3	0 ^s	2	1	6
Alberta	13	5	10	3	31
British Columbia	10	1	17	9	37
Yukon, Northwest Territories and Nunavut	4	0 ^s	1	1	6
National Capital Region ³	1,175	...	...	...	1,175
Unallocated (within Canada)	...	8	5	3	16
Foreign (outside Canada)	...	...	...	184	184

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, 2008/2009

	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	65	26	128	61	1,134	1,717	133	123	314	485	8	324	4,519	556
Grants	58	24	116	56	1,075	1,477	125	118	294	451	7	204	4,005	529
Contracts	7	2	12	6	59	240	8	5	20	34	1	120	513	27
Total research and development	56	25	111	51	1,009	1,419	117	116	271	417	5	258	3,856	200
Grants	55	24	106	51	972	1,283	115	111	256	399	5	198	3,575	181
Contracts	2	1	5	1	37	135	2	4	14	18	0 ^s	60	281	19
Total related scientific activities	8	1	17	10	125	298	16	7	43	67	4	66	663	356
Grants	3	1	10	5	103	193	10	7	38	52	3	6	430	348
Contracts	5	1	7	5	21	105	6	1	5	15	1	60	233	8
Natural sciences														
Total science and technology	54	24	101	46	912	1,264	105	103	246	385	4	292	3,533	300
Grants	47	22	91	44	863	1,059	100	98	228	356	3	184	3,095	275
Contracts	7	2	10	2	48	205	5	5	18	29	1	107	438	25
Total research and development	47	23	90	42	842	1,104	97	98	220	344	2	242	3,150	128
Grants	45	21	85	41	806	973	95	94	206	326	2	183	2,878	110
Contracts	2	1	5	1	36	131	2	4	14	18	0 ^s	58	273	19
Total related scientific activities	7	1	11	4	70	160	8	5	26	41	2	50	383	172
Grants	2	0 ^s	6	3	57	86	5	4	22	30	1	1	217	165
Contracts	5	1	5	1	12	73	3	1	4	10	1	49	166	7
Social Sciences														
Total science and technology	11	3	27	16	222	453	28	20	68	100	4	33	985	256
Grants	11	3	25	12	212	417	25	20	67	95	4	20	910	254
Contracts	0 ^s	0 ^s	2	4	11	36	3	0 ^s	2	5	0 ^s	13	75	2
Total research and development	9	2	22	10	167	315	20	17	51	73	2	17	705	72
Grants	9	2	22	10	166	310	20	17	51	73	2	15	697	71
Contracts	0	0 ^s	0 ^s	0 ^s	1	4	0 ^s	0 ^s	0 ^s	0 ^s	0	2	8	0 ^s
Total related scientific activities	2	0^s	6	6	55	139	8	2	17	27	2	16	280	184
Grants	2	0 ^s	4	2	46	107	5	2	16	22	2	5	213	183
Contracts	0 ^s	0 ^s	2	4	9	31	3	0 ^s	1	5	0 ^s	11	67	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, 2008/2009**

	N.L.	P.E.I.	N.S.	N.B.	Que. ¹	Ont. ¹	Man.	Sask.	Alta.	B.C.	Y.T., N.W.T. and Nvt.	Unallocated within Canada	Canada
millions of dollars													
Total Sciences													
Total science and technology	19	10	26	17	298	292	7	9	23	96	1	113	910
Grants	16	10	19	16	255	93	2	5	10	73	0 ^s	26	526
Contracts	2	1	7	1	43	198	5	4	13	23	0 ^s	87	384
Total research and development	18	10	24	16	274	208	3	9	14	86	0^s	71	732
Grants	16	10	19	16	242	85	2	5	5	70	0 ^s	26	494
Contracts	2	1	4	0 ^s	32	123	1	4	9	16	0 ^s	45	238
Total related scientific activities	1	0^s	2	1	24	84	4	0^s	9	10	0^s	42	178
Grants	0 ^s	0 ^s	0 ^s	0 ^s	13	9	0 ^s	0 ^s	6	3	0 ^s	0 ^s	32
Contracts	1	0 ^s	2	1	11	75	4	0 ^s	4	7	0 ^s	42	146
Natural sciences													
Total science and technology	18	10	26	16	291	277	5	9	18	95	0^s	104	870
Grants	16	10	19	16	252	91	2	5	6	72	0 ^s	25	514
Contracts	2	1	6	0 ^s	40	186	3	4	12	23	0 ^s	79	356
Total research and development	18	10	23	16	274	207	3	9	14	86	0^s	69	729
Grants	16	10	19	16	242	84	2	5	5	70	0 ^s	25	494
Contracts	2	1	4	0 ^s	32	122	1	4	9	16	0 ^s	44	235
Total related scientific activities	1	0^s	2	0^s	17	71	2	0^s	5	9	0^s	34	141
Grants	0 ^s	0 ^s	0 ^s	0 ^s	9	7	0 ^s	0 ^s	1	2	0 ^s	0 ^s	20
Contracts	1	0 ^s	2	0 ^s	8	64	2	0 ^s	3	6	0 ^s	34	121
Social Sciences													
Total science and technology	0^s	0^s	0^s	1	7	14	2	0^s	5	1	0^s	9	40
Grants	0	0	0 ^s	0	3	2	0 ^s	0	4	1	0 ^s	1	12
Contracts	0 ^s	0 ^s	0 ^s	1	3	12	2	0 ^s	0 ^s	1	0 ^s	8	28
Total research and development	0	0^s	0^s	0^s	0^s	1	0^s	0^s	0^s	0^s	0	1	3
Grants	0	0	0	0	0	0 ^s	0	0	0	0	0	1	1
Contracts	0	0 ^s	0 ^s	0 ^s	0 ^s	1	0 ^s	0 ^s	0 ^s	0 ^s	0	1	2
Total related scientific activities	0^s	0	0^s	1	6	13	2	0^s	5	1	0^s	8	37
Grants	0	0	0 ^s	0	3	2	0 ^s	0	4	1	0 ^s	0 ^s	11
Contracts	0 ^s	0	0 ^s	1	3	11	2	0 ^s	0 ^s	1	0 ^s	8	25

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

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

Table 5-7
Federal expenditures by provinces and territories — Extramural expenditures in higher education sector on science and technology, by type of science and activity, 2008/2009

	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	39	11	88	39	753	1,134	113	103	265	347	3	169	3,066
Grants	38	11	85	35	744	1,110	112	102	259	342	3	155	2,998
Contracts	0 ^s	0 ^s	4	4	10	24	1	1	6	5	0	14	68
Total research and development	36	10	77	32	688	1,013	106	98	239	304	2	164	2,769
Grants	36	10	76	31	684	1,003	106	98	234	302	2	154	2,737
Contracts	0 ^s	0	1	1	5	10	0 ^s	1	4	2	0	10	32
Total related scientific activities	3	1	11	7	65	122	7	5	27	43	1	5	297
Grants	3	0 ^s	8	4	60	107	6	5	25	40	1	1	261
Contracts	0 ^s	0 ^s	3	3	5	14	1	0 ^s	1	3	0	4	36
Natural sciences													
Total science and technology	30	9	62	25	563	858	91	85	205	261	1	155	2,345
Grants	29	9	60	25	558	848	90	85	201	258	1	144	2,309
Contracts	0 ^s	0 ^s	2	1	5	10	0 ^s	1	4	3	0	11	37
Total research and development	28	9	56	23	529	796	87	82	188	234	1	155	2,188
Grants	28	9	55	23	525	788	87	82	184	232	1	145	2,158
Contracts	0 ^s	0	1	0 ^s	4	8	0 ^s	1	4	2	0	9	30
Total related scientific activities	2	0^s	7	2	35	62	3	3	17	26	0^s	0^s	158
Grants	1	0 ^s	6	2	34	60	3	3	17	26	0 ^s	-2	151
Contracts	0 ^s	0 ^s	1	0 ^s	1	2	0 ^s	0 ^s	0 ^s	1	0	2	7
Social Sciences													
Total science and technology	9	1	26	14	190	276	22	18	60	87	3	14	721
Grants	9	1	24	11	185	262	22	17	59	84	3	12	689
Contracts	0 ^s	0	2	3	5	14	1	0 ^s	1	2	0	3	32
Total research and development	8	1	21	9	160	217	19	16	50	70	2	9	582
Grants	8	1	21	9	159	215	19	16	50	70	2	9	579
Contracts	0	0	0 ^s	0 ^s	1	2	0	0	0 ^s	0	0	0 ^s	3
Total related scientific activities	1	0^s	5	5	30	60	4	2	10	17	1	5	139
Grants	1	0 ^s	3	2	26	47	3	1	9	14	1	3	110
Contracts	0 ^s	0	2	3	4	13	1	0 ^s	1	2	0	3	29

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 other Canadian sector¹ on science and technology, by type of science and activity, 2008/2009**

	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	7	5	14	5	83	291	13	11	26	41	4	42	543
Grants	3	4	12	4	76	273	11	10	25	36	4	23	482
Contracts	4	1	2	1	6	18	2	1	1	5	1	19	61
Total research and development	3	5	11	4	47	198	8	8	18	27	2	24	354
Grants	3	4	11	3	46	196	8	8	18	27	2	18	344
Contracts	0 ^s	1	0 ^s	0 ^s	1	3	0 ^s	0 ^s	1	0 ^s	0	5	11
Total related scientific activities	5	1	3	2	36	93	5	2	8	14	2	18	189
Grants	0 ^s	0 ^s	1	1	31	77	3	2	7	9	2	5	138
Contracts	4	0 ^s	2	1	5	16	2	1	1	5	1	14	51
Natural sciences													
Total science and technology	5	4	13	4	57	129	10	9	22	30	3	33	318
Grants	1	3	11	3	53	120	8	8	21	26	2	15	272
Contracts	4	1	2	1	4	9	2	1	1	3	1	17	46
Total research and development	1	3	11	3	39	102	7	7	18	24	1	17	234
Grants	1	3	11	3	39	101	7	7	17	24	1	13	226
Contracts	0 ^s	1	0 ^s	0 ^s	0 ^s	1	0 ^s	0 ^s	1	0 ^s	0	4	8
Total related scientific activities	4	1	2	1	18	27	3	2	5	6	1	16	84
Grants	0 ^s	0 ^s	0 ^s	0 ^s	14	19	1	1	4	2	1	3	46
Contracts	4	0 ^s	2	1	4	8	1	0 ^s	1	3	1	13	38
Social sciences													
Total science and technology	2	1	1	1	26	162	3	2	4	12	2	9	225
Grants	2	1	1	1	23	153	3	2	4	10	2	7	209
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	2	9	0 ^s	0 ^s	0 ^s	2	0 ^s	2	16
Total research and development	2	1	0^s	1	7	97	1	1	1	3	1	6	121
Grants	2	1	0 ^s	1	7	95	1	1	1	3	1	6	118
Contracts	0	0	0	0 ^s	1	2	0 ^s	0	0 ^s	0 ^s	0	1	3
Total related scientific activities	0^s	0^s	1	1	18	66	2	1	3	9	1	3	104
Grants	0 ^s	0 ^s	1	1	16	58	2	1	3	7	1	2	92
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	2	8	0 ^s	0 ^s	0 ^s	2	0 ^s	1	13

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

	2006/2007		2007/2008		2008/2009	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
	millions of dollars					
Science and technology expenditures	4,924	4,389	4,885	4,980	5,134	5,075
Exploration and exploitation of the earth	441	74	441	91	409	90
Infrastructure and general planning of land use						
Transport	74	32	92	40	170	50
Telecommunication	56	23	48	30	51	38
Other	139	33	152	38	150	36
Control and care of the environment	452	235	486	295	531	359
Protection and improvement of human health	478	1,247	576	1,573	587	1,641
Production, distribution and rational utilization of energy	372	103	419	144	492	148
Agricultural production and technology						
Agriculture	440	142	438	185	442	208
Fishing	169	26	162	43	147	40
Forestry	93	87	88	90	91	74
Industrial production and technology	291	883	297	936	280	904
Social structures and relationships	1,097	348	974	377	1,065	399
Exploration and exploitation of space	178	183	132	211	141	218
Non-oriented research	315	823	316	652	292	576
Other civil research	28	10	31	110	28	132
Defence	300	140	235	165	257	161
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

	2006/2007		2007/2008		2008/2009	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
	millions of dollars					
Science and technology expenditures	2,391	3,577	2,421	4,071	2,477	4,056
Exploration and exploitation of the earth	98	58	102	72	87	64
Infrastructure and general planning of land use						
Transport	50	26	52	33	61	40
Telecommunication	51	21	44	28	48	37
Other	40	29	44	33	44	31
Control and care of the environment	188	175	203	198	205	217
Protection and improvement of human health	217	1,160	258	1,364	243	1,406
Production, distribution and rational utilization of energy	339	89	387	107	458	126
Agricultural production and technology						
Agriculture	340	130	337	128	348	137
Fishing	47	19	45	21	8	20
Forestry	76	46	61	65	64	60
Industrial production and technology	196	831	203	875	195	853
Social structures and relationships	81	196	100	228	124	224
Exploration and exploitation of space	163	179	123	208	129	213
Non-oriented research	219	535	239	609	221	533
Other civil research	24	10	18	10	16	9
Defence	261	72	205	91	227	87
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

	2006/2007		2007/2008		2008/2009	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
	millions of dollars					
Science and technology expenditures	2,533	812	2,464	909	2,657	1,019
Exploration and exploitation of the earth	343	16	339	19	322	26
Infrastructure and general planning of land use						
Transport	24	6	39	7	109	10
Telecommunication	5	2	4	1	4	2
Other	98	4	109	5	106	5
Control and care of the environment	265	60	282	98	325	143
Protection and improvement of human health	261	86	317	209	344	235
Production, distribution and rational utilization of energy	33	14	32	37	35	22
Agricultural production and technology						
Agriculture	100	12	101	57	94	72
Fishing	122	7	117	22	140	20
Forestry	17	42	26	25	27	14
Industrial production and technology	95	52	94	60	86	52
Social structures and relationships	1,016	151	875	149	941	175
Exploration and exploitation of space	16	4	9	3	12	4
Non-oriented research	95	288	77	43	71	43
Other civil research	4	0 ^s	13	101	13	124
Defence	38	67	30	74	30	74
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.

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).

Fifty-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.