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Federal Scientific Activities

2008/2009



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2008/2009

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Symbols

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- . 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 forecast spending of \$9.9 billion in 2008/2009 on science and technology (S&T), a small decrease from the \$10.2 billion in planned spending the year before and a slight increase, in current dollars, from the \$9.6 billion spent in 2006/2007, where actual, or final, data are available (Table 1-1).
- Of the \$9.9 billion, \$5.2 billion was forecast to be spent within the departments and agencies (Table 2-1) and \$4.7 billion 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).
- The majority, \$6.2 billion or 63%, of federal S&T spending was forecast to be directed to R&D activities, while related scientific activities (RSA) accounts for the remainder, \$3.6 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 one quarter to social sciences throughout the period from 2004/2005 to 2008/2009 (Table 1-6).
- In 2008/2009, the \$5.2 billion in S&T activities to be performed by federal government departments and agencies was forecast to be split almost evenly between R&D and RSA; \$2.5 billion, or 48%, was directed to R&D and remainder to RSA (Table 2-1).
- In 2008/2009, the federal government was forecast to direct \$4.7 billion to other sectors to perform S&T activities. Four in five extramural dollars were forecast to be directed to R&D activities (Table 3-1).
- Over \$3 billion in extramural payments were forecast to be directed to the higher education sector. Ninety percent of these funds were for R&D activities and the remaining ten percent for RSA. The vast majority of the funds for R&D activities came from the four granting councils (Table 3-3).
- In 2008/2009, federal departments and agencies reported a total of 36,379 full-time equivalent employees engaged in S&T activities. Of these employees, 16,824 were classified as “scientific and professional”, 8,740 as “technical” and 10,815 as “other” engaged in support activities (Table 4-5).
- Protection and improvement of human health was the objective receiving the highest level of federal government S&T funding at \$1.7 billion in 2006/2007, the most recent year for which data are available (Table 6-1).

Analysis

Federal Science and Technology Spending

Federal departments and agencies forecast spending of \$9.9 billion in 2008/2009 on science and technology (S&T), a small decrease from the \$10.2 billion in planned spending the year before and a slight increase, in current dollars, from the \$9.6 billion spent in 2006/2007, where actual, or final, data are available (Table 1-1).

Data for 2008/2009 are forecasts of expenditure by departments and thus are provisional and subject to change. Data for 2007/2008 are planned spending for a fiscal period that has almost closed by the time data are collected; these data are provisional, but change only rarely. Data for 2006/2007 are actual expenditures incurred by the reporting departments and agencies, and, as such, are not subject to change.

Of the \$9.9 billion, \$5.2 billion was forecast to be spent within the departments and agencies (Table 2-1) and \$4.7 billion 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 impacts of inflation, actual federal government S&T spending increased by 44% over the ten-year period from 1997/1998 to 2006/2007 (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, \$6.2 billion or 63%, of federal S&T spending was forecast to be directed to R&D activities, while RSA accounts for the remainder, \$3.6 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 one quarter to social sciences throughout the period from 2004/2005 to 2008/2009 (Table 1-6).

In 2008/2009, the funding agencies (the Natural Sciences and Engineering Research Council of Canada Social Sciences (\$1.0 billion); the Canadian Institute for Health Research (\$902 million); the Social Sciences and Humanities Research Council of Canada (\$649 million); and the Canadian Foundation for Innovation (\$462 million)) were forecast to account for over 30% of all federal S&T expenditures (Table 1-2).

Of the 54 departments and agencies that report S&T expenditures, 16 each accounted for at least two percent of the total. Together these 16 departments and agencies accounted for over 85% of the total S&T expenditures (Table 1-2).

Intramural performance of S&T

In 2008/2009, the \$5.2 billion in S&T activities to be performed by federal government departments and agencies was forecast to be split almost evenly between R&D and RSA; \$2.5 billion, or 48%, was directed to R&D and remainder to RSA (Table 2-1).

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

With respect to forecast intramural R&D performance, the top departments and agencies are: the National Research Council (\$590 million), Agriculture and Agri-Food Canada (\$292 million) and National Defence (\$243 million) (Table 2-3).

Top forecast RSA performing agencies and departments are: Statistics Canada (\$569 million), Environment Canada (\$362 million), Health Canada (\$290 million) and Natural Resources Canada (\$286 million) (Table 2-4).

Extramural funding of S&T

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 2008/2009, the federal government was forecast to direct \$4.7 billion to other sectors to perform S&T activities. Four in five extramural dollars were forecast to be directed to R&D activities (Table 3-1).

Over \$3 billion in extramural payments were forecast to be directed to the higher education sector. Ninety percent of these funds were for R&D activities and the remaining ten percent for RSA. The vast majority of the funds for R&D activities came from the four granting councils (Table 3-3).

The second most significant recipient of federal government S&T funding is the business sector, forecast to receive \$1.0 billion in 2008/2009 (Table 3-2).

The business sector was forecast to receive funds as follows: 17% through R&D contracts, 43% through grants and contributions for R&D and the remaining 39% for RSA activities. (Table 3-4) Industry Canada continued to provide the largest share of funds for S&T directed to the business sector and it provided these funds in support of R&D activities exclusively (Table 3-2).

Personnel

In 2008/2009, federal departments and agencies reported a total of 36,379 full-time equivalent employees engaged in S&T activities. Of these employees, 16,824 were classified as “scientific and professional”, 8,740 as “technical” and 10,815 as “other” engaged in support activities (Table 4-5).

Over half (57%) were engaged in RSA and support of RSA, with the remainder engaged in R&D and its support. More S&T personnel were engaged in S&T related to natural sciences and engineering than social sciences and humanities (Table 4-1).

A majority of federal personnel S&T engaged in natural science activities were located outside of the National Capital Region. Spread across all regions of Canada, there were 2,108 full-time equivalent personnel at work in Atlantic Canada, 3,122 in Quebec and 3,689 in Ontario (in areas outside the National Capital Region), 2,901 in the Prairie provinces, 1,619 in British Columbia and 231 in the North. The National Capital Region (Ottawa, Gatineau and surrounding areas) reported 10,619 full-time equivalent personnel in natural sciences (Table 4-8).

By contrast, the vast majority of social science-oriented S&T personnel were located in the National Capital Region (10,104 out of a total of 11,739) (Table 4-8).

Objectives of S&T and R&D activities

Protection and improvement of human health was the objective receiving the highest level of federal government S&T funding at \$1.7 billion in 2006/2007, 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 (\$1.4 billion), industrial production and technology (\$1.0 billion) and non-oriented research (\$754 million) (Table 6-2).

Overall, 40% of all R&D was performed intramurally, but certain objectives were more likely to be researched within government departments than others. Energy-related R&D, along with R&D related to national defence, agriculture, fishing and telecommunication were at least 70% undertaken in-house, while health-related R&D was the most likely to be funded by the federal government but performed by other sectors.

Statistical tables

Table 1-1
Federal expenditures — On science and technology and its components

	Current dollars				Gross Domestic Product implicit ² price index	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				index = 2002	millions of dollars			
1996/1997	156,985	5,694	3,391	2,302	91.6	171,381	6,216	3,702	2,514
1997/1998	149,555	5,509	3,379	2,130	92.8	161,158	5,937	3,641	2,296
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	110.2	176,827	8,574	5,483	3,092
2006/2007 ^r	207,986	9,633	6,073	3,560	112.9	184,221	8,532	5,379	3,153
2007/2008 ^p	230,772	10,164	6,481	3,683	116.4	198,258	8,732	5,568	3,164
2008/2009 ^p	241,308	9,863	6,222	3,641	..	..	..	..	..

1. Part 1, Government Expenditure Plan, Estimates.

2. CANSIM, Table 384-0036.

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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total	8,934	9,449	9,633	10,164	9,863
Agriculture and Agri-Food Canada	340	354	408 ^{1,2}	418 ²	355
Atomic Energy of Canada Limited	148	182	289	329	171
Canada Foundation for Innovation	271	437	367	316	462
Canadian Institutes of Health Research	759	808	853 ³	964	902
Canadian International Development Agency	415	346	344	491	438
Canadian Space Agency	276	281	305	321	372
Environment Canada	675 ⁴	696	588	609	643
Fisheries and Oceans Canada	291	291	317	282	280
Health Canada	284	291	330	368	380
Industry Canada	426	579	444	546 ⁵	400
National Defence	430	434	450	450	426
National Research Council Canada	793	824	769	755	784
Natural Resources Canada	632	541	580	601	616
Natural Sciences and Engineering Research Council of Canada	808	864	900	1,021	1,005
Social Sciences and Humanities Research Council of Canada	523 ⁶	574 ⁷	628 ⁸	687 ⁹	649 ¹⁰
Statistics Canada	610	703	798	680	644
Total of major departments	7,681	8,206	8,370	8,839	8,527
Other	1,253	1,243	1,262	1,325	1,336

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 funding for a research chair by the Canadian Institute for Health Research.

4. Includes \$100 million for the Sustainable Development Technology Fund funded by Environment Canada.

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

6. Includes \$225 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

7. Includes \$245 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

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

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

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

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total	5,454	6,042	6,073	6,481	6,222
Agriculture and Agri-Food Canada	247	327	359 ^{1,2}	360 ²	295
Atomic Energy of Canada Limited	148	182	289	329	171
Canadian Foundation for Innovation	271	437	367	316	462
Canadian Institutes of Health Research	749	795	838 ³	947	886
Canadian Space Agency	263	267	290	304	354
Environment Canada	209	253	214	222	234
Industry Canada	327	478	372	474 ⁴	321
National Defence	296	349	343	336	321
National Research Council Canada	691	756	700	685	715
Natural Resources Canada	378	281	259	270	276
Natural Sciences and Engineering Research Council of Canada	706	755	788	898	874
Social Sciences and Humanities Research Council of Canada	444 ⁵	478 ⁶	523 ⁷	544 ⁸	540 ⁹
Total of major departments	4,727	5,357	5,342	5,686	5,448
Other	727	685	731	795	774

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 funding for a research chair by the Canadian Institute for Health Research.
 4. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Industry Canada.
 5. Includes \$225 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
 6. Includes \$245 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
 7. Includes \$260 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
 8. Includes \$300 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
 9. Includes \$315 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
- Note(s):** The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total	3,480	3,407	3,560	3,683	3,641
Canadian International Development Agency	330	288	273	401	371
Canadian Museum of Civilization	121	73	72	82	71
Environment Canada	466 ¹	443	374	387	409
Fisheries and Oceans Canada	216	214	232	207	205
Health Canada	229	242	281	313	327
Industry Canada	99	101	72	72	78
Library and Archives Canada	83	100	94	99	99
National Defence	134	85	107	114	106
Natural Resources Canada	254	261	321	332	340
Natural Sciences and Engineering Research Council of Canada	102	110	112	123	131
Parks Canada	108	79	89	89	90
Social Sciences and Humanities Research Council of Canada	79	97	105	143	110
Statistics Canada	589	684	748	619	584
Total of major departments	2,812	2,775	2,880	2,980	2,921
Other	669	632	680	703	720

1. Includes \$100 million for the Sustainable Development Technology Fund funded by Environment Canada.
- Note(s):** The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Science and technology	8,934	9,449	9,633	10,164	9,863
Research and development	5,454	6,042	6,073	6,481	6,222
Current expenditures	5,033 ¹	5,611 ²	5,642 ^{3,4,5,6}	6,058 ^{4,7,8}	5,804 ⁹
Administration of extramural programs	269	285	279	287	302
Capital expenditures	152	146	152	136	116
Related scientific activities	3,480	3,407	3,560	3,683	3,641
Data collection	1,702 ¹⁰	1,715	1,870	1,756	1,786
Information services	679	676	669	707	698
Special services and studies	666	627	576	743	665
Education support	230	259	298	314	326
Administration of extramural programs	58	59	64	66	69
Capital expenditures	146	70	83	96	97

1. Includes \$225 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
 2. Includes \$245 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
 3. Includes \$30 million for the Agriculture Development Fund project funded by Agriculture and Agri-Food Canada.
 4. Includes funding of the new Business Risk Management Suite which replaces the Agriculture Income Stabilization Program by Agriculture and Agri-Food Canada.
 5. Includes funding for a research chair by the Canadian Institute for Health Research.
 6. Includes \$260 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
 7. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Industry Canada.
 8. Includes \$300 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
 9. Includes \$315 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
 10. Includes \$100 million for the Sustainable Development Technology Fund funded by Environment Canada.
- 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 sector¹

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total sciences	8,934	9,449	9,633	10,164	9,863
Intramural	4,685	5,024	5,244	5,220	5,158
Canadian business enterprises	979	1,044	902	1,000	1,000
Higher education	2,396 ²	2,698 ³	2,660 ⁴	3,000 ⁵	3,053 ⁶
Canadian non-profit institutions	444 ⁷	307	305	408	245
Provincial and municipal government	22	19	90 ^{8,9}	92 ⁹	56 ¹⁰
Foreign	358	306	301	407	313
Other Canadians performers	51	51	131 ¹¹	36	39
Natural sciences	6,779	7,171	7,166	7,647	7,457
Intramural	3,341	3,618	3,729	3,775	3,756
Canadian business enterprises	942	1,010	850	924	924
Higher education	1,847	2,097	1,991	2,318	2,365
Canadian non-profit institutions	397 ⁷	248	243	324	184
Provincial and municipal government	20	17	82 ^{8,9}	84 ⁹	45 ¹⁰
Foreign	202	147	155	200	158
Other Canadians performers	31	34	115 ¹¹	23	25
Social sciences	2,155	2,278	2,467	2,517	2,406
Intramural	1,344	1,406	1,515	1,445	1,401
Canadian business enterprises	37	34	52	76	76
Higher education	549 ²	601 ³	668 ⁴	682 ⁵	688 ⁶
Canadian non-profit institutions	47	59	61	84	61
Provincial and municipal government	2	2	8	8	11
Foreign	156	159	146	207	155
Other Canadians performers	21	18	16	14	15

1. As reported by the funder, the federal government, not by the performers.
2. Includes \$225 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
3. Includes \$245 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
4. Includes \$260 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
5. Includes \$300 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
6. Includes \$315 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.
7. Includes \$100 million for the Sustainable Development Technology Fund funded by Environment Canada.
8. Includes \$30 million for the Agriculture Development Fund project funded by Agriculture and Agri-Food Canada.
9. Includes funding of the new Business Risk Management Suite which replaces the Agriculture Income Stabilization Program by Agriculture and Agri-Food Canada.
10. Includes several Centres of Excellence in Commercialization and Research (CECR) funded by Industry Canada.
11. Includes funding for a research chair by the Canadian Institute for Health Research.

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

Table 1-7
Federal expenditures — On research and development, by science and by performing sector¹

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total sciences	5,454	6,042	6,073	6,481	6,222
Intramural	2,084	2,414	2,496	2,535	2,467
Canadian business enterprises	704	791	642	638	612
Higher education	2,173 ²	2,442 ³	2,379 ⁴	2,717 ⁵	2,761 ⁶
Canadian non-profit institutions	260	206	224	310	171
Provincial and municipal government	15	10	47 ^{7,8}	48 ^{8,9}	8
Foreign	185	146	167	209	177
Other Canadians performers	33	33	118 ¹⁰	24	26
Natural sciences	4,814	5,370	5,329	5,674	5,417
Intramural	1,965	2,289	2,340	2,359	2,289
Canadian business enterprises	700	788	638	633	609
Higher education	1,734	1,974	1,864	2,181	2,224
Canadian non-profit institutions	242	186	212	298	156
Provincial and municipal government	13	9	45 ^{7,8}	46 ^{8,9}	5
Foreign	135	100	118	140	114
Other Canadians performers	24	23	112 ¹⁰	17	19
Social sciences	640	672	744	807	805
Intramural	118	124	156	176	177
Canadian business enterprises	4	3	3	5	3
Higher education	439 ²	468 ³	514 ⁴	536 ⁵	537 ⁶
Canadian non-profit institutions	18	20	13	12	15
Provincial and municipal government	2	1	1	2	4
Foreign	50	46	49	69	63
Other Canadians performers	9	10	7	7	7

1. As reported by the funder, the federal government, not by the performers.

2. Includes \$225 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

3. Includes \$245 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

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

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

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

7. Includes \$30 million for the Agriculture Development Fund project funded by Agriculture and Agri-Food Canada.

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

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

10. Includes funding for a research chair by the Canadian Institute for Health Research.

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

Table 1-8
Federal expenditures — On related scientific activities, by science and by performing sector¹

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total sciences	3,480	3,407	3,560	3,683	3,641
Intramural	2,601	2,610	2,748	2,685	2,691
Canadian business enterprises	275	253	261	362	387
Higher education	223	256	281	283	292
Canadian non-profit institutions	184 ²	101	81	98	74
Provincial and municipal government	7	9	43	44	47
Foreign	173	160	134	198	136
Other Canadians performers	18	19	12	12	13
Natural sciences	1,965	1,801	1,837	1,973	2,040
Intramural	1,376	1,328	1,389	1,416	1,467
Canadian business enterprises	242	221	212	291	315
Higher education	114	123	127	137	141
Canadian non-profit institutions	155 ²	62	32	26	28
Provincial and municipal government	6	8	36	37	40
Foreign	67	47	37	60	44
Other Canadians performers	6	10	3	5	6
Social sciences	1,515	1,606	1,723	1,710	1,601
Intramural	1,225	1,282	1,358	1,270	1,224
Canadian business enterprises	33	31	49	71	72
Higher education	109	133	154	146	151
Canadian non-profit institutions	29	39	49	72	46
Provincial and municipal government	0 ^s	1	7	7	7
Foreign	106	113	97	138	92
Other Canadians performers	12	8	9	7	8

1. As reported by the funder, the federal government, not by the performers.

2. Includes \$100 million for the Sustainable Development Technology Fund funded by Environment Canada.

Note(s): 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 sector¹, 2006/2007^r

	Intramural	Business enterprise	Higher education	Canadian non-profit institutions	Provincial and municipal governments	Foreign performers	Other performers	Total
millions of dollars								
Total science and technology	5,244	902	2,660	305	90	301	131	9,633
Total research and development	2,496	642	2,379	224	47	167	118	6,073
In-house research and development	1,835	...	...	...	...	...	...	1,835
Research and development contracts	26	169	37	6	2	8	9	257
Supporting contracts	192	...	...	...	...	...	...	192
Research and development grants and contributions	...	468	2,279 ²	217	45 ^{3,4}	140	101 ⁵	3,251
Research fellowships	13	4	63	1	...	19	8	107
Administration of extramural programs	279	...	...	...	...	...	...	279
Capital expenditures	152	...	...	...	...	...	...	152
Total related scientific activities	2,748	261	281	81	43	134	12	3,560
Data collection	1,730	76	11	17	9	23	4	1,870
Information services	579	25	16	25	0 ^s	22	1	669
Special services and studies	281	155	11	22	31	74	2	576
Education support	10	5	242	17	3	15	6	298
Administration of extramural programs	64	...	...	...	...	...	...	64
Capital expenditures	83	...	...	...	...	...	...	83

1. As reported by the funder, the federal government, not by the performers.

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

3. Includes \$30 million for the Agriculture Development Fund project funded by Agriculture and Agri-Food Canada.

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

5. Includes funding for a research chair by the Canadian Institute for Health Research.

Note(s): 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 sector¹, 2007/2008^r

	Intramural	Business enterprise	Higher education	Canadian non-profit institutions	Provincial and municipal governments	Foreign performers	Other performers	Total
millions of dollars								
Total science and technology	5,220	1,000	3,000	408	92	407	36	10,164
Total research and development	2,535	638	2,717	310	48	209	24	6,481
In-house research and development	1,861	...	...	...	...	...	...	1,861
Research and development contracts	24	178	38	6	2	15	10	272
Supporting contracts	213	...	...	...	...	...	...	213
Research and development grants and contributions	...	456	2,610 ²	302	46 ^{3,4}	174	8	3,596
Research fellowships	13	4	69	1	...	20	7	115
Administration of extramural programs	287	...	...	...	...	...	...	287
Capital expenditures	136	...	...	...	...	...	...	136
Total related scientific activities	2,685	362	283	98	44	198	12	3,683
Data collection	1,601	92	10	19	7	22	5	1,756
Information services	608	29	17	13	0 ^s	38	1	707
Special services and studies	303	212	11	55	37	124	2	743
Education support	12	29	244	11	0 ^s	14	3	314
Administration of extramural programs	66	...	...	...	...	...	...	66
Capital expenditures	96	...	...	...	...	...	...	96

1. As reported by the funder, the federal government, not by the performers.

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

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

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

Note(s): 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 sector¹, 2008/2009^p

	Intramural	Business enterprise	Higher education	Canadian non-profit institutions	Provincial and municipal governments	Foreign performers	Other performers	Total
millions of dollars								
Total science and technology	5,158	1,000	3,053	245	56	313	39	9,863
Total research and development	2,467	612	2,761	171	8	177	26	6,222
In-house research and development	1,900	...	...	...	...	...	...	1,900
Research and development contracts	25	174	40	7	2	10	11	269
Supporting contracts	111	...	...	...	...	...	...	111
Research and development grants and contributions	...	434	2,652 ²	162	7	146	8	3,408
Research fellowships	13	5	69	1	...	20	7	117
Administration of extramural programs	302	...	...	...	...	...	...	302
Capital expenditures	116	...	...	...	...	...	...	116
Total related scientific activities	2,691	387	292	74	47	136	13	3,641
Data collection	1,622	96	11	19	8	24	7	1,786
Information services	602	29	19	13	1	34	2	698
Special services and studies	289	233	12	21	38	69	2	665
Education support	12	30	250	21	1	10	3	326
Administration of extramural programs	69	...	...	...	...	...	...	69
Capital expenditures	97	...	...	...	...	...	...	97

1. As reported by the funder, the federal government, not by the performers.

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

Note(s): 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
millions of dollars					
Science and technology	4,685	5,024	5,244	5,220	5,158
Research and development	2,084	2,414	2,496	2,535	2,467
Current expenditures	1,662	1,983	2,065	2,111	2,048
Administration of extramural programs	269	285	279	287	302
Capital expenditures	152	146	152	136	116
Related scientific activities	2,601	2,610	2,748	2,685	2,691
Data collection	1,479	1,588	1,730	1,601	1,622
Information services	587	588	579	608	602
Special services and studies	325	304	281	303	289
Education support	7	1	10	12	12
Administration of extramural programs	58	59	64	66	69
Capital expenditures	146	70	83	96	97

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

Table 2-2
Federal intramural expenditures — On science and technology, by major departments and agencies

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
Total	4 685	5,024	5,244	5,220	5,158
Agriculture and Agri-Food Canada	328	325	352	353	348
Atomic Energy of Canada Limited	141	172	288	329	171
Canadian Space Agency	112	145	150	166	219
Environment Canada	506	610	517	534	565
Fisheries and Oceans Canada	276	275	307	273	271
Health Canada	258	263	289	319	339
Industry Canada	110	115	117	114	120
National Defence	246	277	311	293	281
National Research Council Canada	656	696	643	629	658
Natural Resources Canada	458	457	475	493	505
Statistics Canada	609	702	777	671	629
Total of major departments and agencies	3,699	4,038	4,226	4,173	4,106
Other	986	986	1,018	1,047	1,051

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 expenditures. Due to rounding, components may not add to the totals.

Table 2-3
Federal intramural expenditures — On research and development spending, by major departments and agencies

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total	2,084	2,414	2,496	2,535	2,467
Agriculture and Agri-Food Canada	236	302	307	297	292
Atomic Energy of Canada Limited	141	172	288	329	171
Canadian Institutes of Health Research	53	53	55	53	52
Canadian Space Agency	101	133	137	150	202
Environment Canada	181	220	186	192	203
Fisheries and Oceans Canada	72	77	85	74	74
National Defence	201	257	271	253	243
National Research Council Canada	554	629	574	560	590
Natural Resources Canada	213	218	205	214	219
Statistics Canada	21	19	51	60	59
Total of major departments and agencies	1,772	2,078	2,159	2,182	2,106
Other	311	335	337	353	361

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total	2,601	2,610	2,748	2,685	2,691
Canadian Museum of Civilization	121	73	72	82	71
Environment Canada	324	391	331	342	362
Fisheries and Oceans Canada	204	198	222	198	197
Health Canada	207	218	244	269	290
Industry Canada	66	68	68	70	77
Library and Archives Canada	80	97	92	96	96
National Research Council Canada	102	68	69	69	68
Natural Resources Canada	246	238	270	279	286
Parks Canada Agency	107	77	88	88	89
Statistics Canada	589	683	726	611	569
Total major departments and agencies	2,045	2,111	2,183	2,105	2,106
Other	556	499	564	581	585

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007
	millions of dollars				
National Capital Region (total)					
Science and technology (total)	2,608	2,642	2,709	2,912	2,989
Social sciences and humanities	1,226	1,185	1,222	1,283	1,340
Natural sciences and engineering	1,382	1,457	1,486	1,628	1,649
Research and development	1,015	999	961	1,123	1,105
Social sciences and humanities	115	117	116	121	153
Natural sciences and engineering	900	882	845	1,002	953
Related scientific activities	1,593	1,643	1,748	1,788	1,884
Social sciences and humanities	1,110	1,068	1,106	1,162	1,188
Natural sciences and engineering	483	575	642	626	696
National Capital Region (Ontario)					
Science and technology (total)	2,276	2,361	2,398	2,546	2,585
Social sciences and humanities	1,029	1,044	1,060	1,129	1,186
Natural sciences and engineering	1,246	1,316	1,338	1,416	1,399
Research and development	966	950	913	1,040	1,013
Social sciences and humanities	105	108	107	110	143
Natural sciences and engineering	861	842	806	930	870
Related scientific activities	1,310	1,411	1,485	1,506	1,572
Social sciences and humanities	924	937	953	1,019	1,043
Natural sciences and engineering	385	474	532	486	529
National Capital Region (Quebec)					
Science and technology (total)	332	281	310	366	405
Social sciences and humanities	196	141	162	154	154
Natural sciences and engineering	136	140	148	212	250
Research and development	48	49	48	83	92
Social sciences and humanities	10	9	9	11	9
Natural sciences and engineering	38	39	38	72	83
Related scientific activities	284	232	263	282	312
Social sciences and humanities	186	131	153	143	145
Natural sciences and engineering	98	101	110	140	167

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 sector¹

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total science and technology	4,250	4,425	4,389	4,944	4,706
Business enterprises	979	1,044	902	1,000	1,000
Higher education	2,396 ²	2,698 ³	2,660 ⁴	3,000 ⁵	3,053 ⁶
Canadian non-profit institutions	444 ⁷	307	305	408	245
Provincial and municipal governments	22	19	90 ^{8,9}	92 ^{9,10}	56
Foreign performers	358	306	301 ¹¹	407	313
Other performers	51	51	131	36	39
Total research and development	3,371	3,628	3,577	3,946	3,756
Business enterprises	704	791	642	638	612
Higher education	2,173 ²	2,442 ³	2,379 ⁴	2,717 ⁵	2,761 ⁶
Canadian non-profit institutions	260	206	224	310	171
Provincial and municipal governments	15	10	47 ^{8,9}	48	8
Foreign performers	185	146	167	209 ^{9,10}	177
Other performers	33	33	118 ¹¹	24	26
Total related scientific activities	879	797	812	997	950
Business enterprises	275	253	261	362	387
Higher education	223	256	281	283	292
Canadian non-profit institutions	184 ⁷	101	81	98	74
Provincial and municipal governments	7	9	43	44	47
Foreign performers	173	160	134	198	136
Other performers	18	19	12	12	13

1. As reported by the funder, the federal government, not by the performers.

2. Includes \$225 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

3. Includes \$245 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

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

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

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

7. Includes \$100 million for the Sustainable Development Technology Fund funded by Environment Canada.

8. Includes \$30 million for the Agriculture Development Fund project funded by Agriculture and Agri-Food Canada.

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

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

11. Includes funding for a research chair by the Canadian Institute for Health Research.

Note(s): 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total science and technology	979	1,044	902	1,000	1,000
Atlantic Canada Opportunities Agency	41	25	50	38	38
Canadian International Development Agency	137	126	119	194	215
Canadian Space Agency	118	89	100	100	99
Environment Canada	39	50	43	44	46
Industry Canada	274	411	301	295	278
National Defence	150	135	118	130	121
National Research Council Canada	83	73	66	66	66
Natural Resources Canada	45	36	31	36	37
Other	93	98	74	97	101
Total research and development	704	791	642	638	612
Atlantic Canada Opportunities Agency	41	25	50	38	38
Canadian Space Agency	116	88	98	99	97
Environment Canada	14	18	15	16	16
Industry Canada	273	410	300	295	278
National Defence	75	76	58	62	61
National Research Council Canada	83	73	66	66	66
Natural Resources Canada	44	31	28	32	33
Other	59	70	27	30	24
Total related scientific activities	275	253	261	362	387
Canadian International Development Agency	136	126	118	194	214
Environment Canada	25	32	28	28	29
National Defence	75	59	60	68	60
Statistics Canada	...	...	17	6	12
Transport Canada	3	4	6	8	14
Other	35	33	30	58	58

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total science and technology	2,396	2,698	2,660	3,000	3,053
Canada Foundation for Innovation	260	424	326	305	448
Canadian Institutes of Health Research	678	730	682	879	819
Canadian International Development Agency	66	68	64	62	77
Natural Sciences and Engineering Research Council of Canada	728	782	816	880	916
Social Sciences and Humanities Research Council of Canada	477 ¹	530 ²	584 ³	607 ⁴	604 ⁵
Other	186	165	188	267	190
Total research and development	2,173	2,442	2,379	2,717	2,761
Canada Foundation for Innovation	260	424	326	305	448
Canadian Institutes of Health Research	669	717	668	863	804
Natural Sciences and Engineering Research Council of Canada	642	687	720	774	807
Social Sciences and Humanities Research Council of Canada	419 ¹	451 ²	496 ³	516 ⁴	512 ⁵
Other	183	163	169	260	190
Total related scientific activities	223	256	281	283	292
Canadian Institutes of Health Research	9	12	14	16	15
Canadian International Development Agency	45	46	41	40	50
Health Canada	2	2	18	2	2
Natural Sciences and Engineering Research Council of Canada	86	94	97	106	109
Social Sciences and Humanities Research Council of Canada	58	79	87	91	92
Other	22	23	24	27	24

1. Includes \$225 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

2. Includes \$245 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

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

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

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

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total science and technology payments	979	1,044	902	1,000	1,000
Total research and development payments	704	791	642	638	612
Total contracts	208	185	169	178	174
Canadian Space Agency	102	74	82	83	81
Environment Canada	14	16	15	16	16
National Defence	75	76	58	62	61
Royal Canadian Mounted Police	0 ^s	3	6	5	5
Other	17	16	9	12	10
Total grants and contributions	490	601	468	456	434
Atlantic Canada Opportunities Agency	41	25	50	38	38
Canadian Space Agency	14	15	16	16	16
Industry Canada	273	410	300	295	278
National Research Council Canada	81	72	66	66	66
Natural Resources Canada	41	26	26	29	30
Other	40	53	10	12	6
Total research fellowships	6	5	4	4	5
Total related scientific activities payments	275	253	261	362	387
Canadian International Development Agency	136	126	118	194	214
Environment Canada	25	32	28	28	29
National Defence	75	59	60	68	60
Statistics Canada	...	...	17	6	12
Transport Canada	3	4	6	8	14
Other	35	33	30	58	58

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total science and technology payments	2,396	2,698	2,660	3,000	3,053
Total research and development payments	2,173	2,442	2,379	2,717	2,761
Total contracts	33	37	37	38	40
Canadian International Development Agency	10	10	10	10	12
Canadian Space Agency	10	11	13	14	14
Environment Canada	3	3	3	3	4
National Defence	4	8	9	9	8
Other	6	5	2	2	3
Total grants and contributions	2,081	2,337	2,279	2,610	2,652
Canada Foundation for Innovation	260	424	326	305	448
Canadian Institutes of Health Research	630	672	625	814	759
Natural Sciences and Engineering Research Council of Canada	634	678	713	767	799
Social Sciences and Humanities Research Council of Canada	419 ¹	451 ²	496 ³	515 ⁴	512 ⁵
Other	138	113	120	209	135
Total research fellowships	59	68	63	69	69
Total related scientific activities payments	223	256	281	283	292
Total education support payments	194	219	242	244	250
Canadian Institutes of Health Research	9	12	14	16	15
Canadian International Development Agency	37	38	34	33	41
Health Canada	0 ^s	0 ^s	16	0 ^s	0 ^s
Natural Sciences and Engineering Research Council of Canada	86	94	97	106	109
Social Sciences and Humanities Research Council of Canada	52	69	79	82	82
Other	10	5	3	7	3
Total other related scientific activities	29	37	39	39	42

1. Includes \$225 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

2. Includes \$245 million for indirect costs of university research funded by the Social Sciences and Humanities Research Council of Canada.

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

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

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

Note(s): The major funding departments and agencies are those who that contributed 2% or more to the total 2006/2007 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total science and technology	444	307	305	408	245
Agriculture and Agri-Food Canada	1	3	12	20	3
Atlantic Canada Opportunities Agency	5	6	7	5	5
Canada Foundation for Innovation	2	4	29	...	...
Canadian Institutes of Health Research	17	14	6	17	16
Canadian International Development Agency	9	9	19	8	10
Economic Development Agency of Canada for the Regions of Quebec	2	21	18	16	10
Environment Canada	109 ¹	10	8	9	9
Foreign Affairs and International Trade Canada	...	8	15	10	18
Genome Canada	81	90	85	92	97
Health Canada	9	12	9	7	7
Industry Canada	41	50	24	61	0 ^s
International Development Research Centre	...	6	7	...	...
Natural Resources Canada	113	20	20	18	19
Natural Sciences and Engineering Research Council of Canada	12	17	17	69	11
Western Economic Diversification Canada	6	5	7	15	11
Other	38	32	20	60	29
Total research and development	260	206	224	310	171
Agriculture and Agri-Food Canada	0 ^s	1	9	19	0 ^s
Atlantic Canada Opportunities Agency	5	6	7	5	5
Canada Foundation for Innovation	2	4	29	...	...
Canadian Institutes of Health Research	17	14	6	17	16
Economic Development Agency of Canada for the Regions of Quebec	1	19	13	12	8
Genome Canada	81	90	85	92	97
Industry Canada	11	20	24	61	...
International Development Research Centre	...	5	5	...	...
Natural Resources Canada	108	11	12	9	10
Natural Sciences and Engineering Research Council of Canada	10	15	15	67	9
Western Economic Diversification Canada	5	5	7	15	11
Other	19	16	10	12	16
Total related scientific activities	184	101	81	98	74
Agriculture and Agri-Food Canada	1	2	2	1	3
Canadian International Development Agency	7	8	18	7	8
Economic Development Agency of Canada for the Regions of Quebec	1	2	5	4	2
Environment Canada	106 ¹	7	6	6	7
Foreign Affairs and International Trade Canada	...	8	15	10	18
Health Canada	9	11	8	7	7
Library and Archives Canada	3	2	2	3	3
Natural Resources Canada	4	9	8	9	9
Natural Sciences and Engineering Research Council of Canada	2	2	2	2	2
Public Health Agency of Canada	2	1	3	4	4
Social Sciences and Humanities Research Council of Canada	3	3	3	35	2
Other	45	46	10	10	9

1. Includes \$100 million for the Sustainable Development Technology Fund funded by Environment Canada.

Note(s): The major funding departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	millions of dollars				
Total science and technology	358	306	301	407	313
Canadian Institutes of Health Research	8	9	11	12	11
Canadian International Development Agency	171	109	107	192	99
Canadian Space Agency	32	31	37	37	36
Foreign Affairs and International Trade Canada	16	43	29	28	26
International Development Research Centre	61	58	60	78	82
National Defence	29	11	10	15	12
National Research Council of Canada	12	10	14	13	13
Natural Sciences and Engineering Research Council of Canada	12	14	13	13	14
Social Sciences and Humanities Research Council of Canada	4	5	6	6	6
Other	12	16	15	13	13
Total research and development	185	146	167	209	177
Canadian Institutes of Health Research	8	9	11	12	11
Canadian International Development Agency	53	25	37	57	27
Canadian Space Agency	32	31	36	37	36
International Development Research Centre	51	48	51	66	69
National Defence	14	8	5	12	8
National Research Council of Canada	12	10	14	13	13
Natural Sciences and Engineering Research Council of Canada	8	9	8	8	9
Other	7	5	5	4	4
Total related scientific activities	173	160	134	198	136
Canadian International Development Agency	118	84	70	135	72
Environment Canada	5	6	5	5	5
Foreign Affairs and International Trade Canada	16	43	29	28	26
International Development Research Centre	10	9	9	12	13
National Defence	14	3	4	3	4
Natural Resources Canada	0 ^s	2	3	3	3
Natural Sciences and Engineering Research Council of Canada	5	5	5	5	5
Social Sciences and Humanities Research Council of Canada	3	4	5	5	5
Other	1	5	4	2	2

Note(s): The major funding departments and agencies are those who contributed 2% or more to the total 2006/2007 expenditures. Due to rounding, components may not add to the totals.

Table 4-1
Federal personnel — Engaged in science and technology activities

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	number				
Total science and technology	34,339	35,102	36,027	35,748	36,379
Research and development	12,092	13,321	13,166	13,512	13,533
Administration of extramural research and development programs	1,627	1,924	1,978	2,126	2,208
Related scientific activities	20,073	19,341	20,337	19,561	20,057
Administration of extramural related scientific activities programs	547	515	548	549	581
Natural sciences and engineering	23,949	24,166	24,288	25,029	25,552
Research and development	11,590	12,792	12,445	12,721	12,731
Administration of extramural research and development programs	1,411	1,680	1,709	1,842	1,919
Related scientific activities	10,617	9,414	9,848	10,173	10,582
Administration of extramural related scientific activities programs	331	280	286	293	321
Social sciences and humanities	10,390	10,936	11,739	10,719	10,826
Research and development	502	529	720	791	802
Administration of extramural research and development programs	216	245	269	283	289
Related scientific activities	9,456	9,927	10,489	9,388	9,475
Administration of extramural related scientific activities programs	216	235	262	256	260

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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	number				
Total science and technology	14,928	15,936	16,096	16,345	16,824
Research and development	5,469	6,346	5,984	6,126	6,122
Administration of extramural research and development programs	508	742	766	823	851
Related scientific activities	8,815	8,681	9,170	9,227	9,680
Administration of extramural related scientific activities programs	136	167	176	169	171
Natural sciences and engineering	11,291	11,933	11,952	12,182	12,541
Research and development	5,189	6,057	5,651	5,752	5,738
Administration of extramural research and development programs	428	656	668	722	742
Related scientific activities	5,595	5,133	5,547	5,623	5,975
Administration of extramural related scientific activities programs	80	88	86	85	86
Social sciences and humanities	3,637	4,003	4,144	4,163	4,283
Research and development	280	289	334	374	384
Administration of extramural research and development programs	80	87	98	102	109
Related scientific activities	3,220	3,548	3,623	3,604	3,705
Administration of extramural related scientific activities programs	56	79	90	85	85

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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	number				
Total science and technology	8,884	8,646	8,822	8,716	8,740
Research and development	3,652	3,897	4,118	4,197	4,202
Administration of extramural research and development programs	78	68	70	68	69
Related scientific activities	5,141	4,661	4,613	4,439	4,457
Administration of extramural related scientific activities programs	13	20	20	12	11
Natural sciences and engineering	6,612	6,318	6,497	6,607	6,632
Research and development	3,566	3,806	3,986	4,060	4,057
Administration of extramural research and development programs	75	67	70	68	69
Related scientific activities	2,961	2,429	2,425	2,471	2,498
Administration of extramural related scientific activities programs	10	17	17	8	8
Social sciences and humanities	2,273	2,327	2,325	2,109	2,107
Research and development	86	91	132	138	146
Administration of extramural research and development programs	3	1	0	0	0
Related scientific activities	2,180	2,232	2,189	1,968	1,959
Administration of extramural related scientific activities programs	3	3	4	4	3

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

	2004/2005	2005/2006	2006/2007 ^P	2007/2008 ^P	2008/2009 ^P
	number				
Total science and technology	10,527	10,520	11,109	10,687	10,815
Research and development	2,971	3,078	3,063	3,189	3,208
Administration of extramural research and development programs	1,041	1,114	1,141	1,234	1,287
Related scientific activities	6,117	6,000	6,554	5,896	5,920
Administration of extramural related scientific activities programs	398	328	351	368	399
Natural sciences and engineering	6,046	5,915	5,839	6,240	6,379
Research and development	2,836	2,929	2,809	2,909	2,937
Administration of extramural research and development programs	908	958	970	1,053	1,107
Related scientific activities	2,061	1,853	1,876	2,079	2,109
Administration of extramural related scientific activities programs	241	175	184	200	226
Social sciences and humanities	4,480	4,605	5,270	4,447	4,436
Research and development	135	149	254	280	272
Administration of extramural research and development programs	133	157	171	182	180
Related scientific activities	4,056	4,146	4,677	3,817	3,811
Administration of extramural related scientific activities programs	157	153	168	168	173

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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^P	2008/2009 ^P
	number				
Total science and technology personnel	34,339	35,102	36,027	35,748	36,379
Scientific and professional	14,928	15,936	16,096	16,345	16,824
Technical	8,884	8,646	8,822	8,716	8,740
Other	10,527	10,520	11,109	10,687	10,815
Total research and development personnel	13,719	15,245	15,143	15,638	15,740
Scientific and professional	5,977	7,089	6,751	6,949	6,973
Technical	3,731	3,965	4,188	4,265	4,272
Other	4,012	4,192	4,204	4,423	4,496
Total related scientific activities personnel	20,620	19,856	20,884	20,111	20,639
Scientific and professional	8,951	8,848	9,346	9,396	9,851
Technical	5,154	4,681	4,634	4,451	4,468
Other	6,515	6,328	6,905	6,264	6,319

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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	number				
Total science and technology personnel	23,949	24,166	24,288	25,029	25,552
Scientific and professional	11,291	11,933	11,952	12,182	12,541
Technical	6,612	6,318	6,497	6,607	6,632
Other	6,046	5,915	5,839	6,240	6,379
Total research and development personnel	13,001	14,472	14,154	14,563	14,649
Scientific and professional	5,617	6,713	6,319	6,474	6,480
Technical	3,641	3,873	4,056	4,128	4,126
Other	3,743	3,887	3,779	3,961	4,044
Total related scientific activities personnel	10,948	9,694	10,134	10,466	10,903
Scientific and professional	5,674	5,220	5,633	5,708	6,061
Technical	2,971	2,446	2,441	2,480	2,506
Other	2,303	2,028	2,060	2,279	2,335

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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	number				
Total science and technology personnel	10,390	10,936	11,739	10,719	10,826
Scientific and professional	3,637	4,003	4,144	4,163	4,283
Technical	2,273	2,327	2,325	2,109	2,107
Other	4,480	4,605	5,270	4,447	4,436
Total research and development personnel	718	774	989	1,075	1,091
Scientific and professional	360	376	432	475	493
Technical	89	92	132	138	146
Other	268	306	425	462	452
Total related scientific activities personnel	9,672	10,162	10,750	9,644	9,736
Scientific and professional	3,277	3,627	3,713	3,688	3,790
Technical	2,183	2,235	2,192	1,971	1,962
Other	4,212	4,300	4,845	3,985	3,984

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, 2006/2007

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T., N.W.T. and Nvt.	National Capital Region	Canada
	number												
Total Sciences													
Scientific and professional personnel													
Science and technology	230	55	616	228	1,485	1,812	445	270	591	828	145	9,393	16,096
Research and development	101	42	255	134	1,045	1,262	225	203	356	402	14	2,713	6,751
Related scientific activities	129	13	360	94	441	550	220	67	236	426	130	6,680	9,346
Total Personnel													
Science and technology	474	134	1,372	413	3,460	4,162	1,128	755	1,444	1,694	268	20,723	36,027
Research and development	214	106	591	253	2,277	2,662	556	536	827	794	23	6,305	15,143
Related scientific activities	261	28	781	161	1,183	1,500	572	220	618	900	245	14,418	20,884
Natural Sciences													
Scientific and professional personnel													
Science and technology	210	51	578	221	1,413	1,709	409	267	558	791	138	5,607	11,952
Research and development	101	42	255	134	1,042	1,251	225	203	355	402	14	2,296	6,319
Related scientific activities	109	9	323	88	372	458	184	64	203	390	123	3,311	5,633
Total Personnel													
Science and technology	429	124	1,158	397	3,122	3,689	960	714	1,227	1,619	231	10,619	24,288
Research and development	214	106	591	253	2,267	2,646	556	536	826	794	23	5,344	14,154
Related scientific activities	216	18	567	144	855	1,043	404	178	401	825	207	5,276	10,134
Social Sciences													
Scientific and professional personnel													
Science and technology	20	4	38	6	72	103	36	3	33	37	7	3,786	4,144
Research and development	0	0	0 ^s	0	3	11	0 ^s	0 ^s	0 ^s	0	0	417	432
Related scientific activities	20	4	38	6	68	93	36	3	33	37	7	3,369	3,713
Total Personnel													
Science and technology	45	10	214	17	338	472	168	42	217	75	38	10,104	11,739
Research and development	0	0	0 ^s	0	10	16	0 ^s	0 ^s	0 ^s	0 ^s	0	962	989
Related scientific activities	45	10	214	17	328	456	168	42	217	75	38	9,142	10,750

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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	number				
Total	34,339	35,102	36,027	35,748	36,379
Agriculture and Agri-Food Canada	2,309	2,238	2,300	2,362	2,370
Atomic Energy of Canada Limited	1,250	1,450	1,362	1,570	1,513
Canadian Space Agency	573	596	609	619	724
Environment Canada	3,238	3,469	3,577	3,439	3,439
Fisheries and Oceans Canada	1,857	1,790	1,796	1,825	1,835
Health Canada	2,472	2,567	2,688	2,969	3,335
Industry Canada	972	983	960	1,012	1,022
National Defence	2,089	1,819	1,873	1,979	1,951
National Research Council Canada	4,178	4,155	4,190	4,190	4,190
Natural Resources Canada	3,223	3,273	3,032	3,071	3,077
Statistics Canada	5,436	5,737	6,330	5,179	5,196
Total major departments and agencies	27,597	28,077	28,717	28,218	28,653
Other	6,742	7,025	7,311	7,531	7,726

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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**

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	number				
Total	14,928	15,936	16,096	16,345	16,824
Agriculture and Agri-Food Canada	794	1,027	790	805	813
Atomic Energy of Canada Limited	492	642	603	695	638
Canadian Space Agency	256	268	280	285	333
Environment Canada	1,584	1,695	1,748	1,681	1,681
Fisheries and Oceans Canada	890	852	867	886	900
Health Canada	1,716	1,828	2,040	2,190	2,504
Industry Canada	702	676	677	681	706
National Defence	1,060	958	977	1,001	991
National Research Council Canada	1,519	1,647	1,640	1,640	1,640
Natural Resources Canada	1,889	1,950	1,908	1,901	1,912
Statistics Canada	1,389	1,375	1,396	1,346	1,351
Total major departments and agencies	12,291	12,919	12,927	13,112	13,469
Other	2,636	3,018	3,169	3,233	3,355

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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**

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	number				
Total	8,884	8,646	8,822	8,716	8,740
Agriculture and Agri-Food Canada	885	649	971	999	999
Atomic Energy of Canada Limited	322	372	349	403	403
Canadian Space Agency	39	40	40	41	48
Environment Canada	966	1,036	1,068	1,026	1,026
Fisheries and Oceans Canada	779	759	750	758	755
Health Canada	319	303	265	296	302
Industry Canada	70	62	51	55	57
National Defence	589	475	438	466	457
National Research Council Canada	1,208	1,108	1,124	1,124	1,124
Natural Resources Canada	956	988	865	848	844
Statistics Canada	1,413	1,469	1,438	1,224	1,228
Total major departments and agencies	7,545	7,260	7,359	7,239	7,243
Other	1,339	1,386	1,463	1,477	1,497

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	number				
Total	10,527	10,520	11,109	10,687	10,815
Agriculture and Agri-Food Canada	630	563	539	558	558
Atomic Energy of Canada Limited	436	436	410	472	472
Canadian Space Agency	278	288	288	293	343
Environment Canada	688	738	761	732	732
Fisheries and Oceans Canada	189	179	178	182	181
Health Canada	437	435	383	483	530
Industry Canada	200	245	232	277	259
National Defence	440	386	459	512	503
National Research Council Canada	1,451	1,400	1,426	1,426	1,426
Natural Resources Canada	378	335	259	322	321
Statistics Canada	2,633	2,893	3,496	2,610	2,618
Total major departments and agencies	7,760	7,898	8,430	7,867	7,941
Other	2,766	2,622	2,679	2,820	2,874

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	number				
Total	13,719	15,245	15,143	15,638	15,740
Agriculture and Agri-Food Canada	1,647	2,081	2,040	2,076	2,076
Atomic Energy of Canada Limited	1,250	1,450	1,362	1,570	1,513
Canadian Institutes of Health Research	278	318	341	399	450
Canadian Space Agency	498	524	539	548	641
Environment Canada	906	970	1,001	962	962
Fisheries and Oceans Canada	510	496	490	497	495
National Defence	1,563	1,538	1,538	1,620	1,599
National Research Council Canada	3,000	3,654	3,684	3,684	3,684
Natural Resources Canada	1,656	1,685	1,435	1,428	1,433
Statistics Canada	181	182	393	450	435
Total major departments and agencies	11,489	12,898	12,823	13,235	13,288
Other	2,230	2,347	2,320	2,403	2,452

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2004/2005	2005/2006	2006/2007 ^r	2007/2008 ^p	2008/2009 ^p
	number				
Total	20,620	19,856	20,884	20,111	20,639
Canadian Museum of Civilization	403	395	398	452	393
Environment Canada	2,332	2,499	2,576	2,477	2,477
Fisheries and Oceans Canada	1,348	1,294	1,306	1,329	1,340
Health Canada	2,074	2,149	2,346	2,607	2,979
Industry Canada	623	622	605	659	664
Library and Archives Canada	816	798	729	717	717
National Research Council Canada	1,178	501	506	506	506
Natural Resources Canada	1,567	1,588	1,597	1,643	1,644
Parks Canada	674	697	798	798	798
Statistics Canada	5,255	5,555	5,937	4,729	4,761
Total major departments and agencies	16,269	16,098	16,797	15,917	16,280
Other	4,351	3,759	4,087	4,194	4,359

Note(s): The major departments and agencies are those who contributed 2% or more to the total 2006/2007 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

	2002/2003	2003/2004	2004/2005	2005/2006	2006/2007
	millions of dollars				
Canada	7,299	7,976	8,156	8,682	8,745
Newfoundland and Labrador	117	121	137	128	119
Prince Edward Island	24	32	39	47	47
Nova Scotia	246	257	295	261	303
New Brunswick	102	100	122	93	107
Quebec ¹	1,243	1,328	1,352	1,485	1,468
Ontario ¹	1,581	2,038	1,966	2,101	2,045
Manitoba	214	195	226	254	235
Saskatchewan	151	159	157	193	208
Alberta	396	470	474	484	499
British Columbia	582	588	645	673	681
Yukon, Northwest Territories and Nunavut	35	46	35	51	42
Canada (excluding National Capital Region (NCR))	4,691	5,334	5,448	5,770	5,756
National Capital Region ²	2,608	2,642	2,709	2,912	2,989

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, 2006/2007

	Federal government	Business enterprises	Higher education	Other performers ¹	Total
	millions of dollars				
Total sciences - Canada	5,244	719	2,418	364	8,745
Newfoundland and Labrador	62	22	32	3	119
Prince Edward Island	29	9	9	1	47
Nova Scotia	180	38	74	12	303
New Brunswick	52	15	34	7	107
Quebec ²	529	228	666	45	1,468
Ontario ²	672	288	921	164	2,045
Manitoba	157	7	62	10	235
Saskatchewan	94	8	65	42	208
Alberta	212	20	247	20	499
British Columbia	229	84	309	59	681
Yukon, Northwest Territories and Nunavut	39	1	1	1	42
Canada (excluding National Capital Region)	2,255	719	2,418	364	5,756
National Capital Region ³	2,989	...	...	...	2,989
Natural sciences - Canada	3,729	692	1,802	305	6,528
Newfoundland and Labrador	59	22	24	2	108
Prince Edward Island	28	8	7	1	45
Nova Scotia	155	38	53	11	257
New Brunswick	50	14	21	6	90
Quebec ²	492	225	496	35	1,247
Ontario ²	620	267	684	124	1,695
Manitoba	142	6	45	8	201
Saskatchewan	90	8	50	41	190
Alberta	191	20	191	19	421
British Columbia	219	83	230	56	589
Yukon, Northwest Territories and Nunavut	35	1	0 ^s	1	38
Canada (excluding National Capital Region)	2,080	692	1,802	305	4,880
National Capital Region ³	1,649	...	...	...	1,649
Social sciences - Canada	1,515	27	616	59	2,217
Newfoundland and Labrador	3	0 ^s	8	0 ^s	11
Prince Edward Island	1	0 ^s	1	0 ^s	2
Nova Scotia	25	0 ^s	20	1	47
New Brunswick	2	1	13	0 ^s	17
Quebec ²	37	4	170	11	221
Ontario ²	53	20	237	40	349
Manitoba	15	0 ^s	17	1	34
Saskatchewan	4	0 ^s	14	1	19
Alberta	21	0 ^s	56	1	79
British Columbia	10	1	79	3	93
Yukon, Northwest Territories and Nunavut	4	0 ^s	1	0 ^s	5
Canada (excluding National Capital Region)	174	27	616	59	876
National Capital Region ³	1,340	...	...	...	1,340

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

2. Includes extramural expenditures in the National Capital Region performed within the province.

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, 2006/2007

	Federal government	Business enterprises	Higher education	Other performers ¹	Total
	millions of dollars				
Total sciences - Canada	2,496	610	2,283	270	5,660
Newfoundland and Labrador	27	22	30	2	82
Prince Edward Island	26	8	8	0 ^s	43
Nova Scotia	73	36	71	11	191
New Brunswick	30	14	29	6	78
Quebec ²	365	217	630	35	1,247
Ontario ²	493	209	864	123	1,690
Manitoba	81	4	58	8	150
Saskatchewan	67	8	62	41	178
Alberta	133	15	237	14	399
British Columbia	91	77	292	30	491
Yukon, Northwest Territories and Nunavut	5	1	1	0 ^s	7
Canada (excluding National Capital Region)	1,391	610	2,283	270	4,555
National Capital Region ³	1,105	...	...	...	1,105
Natural sciences - Canada	2,340	608	1,780	252	4,980
Newfoundland and Labrador	27	22	24	2	75
Prince Edward Island	26	8	7	0 ^s	41
Nova Scotia	73	36	52	10	172
New Brunswick	30	14	20	5	69
Quebec ²	364	216	489	30	1,098
Ontario ²	491	208	677	115	1,491
Manitoba	81	4	44	7	136
Saskatchewan	67	8	50	41	144
Alberta	133	15	189	13	351
British Columbia	91	76	227	28	423
Yukon, Northwest Territories and Nunavut	5	1	0 ^s	0 ^s	6
Canada (excluding National Capital Region)	1,387	608	1,780	252	4,027
National Capital Region ³	953	...	...	...	953
Social sciences - Canada	156	2	504	18	680
Newfoundland and Labrador	0 ^s	...	6	0 ^s	7
Prince Edward Island	...	...	1	...	1
Nova Scotia	0 ^s	0 ^s	18	0 ^s	19
New Brunswick	...	...	9	0 ^s	9
Quebec ²	1	1	142	5	149
Ontario ²	3	0 ^s	187	8	199
Manitoba	...	...	14	1	14
Saskatchewan	...	...	13	0 ^s	13
Alberta	0 ^s	...	48	1	48
British Columbia	0 ^s	1	65	2	68
Yukon, Northwest Territories and Nunavut	...	...	1	0 ^s	1
Canada (excluding National Capital Region)	4	2	504	18	528
National Capital Region ³	153	...	...	...	153

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

2. Includes extramural expenditures in the National Capital Region performed within the province.

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, 2006/2007

	Federal government	Business enterprises	Higher education	Other performers ¹	Total
	millions of dollars				
Total sciences - Canada	2,748	109	135	94	3,085
Newfoundland and Labrador	35	0 ^s	2	0 ^s	37
Prince Edward Island	4	0 ^s	0 ^s	0 ^s	4
Nova Scotia	107	2	3	1	112
New Brunswick	22	1	5	1	29
Quebec ²	164	12	36	10	222
Ontario ²	179	79	57	41	355
Manitoba	76	3	4	2	85
Saskatchewan	27	0 ^s	2	1	30
Alberta	79	5	10	6	100
British Columbia	138	7	17	30	191
Yukon, Northwest Territories and Nunavut	34	0 ^s	0 ^s	1	36
Canada (excluding National Capital Region)	864	109	135	94	1,201
National Capital Region ³	1,884	...	...	...	1,884
Natural sciences - Canada	1,389	83	23	53	1,548
Newfoundland and Labrador	32	0 ^s	0 ^s	0 ^s	33
Prince Edward Island	3	0 ^s	0 ^s	0 ^s	3
Nova Scotia	82	1	1	1	84
New Brunswick	20	0 ^s	1	1	22
Quebec ²	128	8	7	5	149
Ontario ²	129	59	7	9	204
Manitoba	61	2	0 ^s	1	65
Saskatchewan	23	0 ^s	0 ^s	1	24
Alberta	57	5	2	6	70
British Columbia	128	6	3	28	166
Yukon, Northwest Territories and Nunavut	30	0 ^s	0 ^s	1	32
Canada (excluding National Capital Region)	693	83	23	53	852
National Capital Region ³	696	...	...	...	696
Social sciences - Canada	1,358	25	112	41	1,536
Newfoundland and Labrador	3	0 ^s	1	0 ^s	4
Prince Edward Island	1	0 ^s	0 ^s	0 ^s	1
Nova Scotia	25	0 ^s	2	1	28
New Brunswick	2	1	4	0 ^s	8
Quebec ²	36	3	28	5	73
Ontario ²	50	20	49	31	151
Manitoba	15	0 ^s	3	1	20
Saskatchewan	4	0 ^s	2	0 ^s	6
Alberta	21	0 ^s	8	1	30
British Columbia	10	0 ^s	13	1	25
Yukon, Northwest Territories and Nunavut	4	...	0 ^s	0 ^s	4
Canada (excluding National Capital Region)	171	25	112	41	349
National Capital Region ³	1,188	...	...	...	1,188

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

2. Includes extramural expenditures in the National Capital Region performed within the province.

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, 2006/2007**

	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.	Canada
millions of dollars												
Total Sciences												
Total science and technology	57	18	123	56	940	1,372	78	115	287	452	4	3,501
Grants	54	17	114	53	903	1,185	71	108	275	428	3	3,213
Contracts	2	1	9	3	37	187	7	6	12	24	0 ^s	288
Total research and development	54	17	118	48	882	1,196	70	111	266	399	2	3,164
Grants	53	17	111	48	857	1,096	66	105	259	382	2	2,997
Contracts	2	0 ^s	7	1	25	100	4	6	7	17	0 ^s	167
Total related scientific activities	2	1	6	7	58	176	9	4	21	53	2	337
Grants	2	0 ^s	3	5	45	89	5	3	16	46	1	216
Contracts	1	0 ^s	2	2	12	87	3	1	5	7	0 ^s	121
Natural sciences												
Total science and technology	49	17	102	41	755	1,076	59	99	230	369	3	2,799
Grants	46	16	93	40	722	916	53	93	219	347	3	2,548
Contracts	2	1	8	1	33	160	6	6	11	22	0 ^s	251
Total research and development	48	16	99	39	734	1,000	55	98	218	332	1	2,640
Grants	46	16	92	39	710	901	51	92	211	316	1	2,475
Contracts	2	0 ^s	7	1	25	99	4	6	7	16	0 ^s	165
Total related scientific activities	1	1	3	2	21	75	4	1	12	38	1	159
Grants	0 ^s	0 ^s	1	1	12	15	2	1	8	32	1	74
Contracts	1	0 ^s	2	1	9	61	2	0 ^s	4	6	0 ^s	86
Social Sciences												
Total science and technology	8	1	22	15	185	297	19	15	57	83	1	702
Grants	8	1	21	13	181	269	18	15	57	81	1	664
Contracts	0 ^s	0 ^s	1	1	4	27	1	0 ^s	1	2	0 ^s	38
Total research and development	7	1	19	9	148	196	14	13	48	68	1	524
Grants	7	1	19	9	147	195	14	13	48	67	1	522
Contracts	0 ^s	...	0 ^s	...	0 ^s	1	...	0	0 ^s	1	...	2
Total related scientific activities	1	0^s	3	5	37	101	5	2	9	15	0^s	178
Grants	1	0 ^s	2	4	33	74	4	2	8	14	0 ^s	143
Contracts	0 ^s	0 ^s	1	1	4	26	1	0 ^s	1	1	0 ^s	36

1. Includes extramural expenditures in the National Capital Region performed within the province.

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, 2006/2007

	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.	Canada
millions of dollars												
Total Sciences												
Total science and technology	22	9	38	15	228	288	7	8	20	84	1	719
Grants	21	8	30	14	200	122	1	3	13	64	1	476
Contracts	1	0 ^s	8	1	29	167	6	5	7	20	0 ^s	243
Total research and development	22	8	36	14	217	209	4	8	15	77	1	610
Grants	21	8	30	14	197	119	1	3	12	63	1	469
Contracts	0 ^s	...	6	0 ^s	20	90	3	5	3	15	0 ^s	142
Total related scientific activities	0^s	0^s	2	1	12	79	3	0^s	5	7	0^s	109
Grants	0 ^s	0 ^s	0 ^s	0 ^s	3	2	0 ^s	0 ^s	1	1	0 ^s	7
Contracts	0 ^s	0 ^s	1	1	9	77	3	0 ^s	4	5	0 ^s	102
Natural sciences												
Total science and technology	22	8	38	14	225	267	6	8	20	83	1	692
Grants	21	8	30	14	199	121	1	3	13	64	1	475
Contracts	1	0 ^s	8	0 ^s	26	147	5	5	7	19	0 ^s	217
Total research and development	22	8	36	14	216	208	4	8	15	76	1	608
Grants	21	8	30	14	197	119	1	3	12	63	1	468
Contracts	0 ^s	...	6	0 ^s	19	90	3	5	3	14	0 ^s	140
Total related scientific activities	0^s	0^s	1	0^s	8	59	2	0^s	5	6	0^s	83
Grants	0 ^s	0 ^s	0 ^s	0 ^s	2	2	0 ^s	0 ^s	1	1	0 ^s	7
Contracts	0 ^s	0 ^s	1	0 ^s	6	57	2	0 ^s	4	5	0 ^s	77
Social Sciences												
Total science and technology	0^s	0^s	0^s	1	4	20	0^s	0^s	0^s	1	...	27
Grants	0 ^s	...	0 ^s	...	1	0 ^s	...	0 ^s	...	0 ^s	...	1
Contracts	0 ^s	0 ^s	0 ^s	1	3	20	0 ^s	0 ^s	0 ^s	1	...	26
Total research and development	...	...	0^s	...	1	0^s	...	...	...	1	...	2
Grants	...	...	...	...	0 ^s	0 ^s	...	...	...	0 ^s	...	0 ^s
Contracts	...	...	0 ^s	...	0 ^s	0 ^s	...	...	...	1	...	2
Total related scientific activities	0^s	0^s	0^s	1	3	20	0^s	0^s	0^s	0^s	...	25
Grants	0 ^s	...	0 ^s	...	0 ^s	0 ^s	...	0 ^s	...	0 ^s	...	1
Contracts	0 ^s	0 ^s	0 ^s	1	3	20	0 ^s	0 ^s	0 ^s	0 ^s	...	25

1. Includes extramural expenditures in the National Capital Region performed within the province.

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, 2006/2007

	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.	Canada
millions of dollars												
Total sciences												
Total science and technology	32	9	74	34	666	921	62	65	247	309	1	2,418
Grants	32	9	73	33	660	908	61	63	243	306	1	2,388
Contracts	0 ^s	0 ^s	1	1	6	13	1	1	4	3	0 ^s	30
Total research and development	30	8	71	29	630	864	58	62	237	292	1	2,283
Grants	30	8	70	29	625	854	57	62	234	290	1	2,261
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	5	10	1	1	3	2	...	22
Total related scientific activities	2	0^s	3	5	36	57	4	2	10	17	0^s	135
Grants	1	0 ^s	3	4	35	54	4	2	9	15	0 ^s	127
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	1	3	0 ^s	0 ^s	1	1	0 ^s	7
Natural sciences												
Total science and technology	24	7	53	21	496	684	45	50	191	230	0^s	1,802
Grants	24	7	53	20	490	673	44	49	188	228	0 ^s	1,777
Contracts	0 ^s	0 ^s	1	1	6	11	1	1	3	3	...	26
Total research and development	24	7	52	20	489	677	44	50	189	227	0^s	1,780
Grants	24	7	52	20	484	667	44	49	186	225	0 ^s	1,757
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	5	10	1	1	3	2	...	22
Total related scientific activities	0^s	0^s	1	1	7	7	0^s	0^s	2	3	0^s	23
Grants	0 ^s	0 ^s	1	0 ^s	6	6	0 ^s	0 ^s	2	3	0 ^s	19
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	1	1	0 ^s	0 ^s	0 ^s	0 ^s	...	3
Social sciences												
Total science and technology	8	1	20	13	170	237	17	14	56	79	1	616
Grants	8	1	20	13	170	235	17	14	55	78	1	612
Contracts	0 ^s	...	0 ^s	0 ^s	0 ^s	2	0 ^s	0 ^s	1	1	0 ^s	4
Total research and development	6	1	18	9	142	187	14	13	48	65	1	504
Grants	6	1	18	9	142	187	14	13	48	65	1	504
Contracts	0 ^s	...	0 ^s	...	...	0 ^s	...	...	0 ^s	0 ^s	...	0 ^s
Total related scientific activities	1	0^s	2	4	28	49	3	2	8	13	0^s	112
Grants	1	0 ^s	2	4	28	48	3	1	8	13	0 ^s	108
Contracts	0 ^s	...	0 ^s	0 ^s	0 ^s	2	0 ^s	0 ^s	1	1	0 ^s	4

1. Includes extramural expenditures in the National Capital Region performed within the province.

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 sectors¹ on science and technology, by type of science and activity, 2006/2007

	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.	Canada
millions of dollars												
Total sciences												
Total science and technology	3	1	12	7	45	164	10	42	20	59	1	364
Grants	1	0 ^s	11	6	43	156	9	42	19	58	1	349
Contracts	1	0 ^s	1	0 ^s	2	8	1	0 ^s	1	1	0 ^s	15
Total research and development	2	0^s	11	6	35	123	8	41	14	30	0^s	270
Grants	1	0 ^s	11	5	35	123	8	41	13	30	0 ^s	267
Contracts	1	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	...	0 ^s	1	0 ^s	...	3
Total related scientific activities	0^s	0^s	1	1	10	41	2	1	6	30	1	94
Grants	0 ^s	0 ^s	1	1	8	33	1	1	6	29	1	82
Contracts	0 ^s	0 ^s	1	0 ^s	2	7	1	0 ^s	0 ^s	1	0 ^s	12
Natural sciences												
Total science and technology	2	1	11	6	35	124	8	41	19	56	1	305
Grants	1	0 ^s	11	6	33	122	8	41	18	56	1	297
Contracts	1	0 ^s	0 ^s	0 ^s	2	2	0 ^s	0 ^s	1	1	0 ^s	8
Total research and development	2	0^s	10	5	30	115	7	41	13	28	0^s	252
Grants	1	0 ^s	10	5	29	115	7	41	12	28	0 ^s	249
Contracts	1	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	...	0 ^s	1	0 ^s	...	3
Total related scientific activities	0^s	0^s	1	1	5	9	1	1	6	28	1	53
Grants	0 ^s	0 ^s	0 ^s	1	4	7	1	1	6	28	1	48
Contracts	0 ^s	0 ^s	0 ^s	0 ^s	1	2	0 ^s	0 ^s	0 ^s	1	0 ^s	5
Social sciences												
Total science and technology	0^s	0^s	1	0^s	11	40	1	1	1	3	0^s	59
Grants	0 ^s	0 ^s	0 ^s	0 ^s	10	34	1	1	1	3	0 ^s	52
Contracts	0 ^s	...	0 ^s	0 ^s	0 ^s	5	0 ^s	0 ^s	0 ^s	0	0 ^s	7
Total research and development	0^s	...	0^s	0^s	5	8	1	0^s	1	2	0^s	18
Grants	0 ^s	...	0 ^s	0 ^s	5	8	1	0 ^s	1	2	0 ^s	18
Contracts	...	...	...	...	...	0 ^s	...	...	...	0 ^s	...	0 ^s
Total related scientific activities	0^s	0^s	1	0^s	5	31	1	0^s	1	1	0^s	41
Grants	0 ^s	0 ^s	0 ^s	0 ^s	5	26	0 ^s	0 ^s	0 ^s	1	0 ^s	34
Contracts	0 ^s	...	0 ^s	0 ^s	0 ^s	5	0 ^s	0 ^s	0 ^s	0 ^s	0 ^s	7

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

2. Includes extramural expenditures in the National Capital Region performed within the province.

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

	2004/2005		2005/2006		2006/2007	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
	millions of dollars					
Science and technology expenditures	4,398	4,250	4,690	4,425	4,924	4,389
Exploration and exploitation of the Earth	414	98	448	101	441	74
Infrastructure and general planning of land use						
Transport	96	34	94	32	74	32
Telecommunication	58	31	57	32	56	23
Other	145	32	130	33	139	33
Control and care of the environment	396	281	470	247	452	235
Protection and improvement of human health	407	1,051	435	1,175	478	1,247
Production, distribution and rational utilization of energy	231	186	263	121	372	103
Agricultural production and technology						
Agriculture	405	89	413	114	440	142
Fishing	168	36	168	37	169	26
Forestry	92	58	95	56	93	87
Industrial production and technology	272	797	296	958	291	883
Social structures and relationships	1,005	291	1,021	336	1,097	348
Exploration and exploitation of space	141	194	176	168	178	183
Non-oriented research	283	458	317	799	315	823
Other civil research	19	2	26	5	29	10
Defence	233	184	265	156	300	140
Other	32	429	17	56	...	...

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

	2004/2005		2005/2006		2006/2007	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
	millions of dollars					
Total science and technology expenditures	1,983	3,371	2,298	3,628	2,391	3,577
Exploration and exploitation of the earth	98	55	110	78	98	58
Infrastructure and general planning of land use						
Transport	53	27	58	28	50	26
Telecommunication	43	30	52	31	51	21
Other	38	28	46	28	40	29
Control and care of the environment	181	155	216	185	188	175
Protection and improvement of human health	203	988	210	1,106	217	1,160
Production, distribution and rational utilization of energy	199	181	229	103	339	89
Agricultural production and technology						
Agriculture	269	79	336	102	340	130
Fishing	44	26	47	25	47	19
Forestry	71	49	75	44	76	46
Industrial production and technology	174	732	198	884	196	831
Social structures and relationships	62	189	59	203	81	196
Exploration and exploitation of space	125	190	162	164	163	179
Non-oriented research	208	428	219	496	219	535
Other civil research	15	2	23	4	24	10
Defence	191	94	245	93	261	72
Other	10	119	13	54	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

	2004/2005		2005/2006		2006/2007	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
	millions of dollars					
Total science and technology expenditures	2,415	879	2,392	797	2,533	812
Exploration and exploitation of the Earth	317	43	338	23	343	16
Infrastructure and general planning of land use						
Transport	44	7	35	4	24	6
Telecommunication	15	1	5	1	5	2
Other	107	4	84	5	98	4
Control and care of the environment	214	126	254	62	265	60
Protection and improvement of human health	205	63	225	69	261	86
Production, distribution and rational utilization of energy	32	6	34	17	33	14
Agricultural production and technology						
Agriculture	136	10	77	12	100	12
Fishing	124	10	122	12	122	7
Forestry	21	9	20	11	17	42
Industrial production and technology	98	65	98	74	95	52
Social structures and relationships	943	101	962	133	1,016	151
Exploration and exploitation of space	16	4	14	4	16	4
Non-oriented research	75	30	98	303	95	288
Other civil research	3	0 ^s	3	1	4	1
Defence	42	90	20	64	38	67
Other	22	310	4	2	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 proposed 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. 2006/2007; forecast expenditures for the current fiscal year, e.g. 2007/2008; and proposed estimates for the fiscal year, e.g. 2008/2009 (as also reported in the Public Accounts).

Over 55 different federal government departments and agencies either perform science and technology (S&T) activities or have a budgetary allocation to fund S&T. In addition to the expenditures attributable to program budgets, there are additional costs attributable to scientific activities which must be included if a full picture of the resources devoted to science activities is to be obtained. These include other sources of funds and other S&T costs which are defined below:

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

Income from external sources such as industry and provincial governments;

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

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

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

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