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Federal Scientific Activities

2006/2007



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- ^P preliminary
- ^r revised
- x suppressed to meet the confidentiality requirements of the *Statistics Act*
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Foreword

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 S&T activities of federal departments and agencies, 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: proposed estimates for the fiscal year, e.g. 2006/2007; forecast expenditures for the current fiscal year, e.g. 2005/2006, and actual expenditures for the past fiscal year, e.g. 2004/2005 (as also reported in the Public Accounts).

Over 65 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 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 report 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, private non-profit organizations, other Canadian performers and foreign performers). Definitions of these terms are provided in the Technical Notes section. Crown corporations which have an industrial function are not included. They are treated as commercial enterprises and the crown corporation expenditures in aggregate are included in the Statistics Canada report, *Industrial Research and Development*, Catalogue No. 88-202-XIE.

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.

This publication was prepared by **Karim El Hassani**, Analyst, with the assistance of the staff of Science and Technology Surveys Section, Science, Innovation and Electronic Information Division and under the direction of **Lloyd Lizotte**, Subject Matter Manager.

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Highlights

- ▶ Preliminary figures for spending by the federal government on science and technology (S&T) for 2006/2007 amounted to \$9.3 billion, 62% of which was allocated to research and development (R&D) and 38% to related scientific activities (RSA). Relative to 2005/2006, this is a slight increase in federal spending of 0.5% on science and technology (S&T) and 1.5% on related scientific activities (RSA) (Table 1.1).
- ▶ Between 2000/2001 and 2006/2007, federal government spending on science and technology (S&T) grew 38.8% (in current dollars). This growth is due mainly to increased expenditures in 2001/2002 when an additional \$1.5 billion was invested, representing a growth rate of 21.8%. (Table 1.1)
- ▶ In 2006/2007, the federal government departments and agencies with the largest expenditures in science and technology (S&T) are the Natural Sciences and Engineering Research Council (\$907 million), the Canadian Institutes of Health Research (\$812 million), Statistics Canada (\$794 million), the National Research Council of Canada (\$792 million), and the Social Sciences and Humanities Research Council of Canada (\$628 million). These five agencies account for over 42% of the federal government's total spending on science and technology (S&T). (Table 1.3)
- ▶ The share of federal science and technology spending allocated to the natural sciences is \$6.9 billion in 2006/2007 or 74% of total spending, down from a high of 78% in 2002/2003. Only 30% of the \$2.4 billion allocated to the social sciences is allocated to R&D, with the rest going to related scientific activities, such as data collection for general purposes, maintaining national standards and testing, feasibility studies and policy research. (Table 1.7)
- ▶ Federal intramural spending on science and technology, defined as all activities primarily performed by federal employees, represents 53% of all federal spending on science and technology, down from 60% in 2000/2001. (Tables 2.1 to 2.4)
- ▶ Between 2000/2001 and 2006/2007, federal extramural spending on science and technology rose by \$1.7 billion, of which about \$802 million occurred in 2003/2004. In 2006/2007, the higher education sector will be receiving the majority of federal extramural spending on science and technology (64%). The business enterprise sector will account for close to 24%, while foreign performers will account for 7% of total extramural spending on science and technology. (Tables 3.1 to 3.3)
- ▶ In 2006/2007, universities are earmarked to receive \$2.5 billion for research and development (R&D), along with \$277 million for related scientific activities (RSA). The three research councils - the Canadian Institutes of Health Research (\$723 million), the Natural Sciences and Engineering Research Council (\$723 million), and the Social Sciences and Humanities Research Council (\$494 million) - along with the Canada Foundation for Innovation (\$430 million) are the major federal government funders of R&D performed by the higher education sector. (Tables 3.7 to 3.9)
- ▶ Federal expenditures on science and technology (S&T) in the industrial sector in 2006/2007 are approximately \$1 billion. An increase of 3.8% compared with 2005/2006. Payments from Industry Canada are \$248 million, while National Defence will spend \$219 million and the Canadian Space Agency, \$154 million. (Tables 3.4 to 3.6)
- ▶ In 2006/2007, 36,339 federal government person-years are devoted to science and technology (S&T) activities, a 3.3% increase from the 35,182 person-years reported for 2005/2006. The majority (61%) of person-years are engaged in related scientific activities in 2006/2007. (Table 4.1)

- ▶ The natural sciences and engineering field accounted for 68% of the estimated total personnel expenditures in 2006/2007, of which 54% were engaged in research and development (R&D). In contrast, personnel in the social sciences and humanities will account for 32% of the total, of which only 7% will be engaged in R&D. (Table 4.1)
- ▶ A breakdown of science and technology personnel by category shows the Scientific and Professional category as the largest, with 43% of all personnel in 2006/2007 falling into this category. It should be noted that Statistics Canada remains the largest employer with 6,242 person-years. (Tables 4.4 and 4.10)

1. Expenditure overview

Table 1.1 Federal expenditures on science and technology (S&T), research and development (R & D) and related scientific activities (RSA) in current dollars and in constant 1997 dollars.

	Current dollars					Constant 1997 dollars			
	Budgetary main estimates ¹	S&T			GDP implicit price index ²	Budgetary main estimates ¹	S&T		
		Total S&T	R & D	RSA			Total S&T	R & D	RSA
millions of dollars					millions of dollars				
2000/2001	156,157	6,707	4,150	2,557	105.5	148,016	6,357	3,934	2,424
2001/2002	165,234	8,169	4,989	3,180	106.7	154,858	7,656	4,676	2,980
2002/2003	170,367	8,014	4,927	3,087	107.8	158,040	7,434	4,571	2,864
2003/2004 ^f	175,937	8,765	5,462	3,303	111.4	157,933	7,868	4,903	2,965
2004/2005 ^f	183,290	8,935	5,455	3,480	114.8	159,660	7,783	4,752	3,031
2005/2006 ^p	185,863	9,260	5,769	3,491	118.5	156,846	7,814	4,868	2,946
2006/2007 ^p	198,595	9,309	5,770	3,539	..	..	..	..	..

1. Part 1, Government Expenditures Plan, Estimates.

2. CANSIM, table 380-0036.

Table 1.2 Gross domestic expenditures on research and development (GERD), by sector of performance and funding sector, 2006/2007.

	Federal government	Provincial government	Provincial research organizations	Business enterprises	Higher education	Private non-profit	Total
millions of dollars							
Total	2,172	320	25	14,850	10,890	127	28,384
Federal government	2,110	3	1	265	2,828	47	5,254
Provincial government	8	290	13	60	1,257	16	1,644
Provincial research organizations	0	0	0	0	0	0	0
Business enterprises	54	27	11	12,239	899	15	13,245
Higher education	0	0	0	0	4,948	0	4,948
Private non-profit	0	0	0	0	842	35	877
Foreign	0	0	0	2,286	116	14	2,416

Chart 1.1 Federal expenditures on science and technology (S&T), research and development (R & D) and related scientific activities (RSA) as a percentage of the Main estimates.

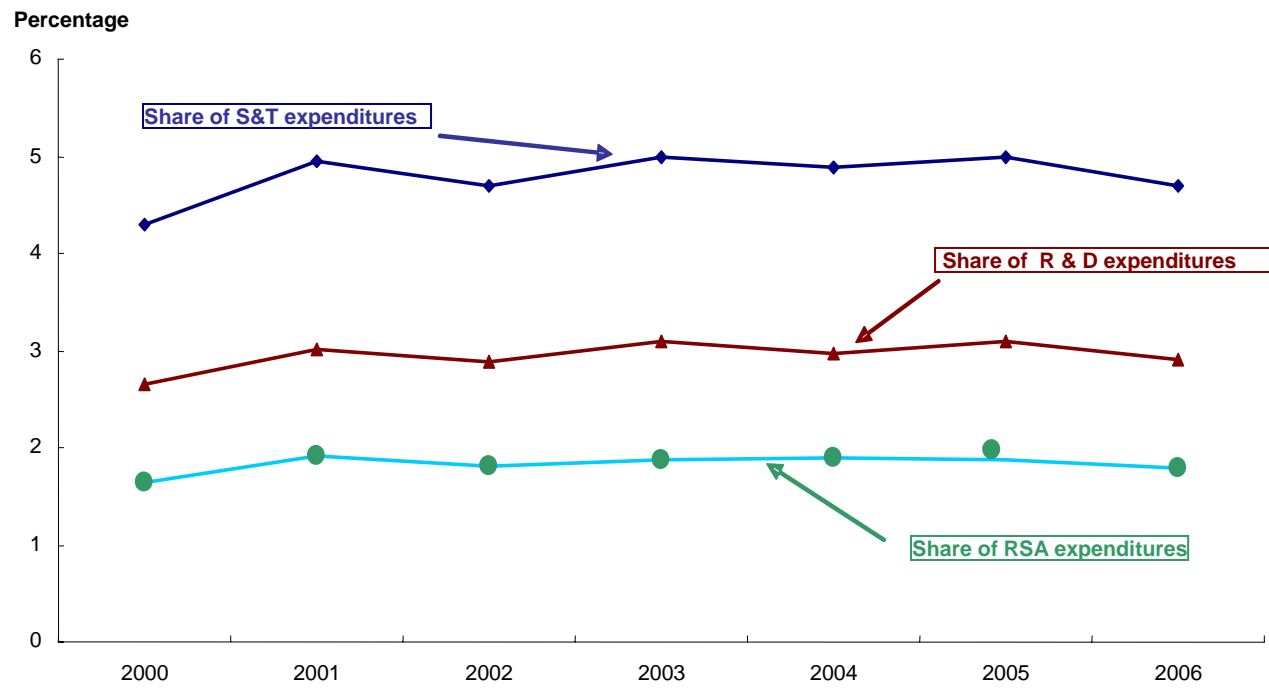


Table 1.3 Federal expenditures on science and technology (S&T), by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
millions of dollars							
Total	6,707	8,169	8,014	8,765	8,935	9,260	9,309
Agriculture and Agri-Food Canada	363	337	320	334	340	361	341
Atlantic Canada Opportunities Agency	27	14	51	63	101	63	63
Atomic Energy of Canada Limited	136	178	147	179	148	182	201
Bank of Canada	42	48	67	69	68	70	73
Canada Economic Development (Quebec)	10	17	27	32	51	58	37
Canada Foundation for Innovation	188	239	332	365	271	444	443
Canada Mortgage and Housing Corporation	35	24	27	31	33	29	30
Canada Science and Technology Museum	26	29	30	34	44	28	28
Canadian Food Inspection Agency	37	38	54	47	46	54	50
Canadian Institutes of Health Research	392	529	628	693	759	768	812
Canadian International Development Agency	358	387	352	366	415	374	377
Canadian Museum of Civilization	58	64	83	127	127	90	74
Canadian Museum of Nature	26	28	31	31	30	59	62
Canadian Space Agency	310	330	320	269	276	286	373
Environment Canada	479	626	574	776	675	634	602
Fisheries and Oceans Canada	367	319	363	283	291	279	274
Foreign Affairs and International Trade Canada	45	48	48	45	31	31	31
Genome Canada	...	34	62	86	85	93	62
Health Canada	229	311	342	332	284	306	319
Industry Canada	336	687	424	434	426	450	378
International Development Research Centre	84	76	86	89	108	117	122
Library and Archives Canada	...	...	...	...	83	88	80
National Defence	315	315	358	403	430	431	412
National Gallery of Canada	44	45	51	54	59	57	57
National Research Council of Canada	655	719	793	778	793	803	792
Natural Resources Canada	437	554	511	651	632	514	497
Natural Sciences & Engineering Research Council	568	588	653	732	808	870	907
Parks Canada Agency	90	95	100	103	109	109	108
Public Health Agency of Canada	...	...	...	...	61	75	61
Social Sciences & Humanities Research Council	145	362	188	460	523	574	628
Statistics Canada	576	727	579	581	610	750	794
Treasury Board	47	57	47	44	32	33	34
Total - Major departments	6,425	7,825	7,647	8,491	8,749	9,081	9,121
Others	282	344	366	274	186	180	188

Table 1.4 Federal expenditures on research and development (R & D), by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total	4,150	4,989	4,927	5,462	5,455	5,769	5,770
Agriculture and Agri-Food Canada	354	329	267	252	247	255	233
Atlantic Canada Opportunities Agency	27	14	51	63	101	63	63
Atomic Energy of Canada Limited	136	178	147	179	148	182	201
Bank of Canada	12	13	25	28	28	26	28
Canada Economic Development (Quebec)	10	17	25	28	45	54	33
Canada Foundation for Innovation	188	239	332	365	271	444	443
Canadian Food Inspection Agency	13	12	19	17	15	19	18
Canadian Institutes of Health Research	384	522	622	687	749	758	802
Canadian International Development Agency	57	56	53	62	85	64	69
Canadian Space Agency	298	317	309	256	263	272	356
Environment Canada	145	222	207	264	209	230	219
Fisheries and Oceans Canada	130	123	141	71	74	80	78
Genome Canada	...	34	62	86	85	93	62
Health Canada	65	102	105	103	56	57	57
Industry Canada	288	503	371	376	327	375	296
International Development Research Centre	76	65	67	66	82	89	93
National Defence	274	281	261	282	296	311	281
National Research Council of Canada	591	645	718	699	691	711	702
Natural Resources Canada	388	335	285	420	378	305	294
Natural Sciences & Engineering Research Council	500	517	573	638	706	760	790
Public Health Agency of Canada	...	...	...	...	35	39	30
Social Sciences & Humanities Research Council	105	325	148	402	444	475	517
Statistics Canada	13	16	19	20	21	18	20
Western Economic Diversification Canada	17	30	26	25	28	18	18
Total - Major departments	4,071	4,895	4,833	5,389	5,384	5,698	5,703
Others	79	94	94	73	71	71	67

Table 1.5 Federal expenditures on related scientific activities (RSA), by major department or agency.							
	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total	2,557	3,180	3,087	3,303	3,480	3,491	3,539
Agriculture and Agri-Food Canada	9	8	53	82	94	106	108
Bank of Canada	30	35	42	41	40	44	46
Canada Economic Development (Quebec)	0	0	1	4	6	4	4
Canada Mortgage and Housing Corporation	24	18	19	22	23	19	20
Canada Science and Technology Museum	26	29	30	34	44	28	28
Canadian Food Inspection Agency	24	26	35	30	30	35	32
Canadian Institutes of Health Research	8	7	7	7	10	10	10
Canadian International Development Agency	302	331	299	304	330	310	308
Canadian Museum of Civilization	53	59	77	122	121	85	68
Canadian Museum of Nature	23	26	28	28	27	55	59
Canadian Space Agency	12	14	12	13	13	14	17
Environment Canada	335	404	366	512	466	403	383
Fisheries and Oceans Canada	237	196	222	212	216	200	196
Foreign Affairs and International Trade Canada	45	48	48	45	31	31	31
Health Canada	164	210	236	229	229	249	262
Industry Canada	48	185	53	59	99	75	82
International Development Research Centre	8	11	20	23	26	28	29
Library and Archives Canada	...	...	...	...	83	88	80
National Defence	41	34	97	121	134	120	131
National Research Council of Canada	64	74	75	79	102	92	90
Natural Resources Canada	49	219	226	232	254	209	203
Natural Sciences & Engineering Research Council	68	71	80	95	102	110	117
Parks Canada Agency	89	94	100	102	109	108	108
Public Health Agency of Canada	...	...	...	...	26	36	31
Social Sciences & Humanities Research Council	40	37	40	58	79	99	111
Statistics Canada	563	711	560	562	589	732	774
Treasury Board	47	57	47	44	32	33	34
Total - Major departments	2,308	2,903	2,773	3,058	3,316	3,323	3,362
Others	248	278	314	245	164	168	177

Chart 1.2 Federal expenditures on science and technology (S&T), by major department or agency, 2004/2005 to 2006/2007(millions \$).

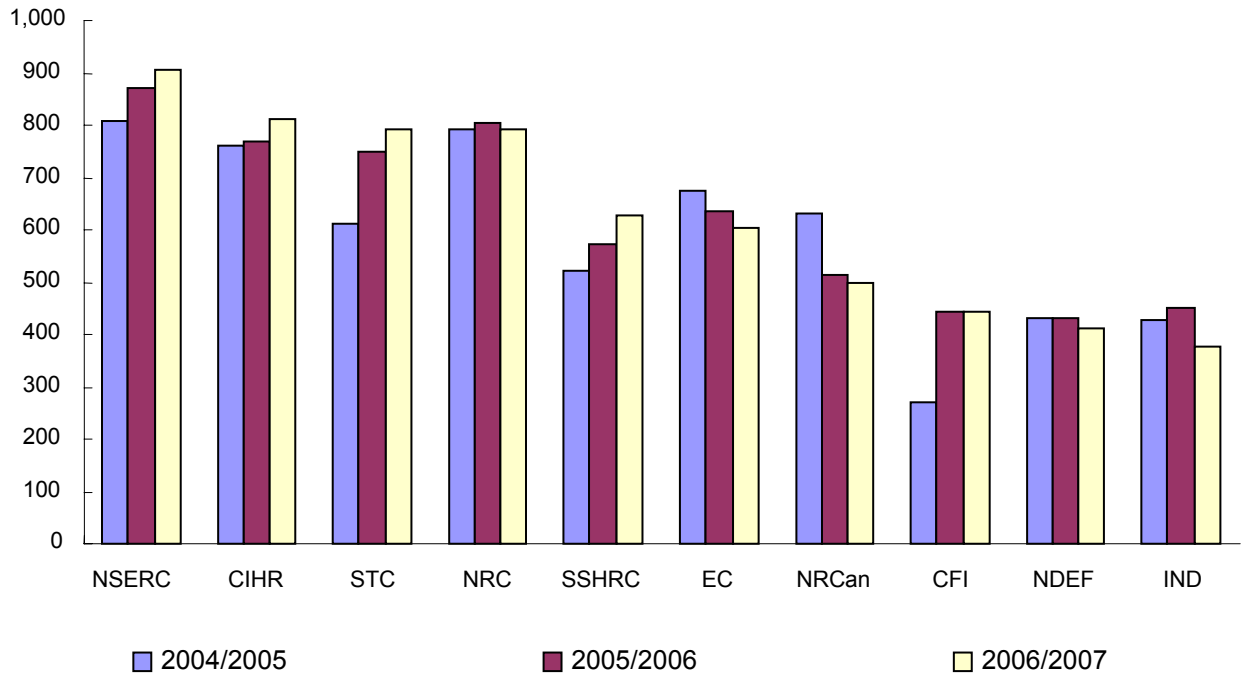


Chart 1.3 Federal expenditures on science and technology (S&T), by major department or agency, 2006/2007(millions \$).

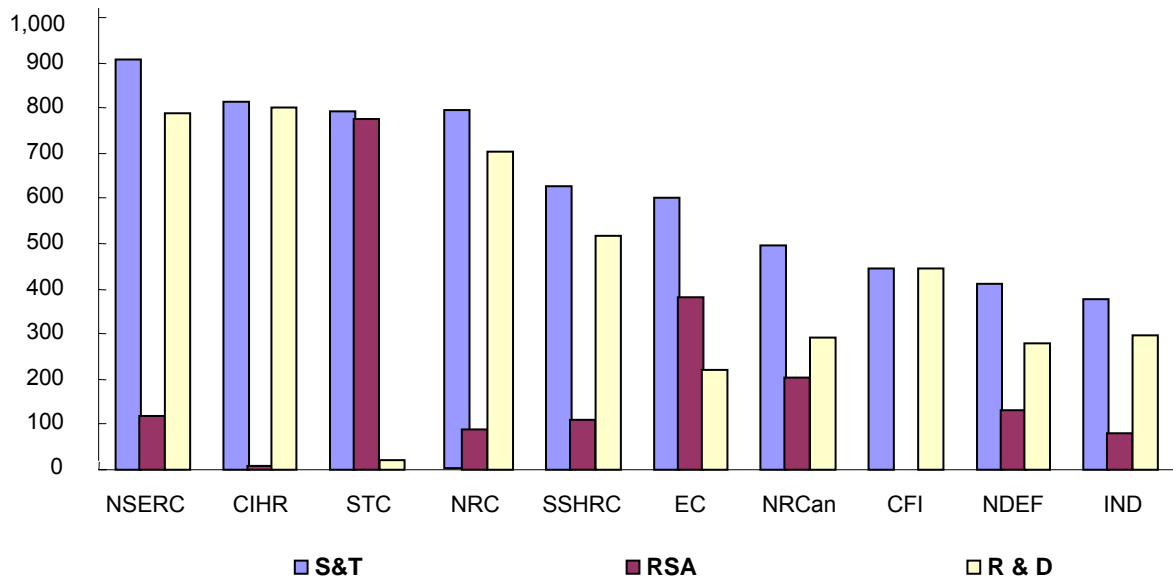


Table 1.6 Federal expenditures on science and technology (S&T), by activity.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total science and technology (S&T)	6,707	8,169	8,014	8,765	8,935	9,260	9,309
Total research and development (R & D) :	4,150	4,989	4,927	5,462	5,455	5,769	5,770
Current expenditures	3,770	4,571	4,492	5,033	5,033	5,332	5,365
Administration of extramural programs	182	213	227	257	269	283	277
Capital expenditures	198	206	208	172	152	154	128
Total related scientific activities (RSA) :	2,557	3,180	3,087	3,303	3,480	3,491	3,539
Data collection	1,231	1,611	1,498	1,619	1,702	1,700	1,719
Information services	484	618	679	663	679	710	720
Special services and studies	531	514	588	615	666	644	656
Education support	163	286	177	206	230	264	278
Administration of extramural programs	46	49	54	57	58	57	61
Capital expenditures	102	103	91	145	146	115	106

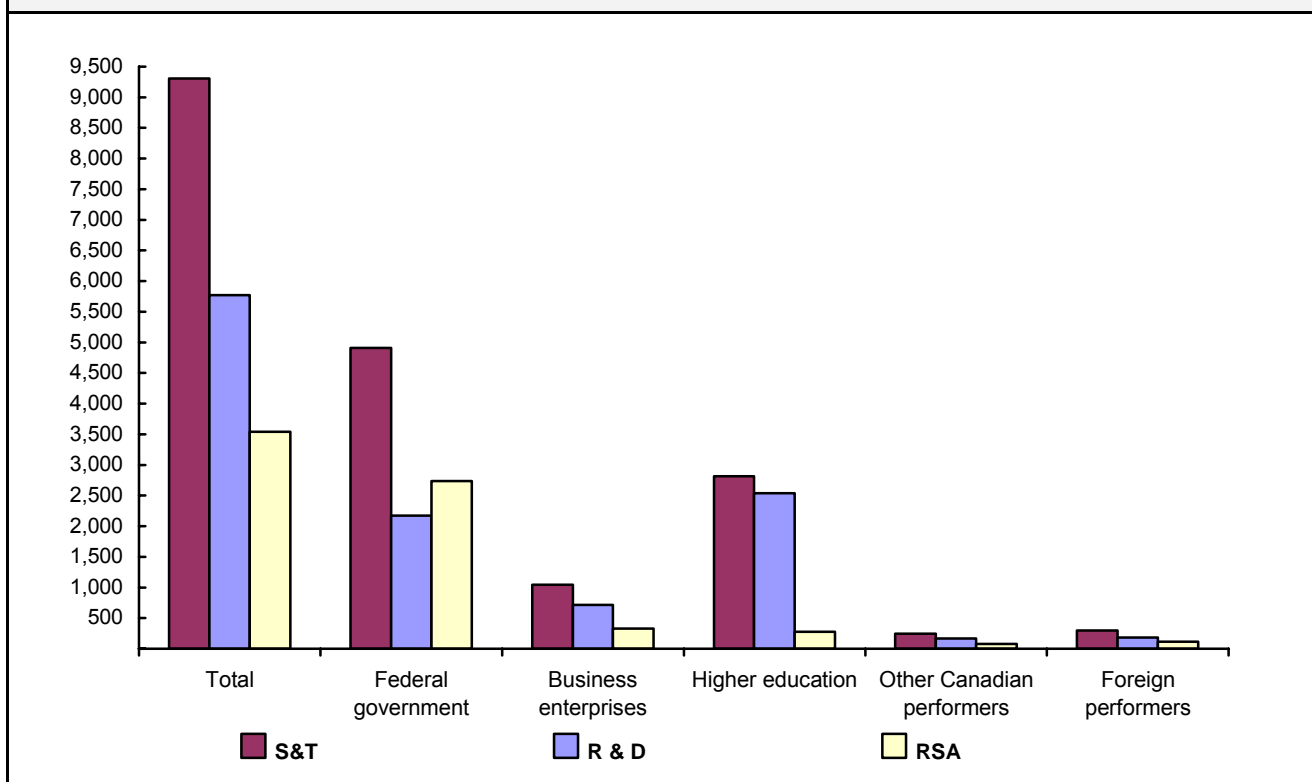
Chart 1.4 Distribution of federal expenditures on science and technology (S&T), by sector of performance, 2006/2007 (millions \$).

Table 1.7 Federal expenditures on science and technology (S&T), by type of science and sector of performance.¹

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total sciences:	6,707	8,169	8,014	8,765	8,935	9,260	9,309
Intramural	4,043	4,555	4,630	4,579	4,685	4,950	4,910
Business enterprises	847	1,109	998	1,039	979	1,006	1,044
Higher education	1,320	1,739	1,803	2,255	2,396	2,696	2,813
Non-profit institutions	154	400	200	514	444	241	186
Provincial and municipal governments	37	31	34	32	22	39	10
Foreign performers	250	282	284	288	358	278	296
Other	56	53	65	57	51	51	49
Natural sciences:	5,124	6,005	6,225	6,723	6,780	6,964	6,933
Intramural	2,872	3,166	3,308	3,277	3,341	3,512	3,438
Business enterprises	816	1,071	965	998	942	962	1,002
Higher education	1,139	1,341	1,583	1,761	1,848	2,082	2,147
Non-profit institutions	98	226	130	459	397	195	142
Provincial and municipal governments	22	14	29	27	20	38	10
Foreign performers	144	157	168	168	202	146	167
Other	33	30	42	33	31	29	28
Social sciences:	1,583	2,164	1,789	2,042	2,155	2,297	2,376
Intramural	1,171	1,389	1,322	1,302	1,344	1,438	1,473
Business enterprises	32	38	33	41	37	43	42
Higher education	181	398	220	494	549	614	667
Non-profit institutions	56	174	71	55	47	46	44
Provincial and municipal governments	15	17	5	5	2	1	1
Foreign performers	106	125	116	120	156	132	129
Other	23	23	23	24	21	23	21

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

Table 1.8 Federal expenditures on research and development (R & D), by type of science and sector of performance.¹

	2000/2001	2001/2002	2002/2003	2003/2004 ^r	2004/2005 ^r	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total sciences:	4,150	4,989	4,927	5,462	5,455	5,769	5,770
Intramural	2,080	2,102	2,190	2,083	2,084	2,247	2,172
Business enterprises	624	862	726	770	704	671	715
Higher education	1,170	1,595	1,644	2,059	2,173	2,436	2,537
Non-profit institutions	76	233	142	340	260	186	129
Provincial and municipal governments	34	26	26	22	15	34	6
Foreign performers	131	136	153	144	185	165	181
Other	35	35	46	43	33	33	31
Natural sciences:	3,879	4,480	4,581	4,860	4,815	5,093	5,055
Intramural	1,996	2,010	2,073	1,964	1,965	2,131	2,054
Business enterprises	622	857	722	766	700	666	710
Higher education	1,063	1,265	1,495	1,661	1,734	1,962	2,020
Non-profit institutions	48	202	107	310	242	168	116
Provincial and municipal governments	19	9	24	18	14	33	6
Foreign performers	104	112	123	112	135	111	128
Other	27	25	37	29	25	22	21
Social sciences:	271	509	346	602	640	676	715
Intramural	84	92	117	120	118	115	117
Business enterprises	2	5	4	4	4	5	5
Higher education	107	330	149	398	439	474	517
Non-profit institutions	28	31	35	30	18	17	13
Provincial and municipal governments	15	17	2	4	2	1	0
Foreign performers	27	24	30	32	50	54	53
Other	8	10	9	14	9	11	10

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

Table 1.9 Federal expenditures on related scientific activities (RSA), by type of science and sector of performance¹.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total sciences:	2,557	3,180	3,087	3,303	3,480	3,491	3,539
Intramural	1,963	2,453	2,440	2,496	2,601	2,704	2,739
Business enterprises	223	247	272	269	275	335	329
Higher education	150	144	159	196	223	260	277
Non-profit institutions	77	168	58	174	184	56	57
Provincial and municipal governments	3	5	8	10	7	5	4
Foreign performers	119	145	131	144	173	113	115
Other	21	18	19	14	18	19	18
Natural sciences:	1,245	1,526	1,644	1,864	1,965	1,870	1,878
Intramural	876	1,156	1,236	1,314	1,376	1,381	1,383
Business enterprises	193	214	243	232	242	296	292
Higher education	76	76	88	100	114	120	127
Non-profit institutions	50	25	23	148	155	27	27
Provincial and municipal governments	3	5	5	9	6	4	4
Foreign performers	41	45	45	56	67	35	39
Other	6	5	5	4	6	7	6
Social sciences:	1,312	1,655	1,444	1,439	1,515	1,621	1,661
Intramural	1,087	1,297	1,205	1,182	1,225	1,323	1,355
Business enterprises	30	33	29	37	33	39	37
Higher education	74	68	71	95	109	140	150
Non-profit institutions	27	143	35	26	29	29	31
Provincial and municipal governments	1	1	3	1	1	0	0
Foreign performers	78	100	87	87	106	78	76
Other	15	13	14	10	12	12	11

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

Chart 1.5 Federal expenditures on science and technology (S&T) in the natural sciences and engineering (millions \$), by activity.

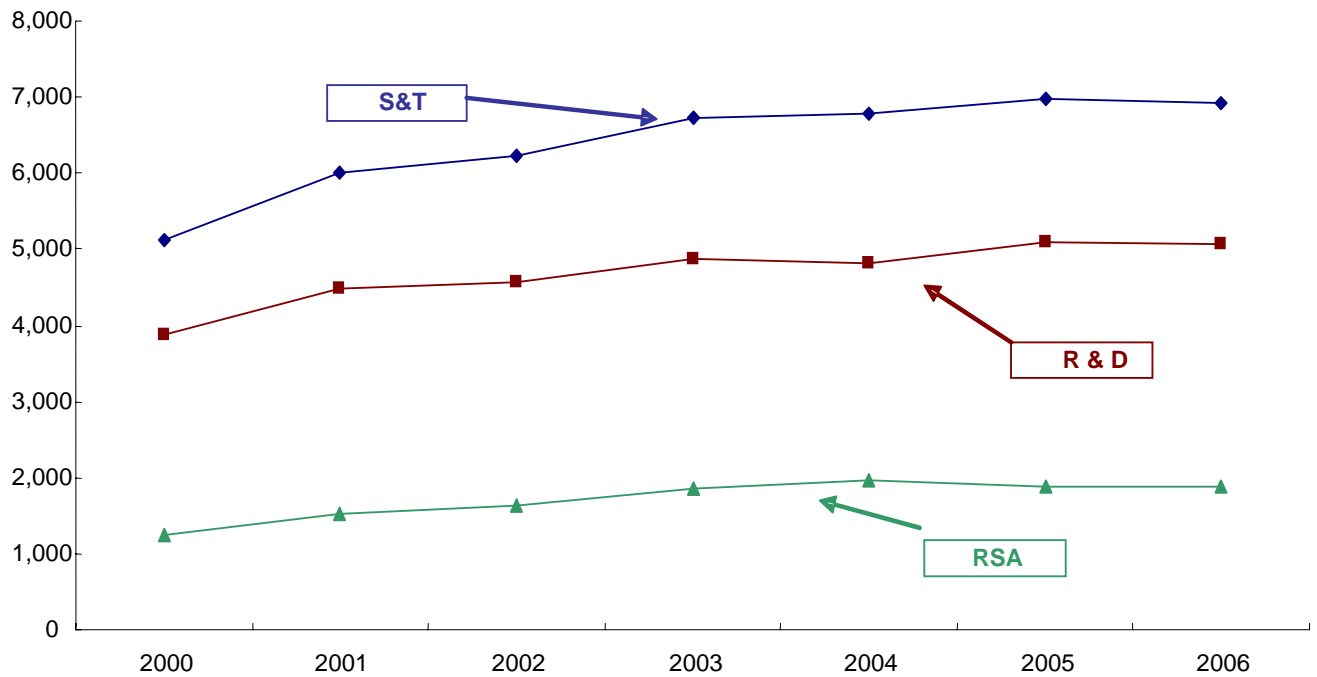


Chart 1.6 Federal expenditures on science and technology (S&T) in the social sciences and humanities (millions \$), by activity.

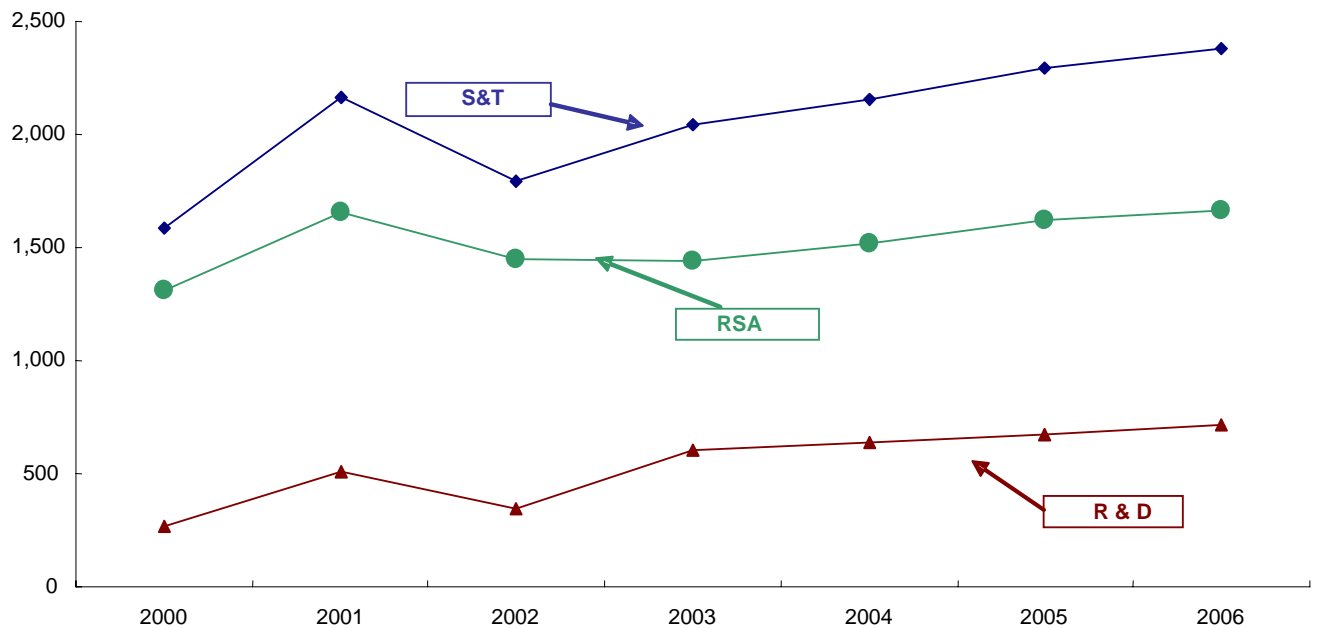


Table 1.10 Federal expenditures on science and technology (S&T), by activity and sector of performance, 2004/2005.								
	Intramural	Business enterprises	Higher education	Non-profit institutions	Provincial and municipal governments	Foreign performers	Other	Total
millions of dollars								
Total science and technology (S&T)	4,685	979	2,396	444	22	358	51	8,935
Research and development (R & D)	2,084	704	2,173	260	15	185	33	5,455
In-house R & D	1,535	...	...	...	...	...	...	1,535
R & D contracts	23	208	33	4	3	22	10	303
Supporting contracts	93	...	...	...	...	...	...	93
R & D grants and contributions	...	490	2,082	254	13	148	14	3,001
Research fellowships	11	6	59	2	0	16	9	102
Administration of extramural programs	269	...	...	...	...	...	...	269
Capital expenditures	152	...	...	...	...	...	...	152
Total related scientific activities (RSA)	2,601	275	223	184	7	173	18	3,480
Data collection	1,479	61	7	116	5	28	6	1,702
Information services ¹	587	17	14	13	0	46	2	679
Special services and studies ²	325	192	8	49	1	85	5	666
Education support	7	5	194	6	0	13	5	230
Administration of extramural programs	58	...	...	...	...	...	...	58
Capital expenditures	146	...	...	...	...	...	...	146

1. Includes information services and museum services.

2. Includes testing and standardization, economic and feasibility studies and operations and policy studies.

Table 1.11 Federal expenditures on science and technology (S&T), by activity and sector of performance, 2005/2006.

	Intramural	Business enterprises	Higher education	Non-profit institutions	Provincial and municipal governments	Foreign performers	Other	Total
millions of dollars								
Total science and technology (S&T)	4,950	1,006	2,696	241	38	278	51	9,260
Research and development (R & D)	2,247	670	2,436	186	34	165	33	5,769
In-house R & D	1,683	...	...	...	...	...	...	1,683
R & D contracts	25	181	36	6	2	18	13	281
Supporting contracts	92	...	...	...	...	...	...	92
R & D grants and contributions	...	483	2,336	178	32	137	11	3,177
Research fellowships	10	6	63	2	0	10	9	99
Administration of extramural programs	283	...	...	...	...	...	...	283
Capital expenditures	154	...	...	...	...	...	...	154
Total related scientific activities (RSA)	2,704	335	260	56	5	113	19	3,491
Data collection	1,579	74	5	16	3	19	3	1,700
Information services ¹	634	20	17	13	0	24	2	710
Special services and studies ²	311	236	10	19	1	59	7	644
Education support	7	5	227	7	0	12	6	264
Administration of extramural programs	57	...	...	...	...	...	...	57
Capital expenditures	115	...	...	...	...	...	...	115

1. Includes information services and museum services.

2. Includes testing and standardization, economic and feasibility studies and operations and policy studies.

Table 1.12 Federal expenditures on science and technology (S&T), by activity and sector of performance, 2006/2007.

	Intramural	Business enterprises	Higher education	Non-profit institutions	Provincial and municipal governments	Foreign performers	Other	Total
millions of dollars								
Total science and technology (S&T)	4,910	1,044	2,813	186	10	296	49	9,309
Research and development (R & D)	2,172	715	2,537	129	6	181	31	5,770
In-house R & D	1,634	...	...	...	...	...	...	1,634
R & D contracts	23	280	37	4	2	22	12	381
Supporting contracts	99	...	...	...	...	...	...	99
R & D grants and contributions	...	429	2,436	122	4	142	11	3,145
Research fellowships	10	6	63	2	0	16	9	106
Administration of extramural programs	277	...	...	...	...	...	...	277
Capital expenditures	128	...	...	...	...	...	...	128
Total related scientific activities (RSA)	2,739	329	277	57	4	115	18	3,539
Data collection	1,603	69	6	15	3	19	3	1,719
Information services ¹	638	21	17	12	0	29	2	720
Special services and studies ²	324	234	11	23	1	56	7	656
Education support	7	5	243	7	0	11	5	278
Administration of extramural programs	61	...	...	...	...	...	...	61
Capital expenditures	106	...	...	...	...	...	...	106

1. Includes information services and museum services.

2. Includes testing and standardization, economic and feasibility studies and operations and policy studies.

2. Federal intramural expenditures

Table 2.1 Federal intramural expenditures on science and technology (S&T), by activity.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total science and technology (S&T):	4,043	4,555	4,630	4,579	4,685	4,950	4,910
Research and development (R & D):	2,080	2,102	2,190	2,083	2,084	2,247	2,172
Current expenditures	1,700	1,684	1,754	1,655	1,662	1,810	1,766
Administration of extramural programs	182	213	227	257	269	283	277
Capital expenditures	198	205	208	172	152	154	128
Related scientific activities (RSA):	1,963	2,453	2,440	2,496	2,601	2,704	2,739
Data collection	1,152	1,518	1,393	1,393	1,479	1,579	1,604
Information services	417	522	595	584	587	634	638
Special services and studies	238	253	295	311	326	311	324
Education support	8	8	13	7	7	7	7
Administration of extramural programs	46	49	54	57	58	57	61
Capital expenditures	102	103	91	145	146	115	106

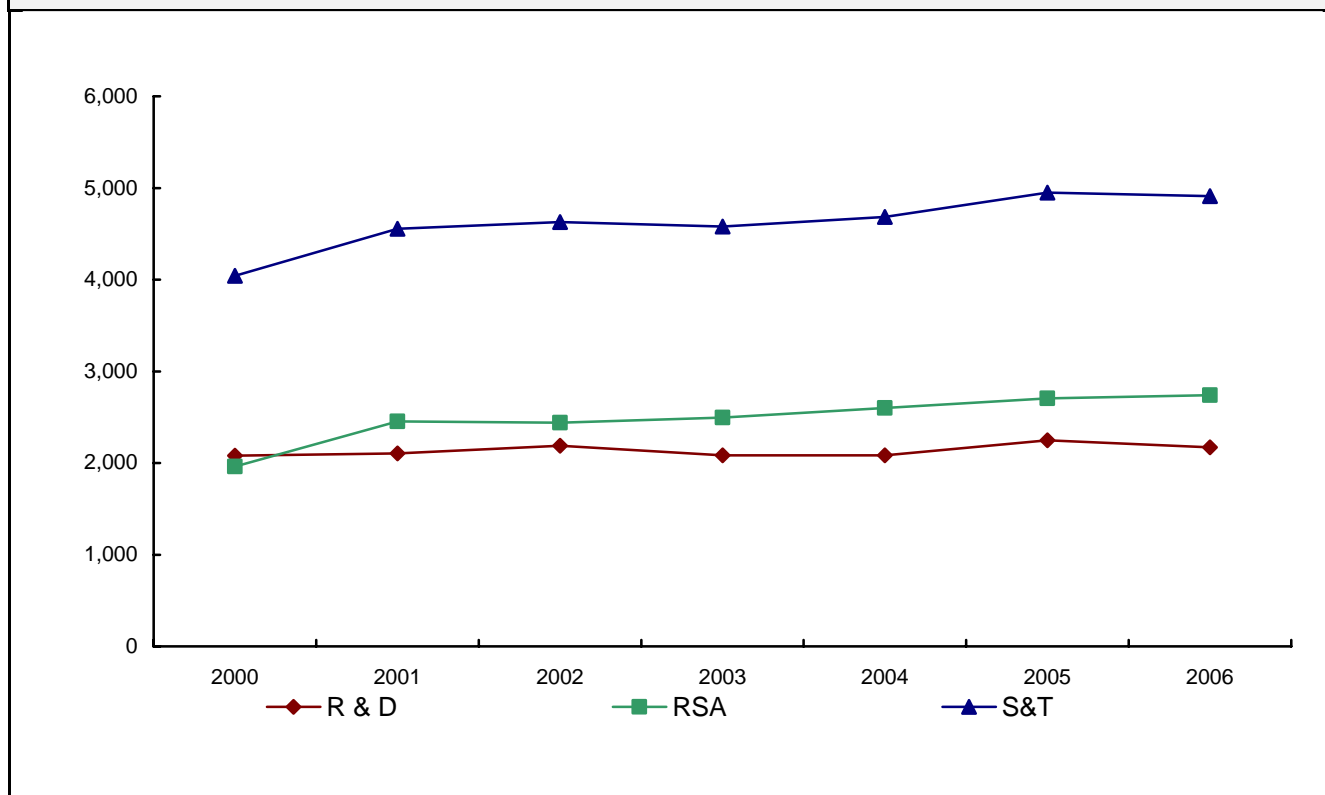
Chart 2.1 Federal intramural expenditures on science and technology (S&T), by activity (millions \$).

Table 2.2 Federal intramural expenditures on science and technology (S&T), by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total	4,043	4,555	4,630	4,579	4,685	4,950	4,910
Agriculture and Agri-Food Canada	347	325	298	316	328	330	336
Atlantic Canada Opportunities Agency	0	2	2	3	4	4	4
Atomic Energy of Canada Limited	128	168	136	168	141	172	190
Bank of Canada	42	48	67	69	68	70	73
Canada Economic Development (Québec)	2	4	4	8	13	15	11
Canada Foundation for Innovation	5	8	7	10	8	9	13
Canada Mortgage and Housing Corporation	29	18	21	26	26	23	24
Canada Science and Technology Museum	26	29	30	34	44	28	28
Canadian Food Inspection Agency	37	38	54	47	45	54	50
Canadian Institutes of Health Research	22	33	40	45	54	54	52
Canadian International Development Agency	16	17	21	22	24	26	27
Canadian Museum of Civilization	58	64	83	127	127	90	74
Canadian Museum of Nature	26	28	30	31	30	59	62
Canadian Space Agency	174	162	162	105	112	143	158
Environment Canada	427	506	508	533	506	557	529
Fisheries and Oceans Canada	327	307	348	280	276	265	259
Foreign Affairs and International Trade Canada	10	11	7	6	5	6	6
Genome Canada	...	1	2	3	4	4	4
Health Canada	193	269	297	280	258	272	293
Industry Canada	90	107	102	98	110	121	125
International Development Research Centre	43	39	38	42	42	45	47
Library and Archives Canada	...	...	...	...	80	85	78
National Defence	175	142	188	205	246	237	171
National Gallery of Canada	44	45	51	54	59	57	57
National Research Council of Canada	506	570	645	643	656	671	660
Natural Resources Canada	374	455	449	456	458	436	421
Natural Sciences & Engineering Research Council	29	35	39	38	42	46	45
Parks Canada Agency	87	93	99	101	107	107	107
Public Health Agency of Canada	...	...	...	...	38	52	40
Social Sciences & Humanities Research Council	16	18	20	23	25	23	23
Statistics Canada	575	726	579	581	609	749	793
Treasury Board	47	57	47	44	32	33	34
Total major departments	3,855	4,325	4,374	4,398	4,577	4,843	4,794
Other	188	231	256	181	108	107	116

Table 2.3 Federal intramural expenditures on research and development (R & D), by major department or agency.							
	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total	2,080	2,103	2,190	2,083	2,084	2,247	2,172
Agriculture and Agri-Food Canada	339	318	246	238	236	227	231
Atlantic Canada Opportunities Agency	0	2	2	3	4	4	4
Atomic Energy of Canada Limited	128	168	136	168	141	172	190
Bank of Canada	12	13	25	28	28	26	28
Canada Economic Development (Quebec)	2	4	4	5	9	11	7
Canada Foundation for Innovation	5	8	7	10	8	9	13
Canadian Food Inspection Agency	13	12	19	17	15	18	18
Canadian Institutes of Health Research	21	32	39	45	53	53	52
Canadian International Development Agency	2	2	2	2	2	3	3
Canadian Space Agency	166	152	154	95	101	131	144
Environment Canada	125	147	182	187	182	200	190
Fisheries and Oceans Canada	128	119	138	68	72	77	76
Health Canada	41	72	80	75	51	50	51
Industry Canada	42	48	49	43	44	51	49
International Development Research Centre	36	31	27	28	28	30	32
National Defence	154	139	161	167	202	223	151
National Research Council of Canada	442	496	570	564	554	579	571
Natural Resources Canada	334	243	233	231	213	233	225
Natural Sciences & Engineering Research Council	25	31	35	33	36	40	39
Public Health Agency of Canada	...	...	...	...	23	28	21
Social Sciences & Humanities Research Council	8	9	12	14	15	14	13
Statistics Canada	13	16	19	20	21	18	20
Total major departments	2,036	2,062	2,140	2,041	2,038	2,197	2,128
Other	44	41	50	42	46	50	44

Table 2.4 Federal intramural expenditures on related scientific activities (RSA), by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total	1,963	2,453	2,440	2,496	2,601	2,704	2,739
Agriculture and Agri-Food Canada	8	7	52	78	92	102	105
Bank of Canada	30	35	42	41	40	44	46
Canada Economic Development (Quebec)	...	...	...	3	4	4	4
Canada Mortgage and Housing Corporation	20	13	15	19	19	15	16
Canada Science and Technology Museum	26	29	30	34	44	28	28
Canadian Food Inspection Agency	24	26	35	30	30	35	32
Canadian International Development Agency	14	15	19	19	22	23	24
Canadian Museum of Civilization	53	59	77	122	121	85	68
Canadian Museum of Nature	23	25	27	27	27	55	58
Canadian Space Agency	8	10	8	10	11	12	15
Environment Canada	301	358	327	346	324	357	339
Fisheries and Oceans Canada	199	188	209	211	204	187	184
Foreign Affairs and International Trade Canada	10	11	7	6	5	6	6
Health Canada	152	197	217	206	207	222	242
International Development Research Centre	7	8	12	14	14	15	16
Library and Archives Canada	...	...	...	...	80	85	78
National Defence	21	3	27	38	45	14	20
National Research Council of Canada	64	74	75	79	102	92	90
Natural Resources Canada	40	212	216	225	246	203	197
Natural Sciences & Engineering Research Council	4	4	5	5	5	6	6
Parks Canada Agency	87	93	99	101	107	107	107
Public Health Agency of Canada	...	...	...	...	15	23	19
Social Sciences & Humanities Research Council	7	8	8	10	11	9	10
Statistics Canada	562	711	560	561	589	732	774
Treasury Board	47	57	47	44	32	33	34
Total major departments	1,707	2,143	2,114	2,229	2,396	2,494	2,518
Other	256	310	326	267	205	210	221

3. Extramural expenditures

3. Extramural expenditures

This section focuses on the federal government's extramural science and technology (S&T) expenditures, that is, expenditures outside its own laboratories. The section presents the total payments to industry, universities, private non-profit institutions, foreign performers and other performers. In 2006/2007, the federal government has earmarked \$4.4 billion, or 47% of its total science and technology (S&T) spending, to extramural activities. The main beneficiaries are universities (\$2.8 billion) and business enterprises (\$1 billion). In addition, private non-profit institutions will receive \$186 million, foreign performers \$296 million and others, including individuals and provincial and municipal governments, will receive \$59 million.

Business enterprises

- ▶ Federal science and technology (S&T) spending in the industry sector is approximately \$1 billion in 2006/2007, an increase of 3.7% from planned expenditures in 2005/2006. (Table 3.1)
- ▶ R&D payments in 2006/2007 will be \$715 million, an increase of 6.7% from the \$670 million allocated in 2005/2006. (Table 3.2)
- ▶ In 2006/2007, the Canadian Space Agency will be spending \$133 million, 48% of the R&D total, followed by the Department of National Defence at 39% or \$109 million. (Table 3.11)
- ▶ Industry Canada payments in the form of R&D grants will total \$248 million or 58% of the total, followed by the National Research Council of Canada at 18% or \$79 million. (Table 3.11)

Higher education

- ▶ In 2006/2007, universities will receive \$2.5 billion in funding for research and development (R&D) activities and \$277 million for related scientific activities (RSA). The three research councils - the Canadian Institutes of Health Research (\$723 million), the Natural Sciences and Engineering Research Council (\$723 million), and the Social Sciences and Humanities Research Council (\$494 million) - along with the Canada Foundation for Innovation (\$430 million) are the major federal government funders of R&D performed by the higher education sector. (Table 3.8)
- ▶ The Natural Sciences and Engineering Research Council and the Canadian Institutes of Health Research are the largest funders of university research. Their combined spending accounts for over 56% of the total R&D performed by the higher education sector. (Table 3.8)

Foreign performers

- ▶ Federal science and technology (S&T) payments in 2006/2007 to the foreign performers sector will be around \$296 million. (Table 3.14)
- ▶ The Canadian International Development Agency (\$104 million), the International Development Research Centre (\$69 million), the Canadian Space Agency (\$43 million) and National Defence (\$17 million) are the main funders of science and technology (S&T) activities performed by foreign performers, accounting for 79% of all science and technology (S&T) spending in this sector (\$296 million). (Table 3.14)

Table 3.1 Federal extramural expenditures on science and technology (S&T), by sector of performance.

	2000/2001	2001/2002	2002/2003	2003/2004 ^r	2004/2005 ^r	2005/2006 ^p	2006/2007 ^p
millions of dollars							
Total	2,664	3,614	3,384	4,186	4,250	4,310	4,398
Business enterprises	847	1,108	998	1,039	979	1,006	1,044
Higher education	1,320	1,739	1,803	2,255	2,396	2,696	2,813
Provincial and municipal governments	154	401	200	514	444	241	186
Non-profit institutions	37	31	34	32	22	38	10
Other Canadian performers	56	53	65	57	51	51	49
Foreign performers	250	282	284	288	358	278	296
percentage							
Total	100	100	100	100	100	100	100
Business enterprises	32	31	30	25	23	23	24
Higher education	50	48	53	54	56	63	64
Provincial and municipal governments	6	11	6	12	10	6	4
Non-profit institutions	1	1	1	1	1	1	0
Other Canadian performers	2	1	2	1	1	1	1
Foreign performers	9	8	8	7	8	6	7

Chart 3.1 Federal extramural expenditures on science and technology (S&T), by sector of performance, 2006/2007.

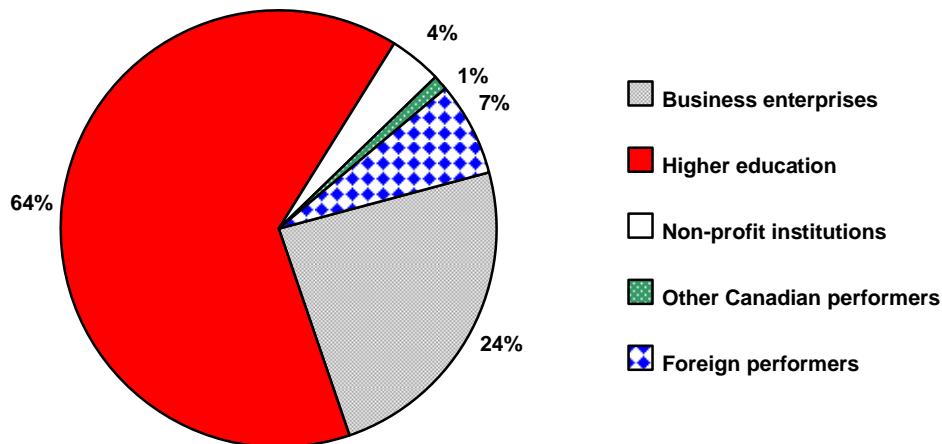


Table 3.2 Federal extramural expenditures on research and development (R & D), by sector of performance.

	2000/2001	2001/2002	2002/2003	2003/2004 ^r	2004/2005 ^r	2005/2006 ^p	2006/2007 ^p
millions of dollars							
Total	2,070	2,886	2,737	3,379	3,371	3,523	3,599
Business enterprises	624	862	727	770	704	670	715
Higher education	1,170	1,595	1,644	2,059	2,173	2,436	2,537
Provincial and municipal governments	76	233	142	340	260	186	129
Non-profit institutions	34	26	26	22	15	34	6
Other Canadian performers	35	35	46	43	33	33	31
Foreign performers	131	137	152	144	185	165	181
percentage							
Total	100	100	100	100	100	100	100
Business enterprises	30	30	27	23	21	19	20
Higher education	57	55	60	61	64	69	70
Provincial and municipal governments	4	8	5	10	8	5	4
Non-profit institutions	2	1	1	1	0	1	0
Other Canadian performers	2	1	2	1	1	1	1
Foreign performers	6	5	6	4	5	5	5

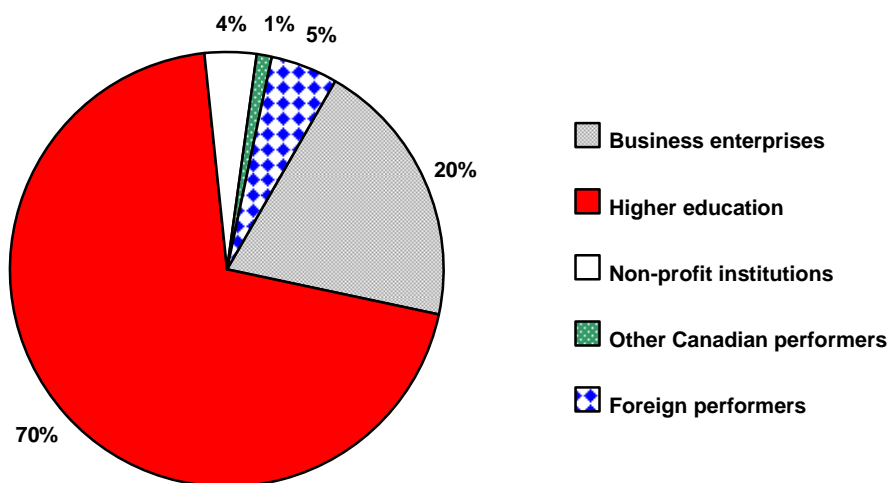
Chart 3.2 Federal extramural expenditures on research and development (R & D), by sector of performance, 2006/2007.

Table 3.3 Federal extramural expenditures on related scientific activities (RSA), by sector of performance.

	2000/2001	2001/2002	2002/2003	2003/2004 ^t	2004/2005 ^t	2005/2006 ^p	2006/2007 ^p
millions of dollars							
Total	593	727	647	807	879	787	800
Business enterprises	223	247	272	269	275	335	329
Higher education	150	144	159	196	223	260	277
Provincial and municipal governments	77	168	58	174	184	56	57
Non-profit institutions	3	5	8	10	7	5	4
Other Canadian performers	21	18	19	14	18	19	18
Foreign performers	119	145	131	144	173	113	115
percentage							
Total	100	100	100	100	100	100	100
Business enterprises	38	34	42	33	31	43	41
Higher education	25	20	25	24	25	33	35
Provincial and municipal governments	13	23	9	22	21	7	7
Non-profit institutions	1	1	1	1	1	1	1
Other Canadian performers	3	2	3	2	2	2	2
Foreign performers	20	20	20	18	20	14	14

Chart 3.3 Federal extramural expenditures on related scientific activities (RSA), by sector of performance, 2006/2007.

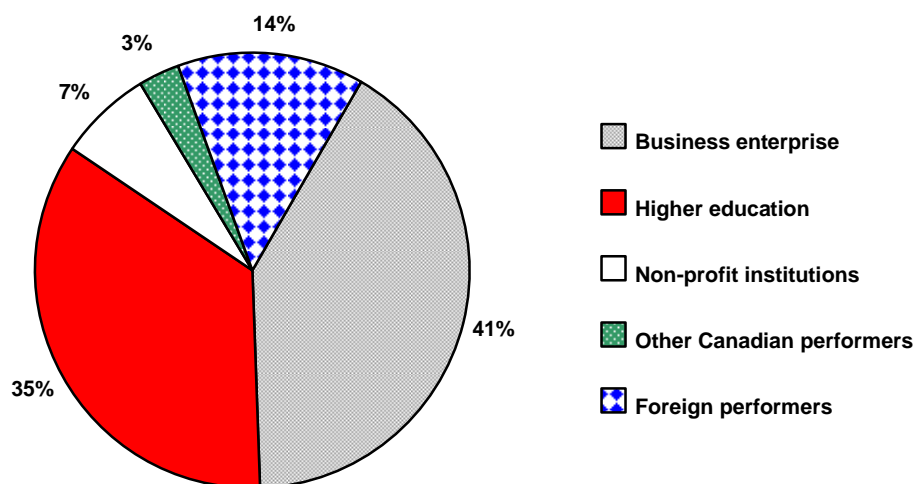


Table 3.4 Federal extramural expenditures on science and technology (S&T) in the business enterprise sector, by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total	848	1,108	998	1,039	979	1,006	1,044
Agriculture and Agri-Food Canada	0	0	0	3	7	1	0
Atlantic Canada Opportunities Agency	15	10	26	25	41	23	23
Atomic Energy of Canada Limited	5	6	6	8	3	8	8
Canada Economic Development (Quebec)	4	11	21	19	24	18	11
Canada Mortgage and Housing Corporation	4	4	3	3	4	4	4
Canadian International Development Agency	165	166	161	151	137	158	152
Canadian Space Agency	102	134	114	119	118	86	154
Environment Canada	29	36	35	28	39	45	42
Fisheries and Oceans Canada	1	3	5	1	3	4	3
Health Canada	4	11	12	13	8	14	8
Industry Canada	237	419	321	323	274	305	248
National Defence	120	152	133	168	150	172	219
National Research Council of Canada	89	82	76	82	83	77	80
Natural Resources Canada	35	27	35	42	45	50	48
Natural Sciences & Engineering Research Council	14	15	21	19	8	8	8
Parks Canada Agency	1	1	0	0	1	1	1
Public Health Agency of Canada	...	...	...	...	8	9	9
Total major departments	825	1,077	969	1,004	953	983	1,018
Other	23	31	29	35	26	23	26

Table 3.5 Federal extramural expenditures on research and development (R & D) in the business enterprise sector, by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total	624	862	727	770	704	670	715
Atlantic Canada Opportunities Agency	15	10	26	25	41	23	23
Atomic Energy of Canada Limited	5	6	6	8	3	8	8
Canada Economic Development (Quebec)	4	11	21	19	24	18	11
Canada Mortgage and Housing Corporation	1	1	1	1	2	2	2
Canadian Space Agency	100	132	111	117	116	84	152
Environment Canada	8	11	14	14	14	16	15
Fisheries and Oceans Canada	0	2	0	0	1	1	1
Health Canada	1	5	8	6	2	2	1
Industry Canada	237	419	321	322	273	304	248
National Defence	108	122	72	98	75	69	109
National Research Council of Canada	89	82	76	82	83	77	80
Natural Resources Canada	28	26	34	41	44	49	47
Natural Sciences & Engineering Research Council	12	12	18	16	4	5	5
Public Health Agency of Canada	...	...	...	...	1	1	1
Total major departments	608	839	708	749	683	659	703
Other	16	23	19	21	21	11	12

Table 3.6 Federal extramural expenditures on related scientific activities (RSA) in the business enterprise sector, by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total	223	247	272	269	275	335	329
Agriculture and Agri-Food Canada	0	0	0	3	1	1	1
Canada Economic Development (Quebec)	0	0	1	1	1	0	0
Canada Mortgage and Housing Corporation	3	3	2	2	2	2	2
Canadian International Development Agency	165	166	161	151	136	158	152
Environment Canada	21	25	21	14	25	29	27
Fisheries and Oceans Canada	1	1	5	0	3	3	3
Health Canada	3	6	5	6	6	12	7
National Defence	11	30	61	69	76	103	110
Natural Resources Canada	7	1	1	1	2	1	1
Natural Sciences & Engineering Research Council	2	2	3	3	4	3	3
Parks Canada Agency	1	1	0	0	0	1	1
Public Health Agency of Canada	...	...	...	...	7	8	8
Total major departments	214	235	260	250	263	321	315
Other	9	12	12	19	12	14	14

Table 3.7 Federal extramural expenditures on science and technology (S&T) in the higher education sector, by major department or agency.

	2000-2001	2001-2002	2002-2003	2003-2004 ^f	2004-2005 ^f	2005-2006 ^p	2006-2007 ^p
	millions of dollars						
Total	1,320	1,739	1,803	2,255	2,396	2,696	2,813
Agriculture and Agri-Food Canada	1	1	1	1	0	1	0
Atomic Energy of Canada Limited	0	0	0	0	1	1	1
Canada Economic Development (Quebec)	0	1	1	3	12	23	14
Canada Foundation for Innovation	183	231	324	351	260	435	430
Canadian Institutes of Health Research	350	482	564	625	678	687	732
Canadian International Development Agency	54	55	54	62	66	79	75
Canadian Space Agency	9	10	11	11	14	17	18
Environment Canada	10	10	9	11	10	10	10
Fisheries and Oceans Canada	1	2	3	2	2	2	2
Foreign Affairs and International Trade Canada	13	12	12	14	8	8	8
Health Canada	8	4	9	8	4	5	5
International Development Research Centre	3	3	5	4	5	6	6
National Defence	4	4	5	4	4	5	5
National Research Council of Canada	44	51	50	41	42	44	41
Natural Resources Canada	7	5	7	7	9	9	9
Natural Sciences & Engineering Research Council	504	518	568	650	728	786	824
Parks Canada Agency	1	1	1	1	1	1	1
Public Health Agency of Canada	...	...	...	...	7	6	5
Social Sciences & Humanities Research Council	114	329	151	420	477	530	585
Total major departments	1,306	1,719	1,775	2,215	2,328	2,655	2,771
Other	14	20	28	40	68	41	42

Table 3.8 Federal extramural expenditures on research and development (R & D) in the higher education sector, by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total	1,170	1,595	1,644	2,059	2,173	2,436	2,537
Agriculture and Agri-Food Canada	1	1	1	1	0	0	0
Atlantic Canada Opportunities Agency	4	1	10	21	46	24	24
Atomic Energy of Canada Limited	0	0	0	0	1	1	1
Canada Economic Development (Quebec)	0	1	0	3	12	23	14
Canada Foundation for Innovation	183	231	324	351	260	435	430
Canadian Institutes of Health Research	343	477	559	619	669	678	723
Canadian International Development Agency	17	18	17	20	21	26	25
Canadian Space Agency	8	9	11	11	14	17	18
Environment Canada	8	8	7	9	8	8	8
Fisheries and Oceans Canada	1	2	1	2	1	1	1
Health Canada	5	2	7	6	1	3	3
International Development Research Centre	3	2	4	3	4	4	4
National Defence	4	4	5	4	4	5	5
National Research Council of Canada	44	51	50	41	42	44	40
Natural Resources Canada	7	4	3	6	8	9	8
Natural Sciences & Engineering Research Council	447	459	501	569	642	692	723
Public Health Agency of Canada	...	...	...	...	6	4	4
Social Sciences & Humanities Research Council	88	307	128	379	419	451	494
Total major departments	1,163	1,577	1,628	2,045	2,158	2,425	2,525
Other	7	18	16	14	15	11	12

Table 3.9 Federal extramural expenditures on related scientific activities (RSA) in the higher education sector, by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total	150	144	159	196	223	260	277
Canadian International Development Agency	36	37	37	42	45	53	50
Environment Canada	2	2	2	3	2	2	2
Fisheries and Oceans Canada	0	0	1	...	1	1	1
Foreign Affairs and International Trade Canada	13	12	12	14	8	8	8
Health Canada	4	2	2	2	2	2	2
Natural Resources Canada	0	1	4	1	1	1	1
Natural Sciences & Engineering Research Council	57	59	67	80	86	94	101
Public Health Agency of Canada	...	...	...	...	1	1	1
Social Sciences & Humanities Research Council	26	22	24	41	58	79	91
Total major departments	138	135	149	183	204	241	257
Other	12	9	10	13	19	19	20

Table 3.10 Federal extramural expenditures on science and technology (S&T), by type of payment and by sector of performance, 2006/2007.

	Business enterprises	Higher education	Canadian non-profit institutions	Other Canadian performers	Foreign performers	Total
	millions of dollars					
Total	1,044	2,813	186	59	296	4,398
Research and development (R & D) contracts	280	37	4	13	22	357
Research and development (R & D) grants and contributions	429	2,436	122	15	142	3,145
Research fellowships	6	63	2	9	16	96
Related scientific activities	329	278	57	22	115	800

Table 3.11 Federal expenditures on science and technology (S&T), in the business enterprise sector, by type of payment and by department or agency.¹

	2000/2001	2001/2002	2002/2003	2003/2004 ^r	2004/2005 ^r	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total S&T payments	847	1,108	998	1,039	979	1,006	1,044
Research and development (R & D) payments (total)	624	862	727	770	704	670	715
Research and development (R & D) contracts (total)	227	270	203	230	208	181	280
Atomic Energy of Canada Limited	5	6	6	8	3	8	8
Canadian Space Agency	88	106	90	91	102	73	133
Environment Canada	8	11	14	14	14	16	15
Fisheries and Oceans Canada	0	2	0	0	0	0	0
National Defence	108	122	72	98	75	69	109
Natural Resources Canada	6	5	2	4	3	4	3
Transport Canada	7	8	7	4	4	4	3
Other	4	11	12	10	7	7	8
Research and development (R & D) grants (total)	393	587	518	535	490	483	429
Atlantic Canada Opportunities Agency	15	10	26	25	41	23	23
Canada Economic Development (Quebec)	3	11	20	19	24	18	11
Canadian Space Agency	12	26	21	26	14	10	19
Industry Canada	237	419	321	322	273	304	248
National Research Council of Canada	87	80	75	80	81	76	79
Natural Resources Canada	22	21	32	37	41	45	44
Other	2	1	2	5	8	2	2
Research fellowships (total)	4	5	5	5	6	6	6
Other S&T payments	223	247	272	269	275	335	329
Canadian International Development Agency	165	166	161	151	136	158	152
Environment Canada	21	25	21	14	25	29	27
Fisheries and Oceans Canada	1	1	5	0	3	3	3
National Defence	11	30	61	69	75	103	110
Natural Resources Canada	7	1	1	1	2	1	1
Transport Canada	1	1	2	11	3	2	2
Other	18	22	21	23	31	40	34

Table 3.12 Federal expenditures on science and technology (S&T) in the higher education sector, by type of payment and by funding department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total science and technology (S&T) payments	1,320	1,739	1,803	2,255	2,396	2,696	2,813
Research and development (R & D) payments (total)	1,170	1,595	1,644	2,059	2,173	2,436	2,537
Research and development (R & D) grants (total)	1,118	1,527	1,555	1,970	2,082	2,336	2,436
Canada Economic Development (Quebec)	0	1	0	3	12	23	14
Canada Foundation for Innovation	183	231	324	351	260	435	430
Canadian Institutes of Health Research	330	450	517	578	630	639	683
Environment Canada	6	6	4	4	5	5	5
International Development Research Centre	3	2	4	3	4	4	4
Natural Sciences & Engineering Research Council	442	454	495	562	634	683	714
National Research Council of Canada	44	51	50	41	41	44	40
Social Sciences & Humanities Research Council	88	307	127	379	419	450	494
Health Canada	2	0	4	4	1	3	3
Other	19	24	29	44	76	51	50
Research and development (R & D) contracts (total)	22	27	32	31	33	36	37
Canadian International Development Agency	8	8	8	9	10	12	11
Canadian Space Agency	8	9	11	10	10	12	13
National Defence	3	3	4	4	4	5	5
Natural Resources Canada	0	0	0	0	0	0	0
Other	3	6	9	8	9	8	8
Research fellowships (total)	30	41	57	59	59	63	63
Education support (total)	130	127	140	172	194	227	243
Canadian Institutes of Health Research	7	5	5	6	9	9	9
Canadian International Development Agency	31	32	31	35	37	44	42
Foreign Affairs and International Trade Canada	13	12	12	14	8	8	8
Natural Sciences & Engineering Research Council	57	59	67	80	86	94	101
Social Sciences & Humanities Research Council	22	17	20	35	52	71	81
Other	1	2	5	1	2	2	2
Other S&T payments (total)	20	17	19	24	29	32	34

Table 3.13 Federal expenditures on science and technology (S&T) in the non-profit institutions sector, by funding department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^r	2004/2005 ^t	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total	154	401	200	514	444	241	186
Agriculture and Agri-Food Canada	3	5	5	3	1	3	3
Canada Economic Development (Quebec)	4	2	1	1	2	2	1
Canadian Institutes of Health Research	11	2	11	12	17	18	18
Canadian International Development Agency	8	8	9	9	9	10	10
Environment Canada	7	63	10	191	109	9	9
Genome Canada	...	33	60	83	81	89	58
Health Canada	4	4	15	16	9	9	9
Industry Canada	4	154	1	11	41	20	1
Natural Resources Canada	14	64	15	139	113	15	14
Social Development Canada	...	...	...	19	0	0	3
Social Sciences & Humanities Research Council	2	2	3	3	5	5	5
Western Economic Diversification Canada	10	16	8	5	6	4	4
Other	87	48	62	22	51	57	51

Table 3.14 Federal expenditures on science and technology (S&T) in the foreign sector, by funding department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^r	2004/2005 ^t	2005/2006 ^p	2006/2007 ^p
	millions of dollars						
Total	250	282	284	288	358	278	296
Canadian Institutes of Health Research	7	9	9	8	8	8	8
Canadian International Development Agency	109	134	101	115	171	92	104
Canadian Space Agency	22	22	33	33	32	40	43
Foreign Affairs and International Trade Canada	23	25	29	25	16	16	16
International Development Research Centre	35	32	41	42	61	66	69
National Defence	15	16	32	25	29	15	17
National Research Council of Canada	12	11	11	11	12	11	11
Natural Resources Canada	2	2	2	2	0	0	0
Natural Sciences & Engineering Research Council	11	11	11	12	12	13	13
Social Sciences & Humanities Research Council	2	3	2	3	4	4	4
Other	12	17	13	12	13	13	11

4. Federal personnel

4. Federal personnel

This section presents data on personnel (in person-years) allocated to science and technology activities. A person-year is a measure of the time actually devoted to the conduct of scientific activities. An employee who is engaged in scientific activities for half a year has a person-year full-time equivalence (FTE) of 0.5 person-years. Personnel statistics for 2006/2007 were based on the plans of departments and agencies at the beginning of the fiscal year.

- ▶ In 2006/2007, 36,339 federal government person-years will be devoted to science and technology (S&T) activities, a 3.3% increase from the 35,182 person-years reported in 2005/2006. The majority (61%) of person-years are engaged in related scientific activities in 2006/2007. (Table 4.1)
- ▶ The natural sciences and engineering field accounts for 68% of the estimated total personnel expenditures in 2006/2007, of which 54% are engaged in research and development (R&D). In contrast, personnel in the social sciences and humanities account for 32% of the total, only 7% of which will be engaged in R&D. (Table 4.1)
- ▶ A breakdown of science and technology (S&T) personnel by category shows the Scientific and Professional category as the largest, with 43% of all personnel in 2006/2007 falling into this category. (Tables 4.10 to 4.12)
- ▶ In 2006/2007, the federal departments and agencies that allocated the largest number of personnel (person-years) to science and technology (S&T) activities are Statistics Canada (6,242 person-years), the National Research Council of Canada (4,033 person-years), Environment Canada (3,469 person-years) and Natural Resources Canada (3,008 person-years). These institutions account for more than 46% of the total person-years assigned to federal science and technology activities. (Table 4.4)

Chart 4.1 Federal personnel engaged in science and technology (S&T) activities.

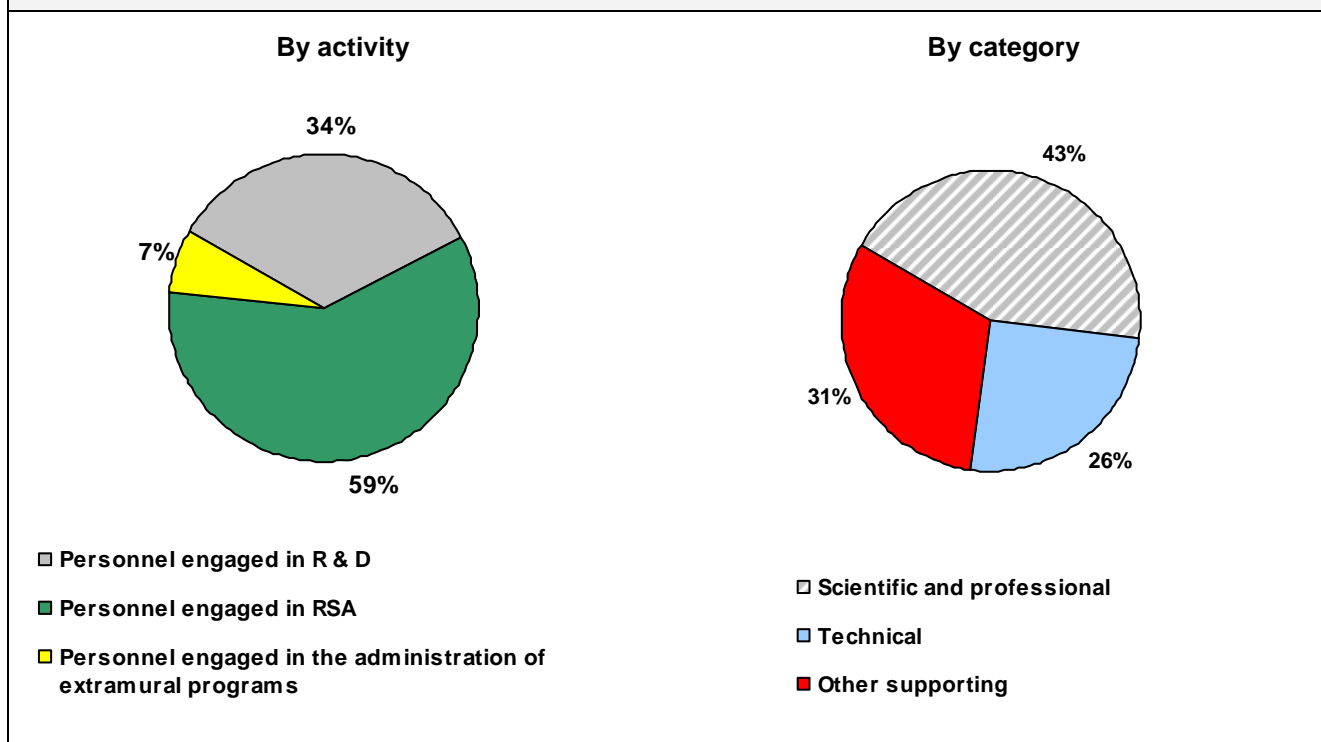
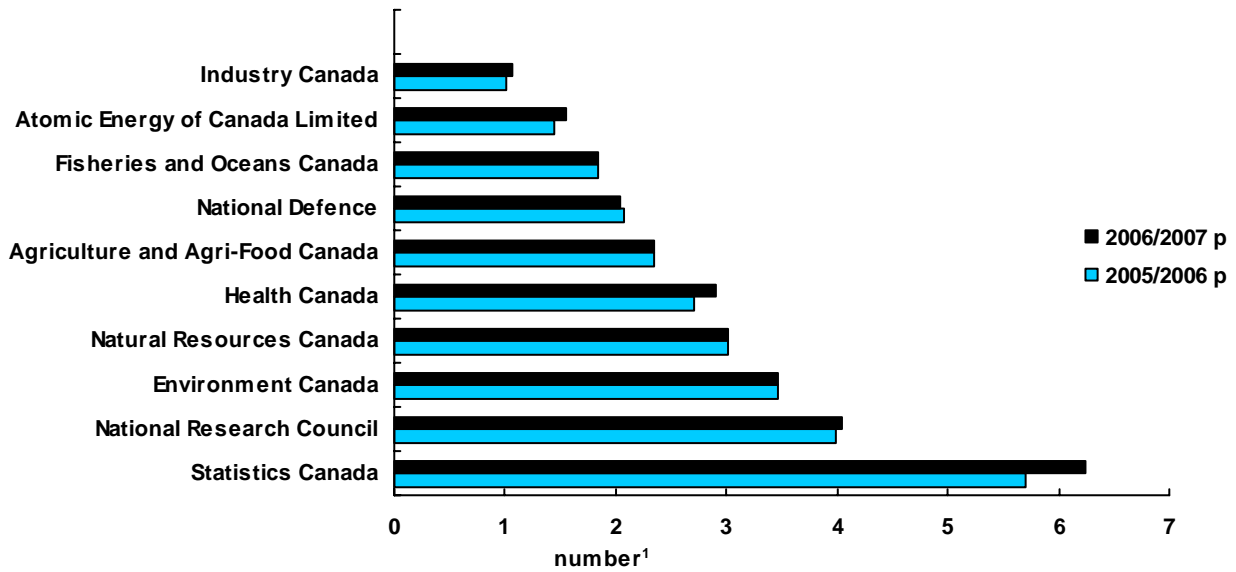
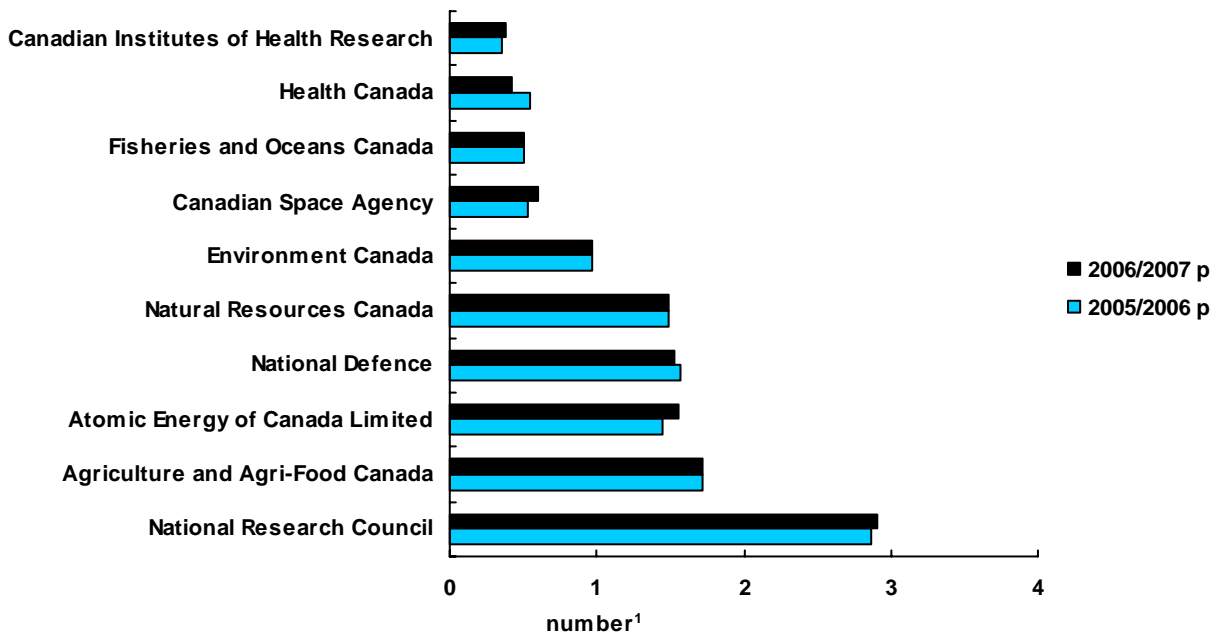


Chart 4.2 Federal personnel engaged in science and technology (S&T) activities, by department or agency.



1. Full-time equivalent (thousands)

Chart 4.3 Federal personnel engaged in research and development (R & D) activities, by department or agency.



1. Full-time equivalent (thousands)

Table 4.1 Federal personnel engaged in science and technology (S&T) activities.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	number ¹						
Total science and technology (S&T)	32,139	34,035	35,125	34,707	34,339	35,182	36,339
Research and development	13,439	12,323	12,339	12,030	12,092	12,349	12,445
Related scientific activities	16,955	19,805	20,604	20,534	20,073	20,465	21,451
Administration of extramural R & D programs	1,263	1,417	1,626	1,554	1,627	1,773	1,772
Administration of extramural RSA programs	482	491	555	589	547	593	671
Natural sciences and engineering:	21,349	22,241	23,464	23,800	23,949	24,420	24,890
Research and development	13,034	11,829	11,827	11,537	11,590	11,814	11,902
Related scientific activities	6,957	8,935	9,925	10,576	10,617	10,696	11,017
Administration of extramural R & D programs	1,086	1,211	1,399	1,337	1,411	1,547	1,539
Administration of extramural RSA programs	273	267	313	351	331	363	432
Social sciences and humanities:	10,790	11,794	11,660	10,907	10,390	10,761	11,449
Research and development	405	494	512	494	502	535	543
Related scientific activities	9,998	10,871	10,679	9,958	9,456	9,769	10,434
Administration of extramural R & D programs	178	205	228	217	216	226	233
Administration of extramural RSA programs	209	224	242	239	216	230	239

1. Full-time equivalent.

Table 4.2 Federal scientific and professional personnel engaged in science and technology (S&T) activities.							
	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	number ¹						
Total science and technology (S&T) :	12,540	13,098	14,481	14,823	14,928	15,205	15,806
Research and development	5,796	5,242	5,701	5,612	5,469	5,615	5,666
Related scientific activities	6,261	7,343	8,138	8,551	8,815	8,919	9,427
Administration of extramural R & D programs	329	364	490	493	508	525	547
Administration of extramural RSA programs	154	149	152	167	136	146	166
Natural sciences and engineering:	9,158	9,594	10,642	11,113	11,291	11,548	11,905
Research and development	5,588	4,969	5,398	5,330	5,189	5,297	5,351
Related scientific activities	3,248	4,269	4,762	5,286	5,595	5,728	5,991
Administration of extramural R & D programs	250	281	406	408	428	441	464
Administration of extramural RSA programs	72	75	77	89	80	82	99
Social sciences and humanities:	3,382	3,504	3,839	3,710	3,637	3,657	3,901
Research and development	208	273	303	283	280	318	315
Related scientific activities	3,012	3,074	3,376	3,264	3,220	3,191	3,436
Administration of extramural R & D programs	79	83	84	85	80	84	83
Administration of extramural RSA programs	83	75	76	78	56	64	66

1. Full-time equivalent.

Table 4.3 Federal technical personnel engaged in science and technology (S&T) activities.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	number ¹						
Total science and technology (S&T) :	7,854	8,635	8,905	9,003	8,884	9,081	9,271
Research and development	3,804	3,761	3,710	3,697	3,652	3,812	3,819
Related scientific activities	4,028	4,842	5,110	5,205	5,141	5,181	5,356
Administration of extramural R & D programs	11	21	63	72	78	74	79
Administration of extramural RSA programs	11	11	23	29	13	14	17
Natural sciences and engineering:	5,742	6,343	6,582	6,718	6,612	6,810	6,856
Research and development	3,740	3,682	3,643	3,624	3,566	3,727	3,729
Related scientific activities	1,989	2,640	2,866	3,005	2,961	3,002	3,041
Administration of extramural R & D programs	11	19	61	70	75	71	76
Administration of extramural RSA programs	3	1	11	19	10	10	10
Social sciences and humanities:	2,112	2,292	2,323	2,284	2,273	2,271	2,415
Research and development	64	79	66	73	86	85	90
Related scientific activities	2,040	2,202	2,244	2,200	2,180	2,179	2,315
Administration of extramural R & D programs	1	1	2	1	3	3	3
Administration of extramural RSA programs	8	10	11	10	3	4	7

1. Full-time equivalent.

Table 4.4 Federal personnel engaged in science and technology (S&T) activities, by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ¹	2004/2005 ¹	2005/2006 ^P	2006/2007 ^P
	number ¹						
Total	32,139	34,035	35,125	34,707	34,339	35,182	36,339
Agriculture and Agri-Food Canada	2,869	2,720	2,293	2,375	2,309	2,348	2,352
Atlantic Canada Opportunities Agency	5	30	24	32	50	50	50
Atomic Energy of Canada Limited	886	950	1,164	1,002	1,250	1,450	1,550
Bank of Canada	219	238	261	268	267	282	299
Canada Economic Development (Quebec)	17	32	37	50	96	112	73
Canada Foundation for Innovation	23	30	40	43	46	49	52
Canada Mortgage and Housing Corporation	110	112	124	148	147	145	143
Canada Science and Technology Museum	244	261	273	243	220	220	220
Canadian Food Inspection Agency	404	430	474	464	473	479	462
Canadian Institutes of Health Research	140	173	227	275	282	357	390
Canadian International Development Agency	210	203	247	238	256	256	264
Canadian Museum of Civilization	421	421	425	425	459	485	444
Canadian Museum of Nature	161	164	169	173	172	172	186
Canadian Space Agency	419	461	521	550	573	607	690
Environment Canada	2,992	3,013	3,157	3,263	3,238	3,469	3,469
Fisheries and Oceans Canada	2,400	2,373	2,371	1,903	1,857	1,841	1,842
Foreign Affairs and International Trade Canada	74	57	60	60	60	60	60
Genome Canada	...	22	30	33	37	46	45
Health Canada	1,842	2,471	2,507	2,742	2,472	2,709	2,900
Industry Canada	1,072	950	1,061	913	972	1,005	1,069
International Development Research Centre	148	143	153	156	158	176	178
Library and Archives Canada	...	...	...	...	816	823	824
National Defence	1,617	1,428	1,828	1,960	2,089	2,069	2,031
National Gallery of Canada	225	254	250	267	267	270	275
National Research Council of Canada	3,426	3,612	3,890	4,139	4,178	3,988	4,033
Natural Resources Canada	2,870	3,161	3,532	3,604	3,223	3,012	3,008
Natural Sciences & Engineering Research Council	250	264	280	295	311	309	313
Parks Canada Agency	750	803	923	916	674	674	674
Public Health Agency of Canada	...	...	...	...	459	484	506
Social Sciences & Humanities Research Council	128	148	158	172	177	184	190
Statistics Canada	5,811	6,320	5,964	5,648	5,436	5,697	6,242
Treasury Board	411	464	355	460	293	332	362
Total major departments	30,146	31,708	32,799	32,817	33,317	34,161	35,195
Other	1,993	2,327	2,326	1,890	1,021	1,021	1,144

1. Full-time equivalent.

Table 4.5 Federal scientific and professional personnel engaged in science and technology (S&T) activities, by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	number ¹						
Total	12,540	13,098	14,481	14,823	14,928	15,205	15,806
Agriculture and Agri-Food Canada	765	674	728	792	794	788	790
Atomic Energy of Canada Limited	464	499	656	573	492	642	692
Bank of Canada	86	91	114	117	116	122	129
Canada Economic Development (Quebec)	2	2	2	2	2	2	2
Canada Foundation for Innovation	10	13	16	15	17	19	20
Canada Mortgage and Housing Corporation	79	80	89	106	106	110	104
Canada Science and Technology Museum	9	22	15	84	77	77	77
Canadian Food Inspection Agency	145	139	162	162	162	162	158
Canadian Institutes of Health Research	20	27	36	44	45	56	62
Canadian International Development Agency	35	37	48	49	56	58	58
Canadian Museum of Civilization	77	77	78	78	85	90	82
Canadian Museum of Nature	93	95	97	98	98	98	106
Canadian Space Agency	186	207	241	246	256	272	308
Environment Canada	1,460	1,471	1,544	1,595	1,584	1,695	1,695
Fisheries and Oceans Canada	935	922	931	910	890	882	884
Foreign Affairs and International Trade Canada	29	34	35	35	35	35	35
Health Canada	1,223	1,510	1,532	1,694	1,716	1,806	2,002
Industry Canada	477	415	551	642	702	730	792
International Development Research Centre	92	90	97	102	108	119	119
Library and Archives Canada	...	...	...	...	314	324	324
National Defence	792	585	889	966	1,060	1,043	1,044
National Gallery of Canada	39	38	38	38	78	79	80
National Research Council of Canada	1,271	1,392	1,480	1,502	1,519	1,450	1,466
Natural Resources Canada	1,373	1,669	1,910	1,977	1,889	1,810	1,806
Natural Sciences & Engineering Research Council	12	12	13	15	16	16	16
Parks Canada Agency	233	255	277	283	190	190	190
Public Health Agency of Canada	...	...	...	...	229	256	247
Social Sciences & Humanities Research Council	11	12	14	16	17	15	17
Statistics Canada	1,334	1,391	1,394	1,429	1,389	1,368	1,499
Treasury Board	66	86	88	106	68	77	83
Total major departments	11,317	11,844	13,075	13,675	14,109	14,390	14,886
Other	1,222	1,255	1,406	1,148	819	815	920

1. Full-time equivalent.

Table 4.6 Federal technical personnel engaged in science and technology (S&T) activities, by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ¹	2004/2005 ¹	2005/2006 ^P	2006/2007 ^P
	number ¹						
Total	7,854	8,635	8,905	9,003	8,884	9,081	9,271
Agriculture and Agri-Food Canada	968	961	870	910	885	931	930
Atomic Energy of Canada Limited	314	333	368	314	322	372	397
Bank of Canada	92	113	113	116	115	121	129
Canada Foundation for Innovation	8	12	15	18	22	19	20
Canada Mortgage and Housing Corporation	5	5	5	7	6	6	9
Canada Science and Technology Museum	57	60	57	61	51	51	51
Canadian Food Inspection Agency	221	248	269	262	274	277	264
Canadian International Development Agency	1	0	0	0	0	0	0
Canadian Museum of Civilization	99	99	100	100	108	114	105
Canadian Museum of Nature	40	41	43	45	44	44	48
Canadian Space Agency	22	24	27	36	39	41	47
Environment Canada	895	901	943	974	966	1,036	1,036
Fisheries and Oceans Canada	909	891	885	798	779	773	773
Health Canada	268	601	487	548	319	399	398
Industry Canada	31	25	62	62	70	67	69
Library and Archives Canada	...	...	...	...	280	296	297
National Defence	349	344	501	558	589	610	601
National Gallery of Canada	46	52	52	52	77	77	78
National Research Council of Canada	940	1,007	1,080	1,189	1,208	1,155	1,168
Natural Resources Canada	752	951	1,012	1,004	956	936	939
Parks Canada Agency	128	137	156	155	113	113	113
Public Health Agency of Canada	...	...	...	...	161	168	179
Statistics Canada	1,445	1,516	1,507	1,468	1,413	1,378	1,509
Treasury Board	7	7	8	5	3	4	4
Total major departments	7,596	8,328	8,561	8,682	8,800	8,988	9,164
Other	258	307	344	321	85	93	107

1. Full-time equivalent.

Table 4.7 Federal personnel engaged in research and development (R & D)² activities, by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	number ¹						
Total	14,702	13,739	13,966	13,585	13,719	14,123	14,217
Agriculture and Agri-Food Canada	2,800	2,664	1,810	1,737	1,647	1,724	1,724
Atlantic Canada Opportunities Agency	5	30	24	32	50	50	50
Atomic Energy of Canada Limited	886	950	1,164	1,002	1,250	1,450	1,550
Bank of Canada	59	59	82	76	79	75	82
Canada Economic Development (Quebec)	17	32	37	41	66	82	43
Canada Foundation for Innovation	23	30	40	43	46	49	52
Canada Mortgage and Housing Corporation	32	32	34	41	40	47	46
Canadian Food Inspection Agency	103	114	122	132	128	129	133
Canadian Institutes of Health Research	135	169	222	269	278	352	385
Canadian International Development Agency	23	23	29	27	28	28	27
Canadian Museum of Civilization	52	52	52	52	56	59	60
Canadian Museum of Nature	22	23	23	23	23	23	26
Canadian Space Agency	374	416	464	482	498	528	600
Environment Canada	840	844	885	914	906	970	970
Fisheries and Oceans Canada	902	895	891	521	510	506	506
Genome Canada	...	22	30	33	37	46	45
Health Canada	524	665	699	618	399	543	427
Industry Canada	449	422	479	359	349	356	381
International Development Research Centre	130	118	114	111	118	131	132
National Defence	1,348	1,298	1,484	1,477	1,563	1,572	1,532
National Gallery of Canada	42	44	44	44	52	52	55
National Research Council of Canada	2,934	2,507	2,723	2,965	3,000	2,870	2,902
Natural Resources Canada	2,435	1,689	1,845	1,923	1,656	1,494	1,492
Natural Sciences & Engineering Research Council	220	233	246	257	272	268	270
Public Health Agency of Canada	...	...	...	...	251	272	274
Social Sciences & Humanities Research Council	66	77	90	98	101	106	109
Statistics Canada	167	194	203	201	181	195	195
Total major departments	14,587	13,602	13,835	13,478	13,583	13,977	14,069
Other	114	137	130	107	135	146	148

1. Full-time equivalent.

2. Including Administration of Extramural Programs Personnel.

Table 4.8 Federal scientific and professional personnel engaged in research and development (R & D)² activities, by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^r	2004/2005 ^r	2005/2006 ^p	2006/2007 ^p
	number ¹						
Total	6,125	5,606	6,190	6,105	5,977	6,140	6,213
Agriculture and Agri-Food Canada	719	636	509	524	503	498	498
Atomic Energy of Canada Limited	464	499	656	573	492	642	692
Bank of Canada	20	20	43	31	32	30	33
Canada Economic Development (Quebec)	2	2	2	2	2	2	2
Canada Foundation for Innovation	10	13	16	15	17	19	20
Canada Mortgage and Housing Corporation	26	26	27	33	32	37	34
Canadian Food Inspection Agency	43	42	51	56	54	51	55
Canadian Institutes of Health Research	20	26	35	43	44	55	61
Canadian International Development Agency	4	4	4	4	4	6	5
Canadian Museum of Civilization	9	9	9	9	10	11	11
Canadian Museum of Nature	22	23	23	23	23	23	24
Canadian Space Agency	176	203	229	237	243	258	293
Environment Canada	509	512	539	556	552	591	591
Fisheries and Oceans Canada	347	341	340	246	240	238	238
Health Canada	328	353	309	316	224	261	223
Industry Canada	190	171	245	262	251	256	279
International Development Research Centre	80	74	72	73	80	89	88
National Defence	639	529	765	720	785	783	782
National Gallery of Canada	8	7	7	7	15	15	16
National Research Council of Canada	1,084	966	1,036	1,051	1,068	1,020	1,031
Natural Resources Canada	1,214	911	1,027	1,080	934	846	844
Natural Sciences & Engineering Research Council	11	11	12	13	14	14	14
Public Health Agency of Canada	...	...	...	...	120	134	117
Social Sciences & Humanities Research Council	6	6	8	9	10	9	10
Statistics Canada	107	124	131	140	119	135	135
Total major departments	6,037	5,508	6,095	6,022	5,868	6,024	6,096
Other	88	99	95	83	109	116	117

1. Full-time equivalent.

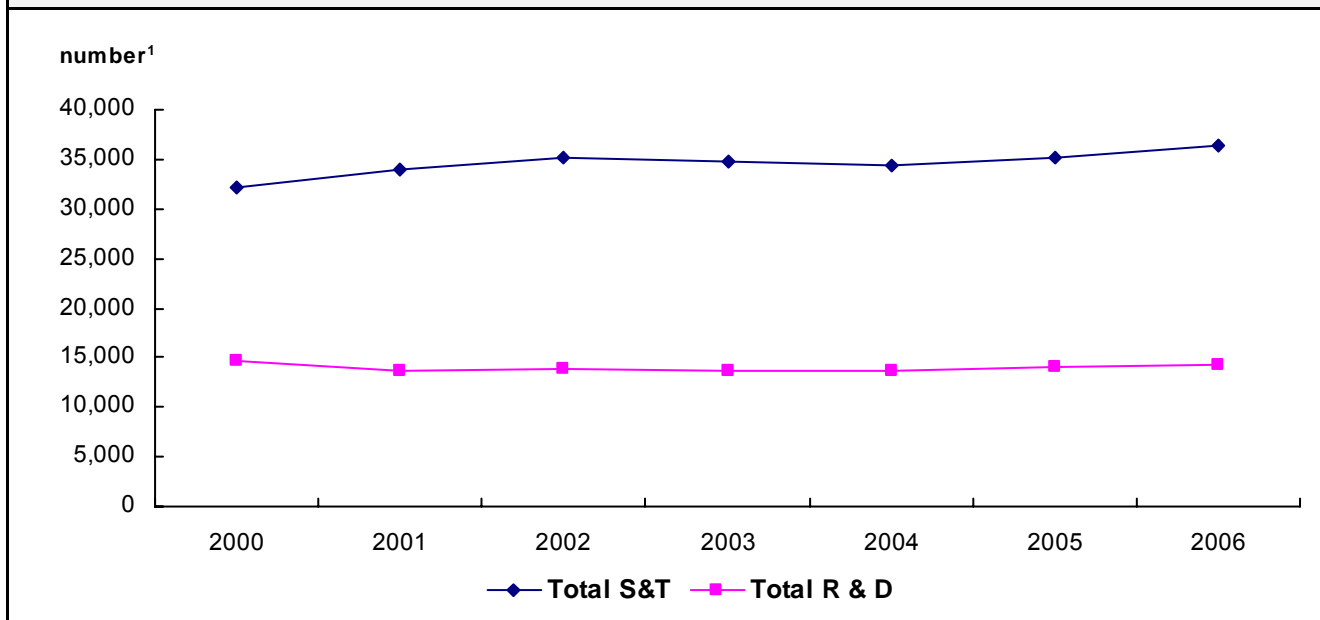
2. Including Administration of Extramural Programs Personnel.

Table 4.9 Federal technical personnel engaged in research and development (R & D)² activities, by major department or agency.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	number ¹						
Total	3,815	3,782	3,773	3,769	3,731	3,886	3,898
Agriculture and Agri-Food Canada	958	953	710	691	662	705	705
Atomic Energy of Canada Limited	314	333	368	314	322	372	397
Bank of Canada	26	26	26	32	33	31	34
Canadian Food Inspection Agency	53	59	64	69	66	68	68
Canada Foundation for Innovation	8	12	15	18	22	19	20
Canada Mortgage and Housing Corporation	2	2	2	2	2	2	4
Canadian Museum of Civilization	13	13	13	13	14	15	15
Canadian Space Agency	8	8	8	11	14	15	17
Environment Canada	212	214	223	230	228	244	244
Fisheries and Oceans Canada	355	348	346	231	226	224	224
Health Canada	145	248	250	233	124	183	144
Industry Canada	25	19	54	56	55	54	56
National Defence	280	276	310	363	393	418	409
National Gallery of Canada	9	7	7	7	15	15	16
National Research Council of Canada	805	699	756	865	878	857	867
Natural Resources Canada	578	533	585	611	542	513	515
Public Health Agency of Canada	...	...	...	...	108	120	129
Statistics Canada	14	16	17	12	10	10	10
Total major departments	3,805	3,766	3,754	3,758	3,715	3,866	3,874
Other	10	17	19	10	16	20	24

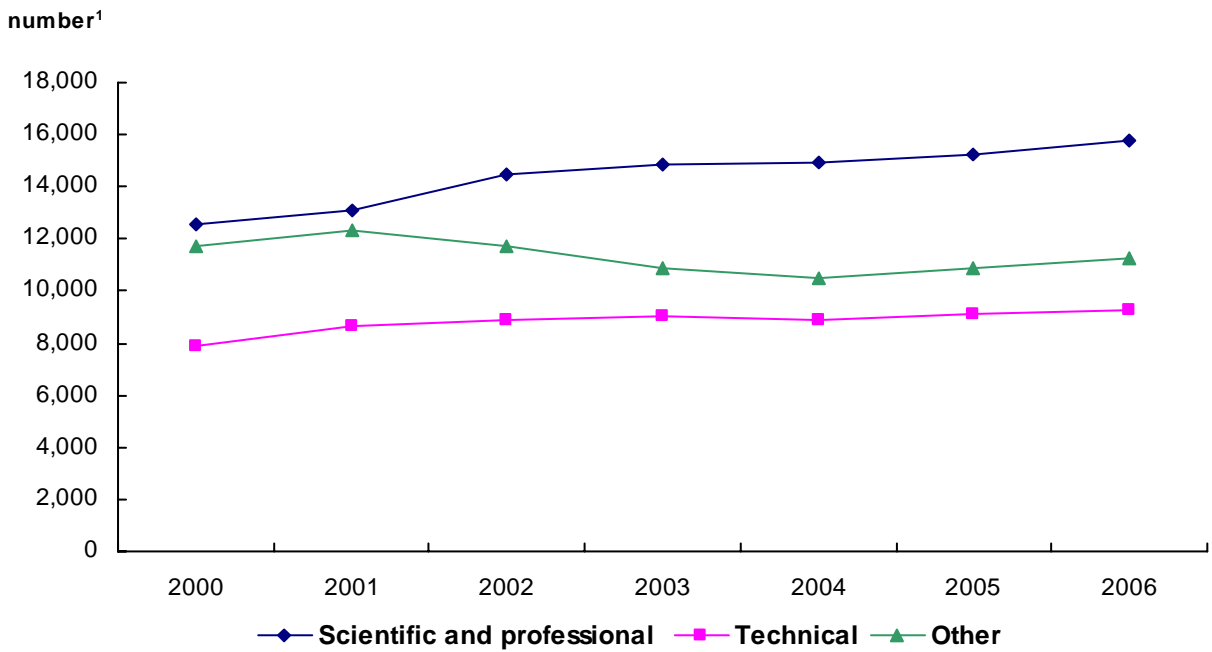
1. Full-time equivalent.

2. Including Administration of Extramural Programs Personnel.

Chart 4.4 Federal personnel engaged in science and technology (S&T) and research and development (R & D) activities.

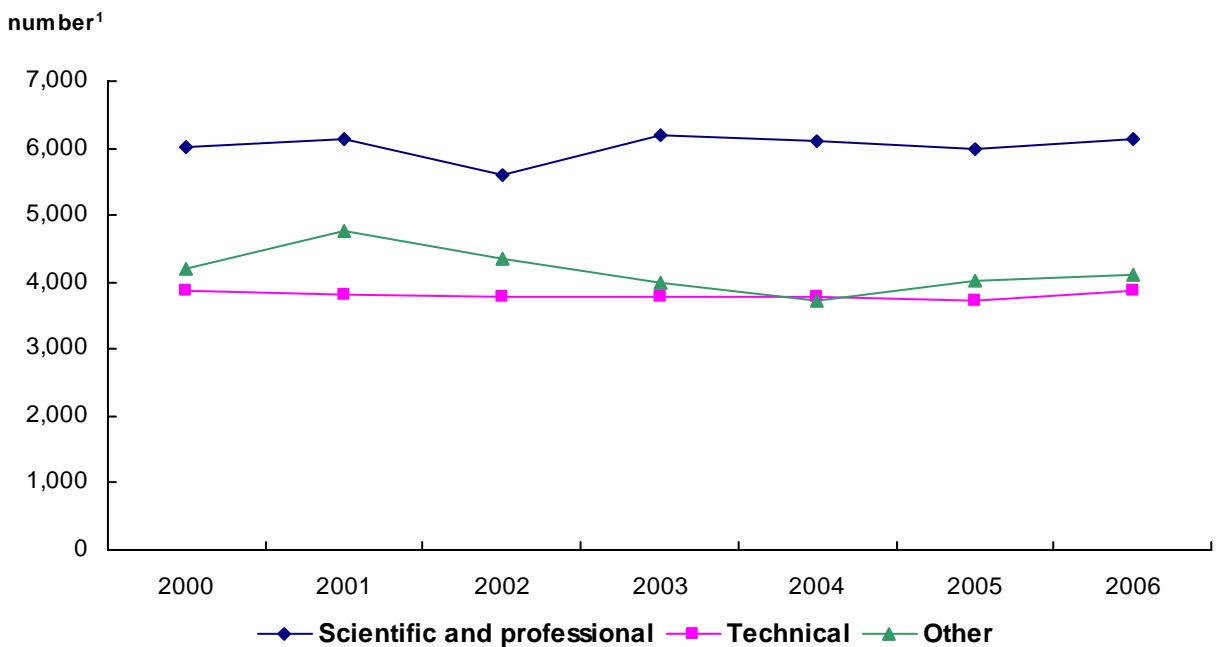
1. Full-time equivalent.

Chart 4.5 Federal personnel engaged in science and technology (S&T) activities, by category and activity.



1. Full-time equivalent.

Chart 4.6 Federal personnel engaged in research and development (R & D) activities, by category and activity.



1. Full-time equivalent.

Table 4.10 Federal personnel engaged in science and technology (S&T) activities, by category and activity.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	number ¹						
Total S&T personnel²	32,139	34,035	35,125	34,707	34,339	35,182	36,339
Scientific and professional	12,540	13,098	14,481	14,823	14,928	15,205	15,806
Technical	7,854	8,635	8,905	9,003	8,884	9,081	9,271
Administrative support ³	11,745	12,302	11,739	10,882	10,527	10,896	11,263
Total R & D personnel²	14,702	13,739	13,966	13,585	13,719	14,123	14,217
Scientific and professional	6,125	5,606	6,190	6,105	5,977	6,140	6,213
Technical	3,815	3,782	3,773	3,769	3,731	3,886	3,898
Administrative support ³	4,762	4,351	4,003	3,711	4,012	4,097	4,107

1. Full-time equivalent.

2. Including Administration of Extramural Programs Personnel.

3. Includes all other categories.

Table 4.11 Federal personnel engaged in science and technology (S&T) activities in the natural sciences and engineering, by category and activity.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	number ¹						
Total S&T personnel²	21,349	22,241	23,464	23,800	23,949	24,420	24,890
Scientific and professional	9,158	9,594	10,642	11,113	11,291	11,548	11,905
Technical	5,742	6,343	6,582	6,718	6,612	6,810	6,856
Administrative support ³	6,449	6,304	6,241	5,969	6,046	6,062	6,129
Total R & D personnel²	14,120	13,040	13,226	12,874	13,001	13,361	13,441
Scientific and professional	5,838	5,250	5,804	5,738	5,617	5,738	5,815
Technical	3,750	3,701	3,704	3,694	3,641	3,798	3,805
Administrative support ³	4,532	4,088	3,718	3,442	3,743	3,825	3,822

1. Full-time equivalent.

2. Including Administration of Extramural Programs Personnel.

3. Includes all other categories.

Table 4.12 Federal personnel engaged in science and technology (S&T) activities in the social sciences and humanities, by category and activity.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005 ^f	2005/2006 ^p	2006/2007 ^p
	number ¹						
Total S&T personnel²	10,790	11,794	11,660	10,907	10,390	10,761	11,449
Scientific and professional	3,382	3,504	3,839	3,710	3,637	3,657	3,901
Technical	2,112	2,292	2,323	2,284	2,273	2,271	2,415
Administrative support ³	5,296	5,998	5,498	4,913	4,480	4,833	5,134
Total R & D personnel²	582	699	740	711	718	762	776
Scientific and professional	287	356	387	367	360	402	398
Technical	65	81	69	75	89	88	93
Administrative support ³	230	263	284	269	268	272	285

1. Full-time equivalent.

2. Including Administration of Extramural Programs Personnel.

3. Includes all other categories.

5. Federal scientific and technological activities by province and territories

5. Federal government science and technology (S&T) activities by province and territories

This section presents the geographical distribution of federal science and technology (S&T) activities. Federal departments and agencies must allocate the spending and personnel of their scientific institutions by province or territory. Since no effort is made to predict or estimate provincial spending, these expenditures are available only at the end of the fiscal year. This means that provincial data is available only up to 2004/2005.

- ▶ Federal government science and technology expenditures geographical for 2004/2005 amounted to \$8.2 billion, up 34.1% from 2000/2001. This increase is due primarily to higher expenditures in 2001/2002 when an additional \$1.4 billion was spent, representing a growth rate of 22.9%. However, the growth rate was only 2.3% in 2004/2005. (Table 5.1)
- ▶ The National Capital Region received \$2.7 billion, or 33% of total federal government expenditures by geographic region in 2004/2005. In recent years, the National Capital Region's share has fallen steadily from 35% in 2000/2001 to 33% in 2004/2005. (Table 5.1)
- ▶ One-quarter of federal science and technology expenditures occurred in Ontario (\$2 billion), while 17% of spending was allocated to Quebec (\$1.4 billion). (Table 5.2)
- ▶ Ontario received 30% of federal research and experimental development spending allocated geographically, or \$1.5 billion, ranking ahead of Quebec (\$1.1 billion). (Table 5.3)
- ▶ Although federal government science and technology spending in the Atlantic Provinces (Newfoundland and Labrador, Prince Edward Island, Nova Scotia and New Brunswick) has risen by \$174 million since 2000/2001, their share has remained unchanged at 7% of all federal spending in this category. (Table 5.1)
- ▶ Compared with the regional breakdown in 2003/2004, federal government expenditures on science and technology rose sharply in Newfoundland and Labrador (13.2%), Prince Edward Island (18.2%), Nova Scotia (14.4%), New Brunswick (22%) and Manitoba (16.5%). In contrast, federal spending was substantially lower in the Yukon territory, Northwest Territories and Nunavut (\$11 million). (Table 5.1)
- ▶ In 2004/2005, the federal government provided \$687 million to the Canadian business enterprise sector in grants and contracts for research and development activity. Ontario enterprises received \$245 million, or 36%, Quebec enterprises received 31%, the Atlantic Provinces (Newfoundland-Labrador, Prince Edward Island, Nova Scotia and New Brunswick) received 11% or \$78 million, and British Columbia's share was 14%. (Table 5.3)
- ▶ Ontario's higher education sector received almost 24% of the federal government's total \$3,013 million in extramural R&D expenditures. Its share, combined with that of Quebec, accounted for 43% of total extramural R&D spending and about 63% of federal research and experimental development spending carried out by the higher education sector. (Table 5.3)
- ▶ In 2004/2005, personnel performing science and technology activities in federal institutions accounted for 34,339 full-time equivalents (FTE). The majority of these personnel were located in the National Capital Region (20,491 FTE or 60%). 13,848 FTE were employed outside the National Capital Region, including 3,242 in Quebec and 3,668 in Ontario. Atomic Energy Canada Limited employed 1,175 FTE in Ontario, while the second employer in Ontario was Environment Canada with 1,088 FTE assigned to science and technology activities. (Tables 5.14 to 5.17)

Table 5.1 Federal expenditures on science and technology (S&T), by province and territories.

	2000/2001	2001/2002	2002/2003	2003/2004 ^r	2004/2005
	millions of dollars				
Canada	6,084	7,476	7,300	7,976	8,156
Newfoundland and Labrador	101	95	117	121	137
Prince Edward Island	29	26	24	33	39
Nova Scotia	220	225	247	257	294
New Brunswick	68	82	102	100	122
Quebec ²	1,017	1,381	1,243	1,328	1,352
Ontario ²	1,347	1,653	1,582	2,038	1,967
Manitoba	190	211	214	194	226
Saskatchewan	148	165	151	159	157
Alberta	327	476	395	469	474
British Columbia	479	525	582	588	645
Yukon Territory, Northwest Territories and Nunavut	28	34	35	46	35
Canada (excluding National Capital Region (NCR)¹	3,954	4,873	4,692	5,333	5,448
National Capital Region ¹	2,130	2,603	2,608	2,642	2,708

1. Federal intramural expenditures only.

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

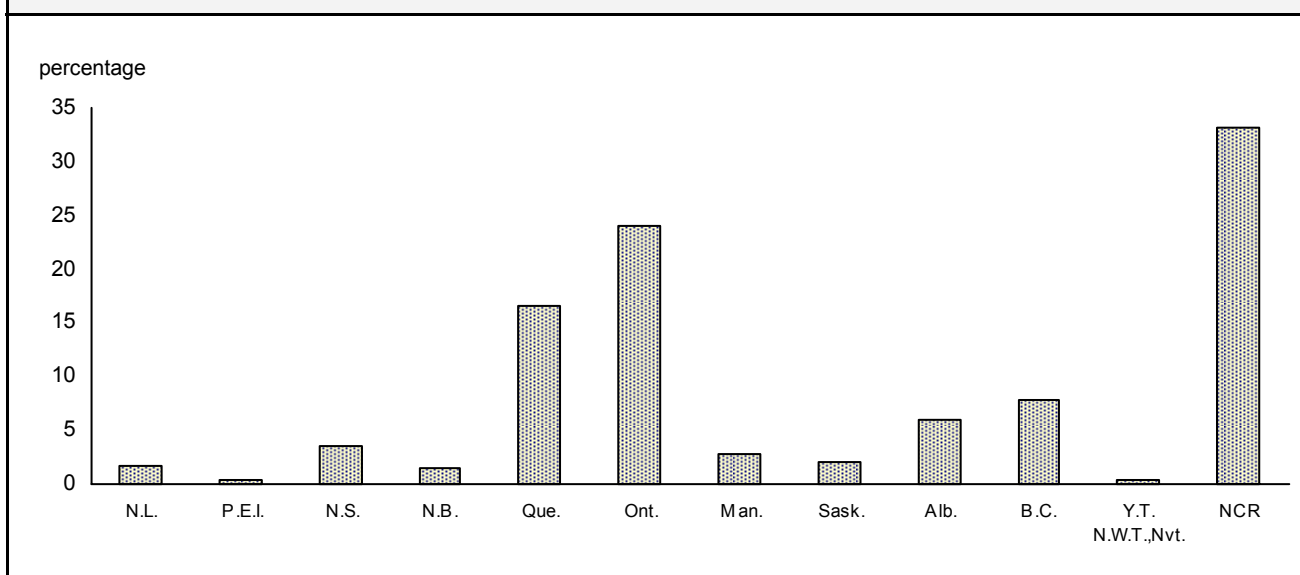
Chart 5.1 Federal expenditures on science and technology (S&T), by province and territories, 2004/2005.

Table 5.2 Federal expenditures on science and technology (S&T), by type of science, by province and territories, and by sector of performance, 2004/2005

	Federal government	Business enterprises	Higher education	Other Canadian performers ³	Total
	millions of dollars				
Total sciences - Canada	4,685	796	2,208	468	8,156
Newfoundland and Labrador	59	29	43	6	137
Prince Edward Island	17	7	14	1	39
Nova Scotia	184	30	70	10	294
New Brunswick	68	14	32	9	122
Quebec ²	485	249	583	36	1,352
Ontario ²	502	292	806	366 ⁴	1,967
Manitoba	132	28	62	4	226
Saskatchewan	85	10	58	4	157
Alberta	191	37	229	18	474
British Columbia	222	99	311	13	645
Yukon Territory, Northwest Territories and Nunavut	31	2	0	2	35
Canada (excluding National Capital Region)	1,977	796	2,208	468	5,448
National Capital Region ¹	2,708	...	...	...	2,708
Natural sciences - Canada	3,341	785	1,720	417	6,263
Newfoundland and Labrador	56	29	36	6	126
Prince Edward Island	16	7	13	1	37
Nova Scotia	166	30	55	10	260
New Brunswick	67	14	23	8	112
Quebec ²	461	248	448	30	1,186
Ontario ²	465	284	620	329 ⁴	1,699
Manitoba	124	28	48	3	203
Saskatchewan	83	10	46	4	143
Alberta	179	37	183	16	414
British Columbia	212	98	248	9	567
Yukon Territory, Northwest Territories and Nunavut	28	2	0	2	31
Canada (excluding National Capital Region)	1,856	785	1,720	417	4,778
National Capital Region ¹	1,485	...	...	...	1,485
Social sciences - Canada	1,344	11	488	50	1,893
Newfoundland and Labrador	3	0	7	0	11
Prince Edward Island	1	0	1	0	2
Nova Scotia	18	0	16	1	34
New Brunswick	1	0	9	0	10
Quebec ²	24	1	135	6	166
Ontario ²	37	8	186	37	268
Manitoba	8	0	13	1	23
Saskatchewan	2	0	12	0	14
Alberta	12	0	46	2	60
British Columbia	10	1	63	3	78
Yukon Territory, Northwest Territories and Nunavut	3	0	0	0	4
Canada (excluding National Capital Region)	121	11	488	50	670
National Capital Region ¹	1,223	...	...	...	1,223

1. Federal intramural expenditures only

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

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

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

Table 5.3 Federal expenditures on research and development (R & D), by type of science, by province and territories, and by sector of performance, 2004/2005.

	Federal government	Business enterprises	Higher education	Other Canadian performers ³	Total
	millions of dollars				
Total sciences - Canada	2,084	687	2,043	283	5,097
Newfoundland and Labrador	23	28	41	3	96
Prince Edward Island	10	7	14	0	32
Nova Scotia	81	29	64	8	182
New Brunswick	26	14	28	7	76
Quebec ²	320	214	545	30	1,109
Ontario ²	329	245	737	211	1,522
Manitoba	73	14	58	1	146
Saskatchewan	54	10	54	2	121
Alberta	110	33	211	10	364
British Columbia	91	93	288	8	481
Yukon Territory, Northwest Territories and Nunavut	6	0	0	1	8
Canada (excluding National Capital Region)	1,124	687	2,043	283	4,137
National Capital Region ¹	960	...	...	...	960
Natural sciences - Canada	1,965	685	1,616	259	4,525
Newfoundland and Labrador	23	28	35	3	89
Prince Edward Island	10	7	13	0	30
Nova Scotia	81	29	50	8	167
New Brunswick	26	14	21	7	68
Quebec ²	320	213	425	27	986
Ontario ²	327	244	579	193	1,342
Manitoba	73	14	46	1	134
Saskatchewan	54	10	44	2	110
Alberta	110	33	170	9	323
British Columbia	91	93	233	6	424
Yukon Territory, Northwest Territories and Nunavut	6	1	0	1	8
Canada (excluding National Capital Region)	1,122	685	1,616	258	3,681
National Capital Region ¹	844	...	...	...	844
Social sciences - Canada	118	2	427	25	572
Newfoundland and Labrador	0	0	6	0	7
Prince Edward Island	0	0	1	0	2
Nova Scotia	0	0	14	0	15
New Brunswick	0	0	8	0	8
Quebec ²	0	1	120	3	123
Ontario ²	2	1	158	18	180
Manitoba	0	0	12	0	12
Saskatchewan	0	0	11	0	11
Alberta	0	0	41	0	41
British Columbia	0	0	55	2	57
Yukon Territory, Northwest Territories and Nunavut	0	0	0	0	0
Canada (excluding National Capital Region)	2	2	427	25	456
National Capital Region ¹	116	...	...	...	116

1. Federal intramural expenditures only

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

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

Table 5.4 Federal expenditures on related scientific activities (RSA), by type of science, by province and territories, and by sector of performance, 2004/2005.

	Federal government	Business enterprises	Higher education	Other Canadian performers ³	Total
millions of dollars					
Total sciences - Canada	2,601	109	165	185	3,059
Newfoundland and Labrador	36	0	2	3	41
Prince Edward Island	7	0	0	0	7
Nova Scotia	103	1	6	2	112
New Brunswick	42	0	3	1	46
Quebec ²	165	35	37	6	243
Ontario ²	173	47	69	155 ⁴	445
Manitoba	59	14	4	2	80
Saskatchewan	31	0	3	2	36
Alberta	81	4	17	8	110
British Columbia	131	6	23	4	164
Yukon Territory, Northwest Territories and Nunavut	25	1	0	1	27
Canada (excluding National Capital Region)	853	109	165	185	1,311
National Capital Region ¹	1,748	...	...	...	1,748
Natural sciences - Canada	1,376	100	104	159	1,738
Newfoundland and Labrador	33	0	1	3	37
Prince Edward Island	6	0	0	0	7
Nova Scotia	85	1	5	2	93
New Brunswick	41	0	2	1	44
Quebec ²	141	34	22	3	200
Ontario ²	138	41	42	137 ⁴	357
Manitoba	51	14	3	2	69
Saskatchewan	29	0	2	1	33
Alberta	69	4	12	7	91
British Columbia	121	5	15	3	143
Yukon Territory, Northwest Territories and Nunavut	22	1	0	1	23
Canada (excluding National Capital Region)	734	100	104	159	1,097
National Capital Region ¹	641	...	...	...	641
Social sciences - Canada	1,226	9	61	26	1,321
Newfoundland and Labrador	3	0	1	0	4
Prince Edward Island	1	0	1	0	0
Nova Scotia	18	0	1	0	19
New Brunswick	1	0	1	0	2
Quebec ²	24	1	15	2	43
Ontario ²	35	6	27	19	88
Manitoba	8	0	1	1	11
Saskatchewan	2	0	1	0	3
Alberta	12	0	5	1	19
British Columbia	10	1	8	1	21
Yukon Territory, Northwest Territories and Nunavut	3	0	0	0	4
Canada (excluding National Capital Region)	118	9	61	26	214
National Capital Region ¹	1,107	...	...	...	1,107

1. Federal intramural expenditures only.

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

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

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

Table 5.5 Intramural expenditures by federal scientific establishments in the natural sciences, by department or agency,¹ by activity and by province and territories, 2004/2005.

	N.L.	P.E.I.	N.S.	N.B.	Que. ²	Ont. ²	Man.	Sask.	Alta.	B.C.	Y.T., N.W.T., & Nvt.	NCR	Canada
millions of dollars													
Science and technology													
Total	56	16	166	67	461	465	124	83	179	212	28	1,485	3,341
AECL	0	0	0	0	0	135	6	0	0	0	0	0	141
AGR	2	7	12	8	36	53	26	34	54	19	0	69	320
CSA	0	0	0	0	103	0	0	0	0	0	0	9	112
EC	3	0	15	6	85	181	30	24	25	43	6	84	501
F&O	34	3	55	10	32	12	13	1	1	65	16	23	264
HC	0	0	1	1	9	11	4	1	1	6	0	214	247
NDEF	0	0	32	0	51	19	0	0	35	0	0	106	244
NRC	12	4	21	28	79	25	17	18	11	38	0	402	656
NRCan	2	0	22	12	44	21	0	1	41	33	4	279	458
Other	3	2	8	2	22	8	28	4	11	8	2	299	398
Research and development													
Total	23	10	81	26	320	327	73	54	110	91	6	844	1,965
AECL	0	0	0	0	0	135	6	0	0	0	0	0	141
AGR	1	5	9	6	29	41	23	27	46	13	0	36	236
CSA	0	0	0	0	100	0	0	0	0	0	0	1	101
EC	1	0	4	2	23	94	4	7	4	10	0	33	181
F&O	9	1	15	3	9	3	3	0	0	17	4	7	72
HC	0	0	0	0	3	3	2	0	0	2	0	41	50
NDEF	0	0	28	0	51	19	0	0	27	0	0	74	200
NRC	10	4	19	8	69	10	16	16	8	32	0	362	554
NRCan	1	0	5	7	22	20	0	1	23	14	1	118	213
Other	1	0	1	0	14	2	19	3	2	3	1	172	217

1. List of participating departments and agencies available at the end of publication.

2. Excluding the National Capital Region

Table 5.6 Federal extramural expenditures on science and technology (S&T), by type of science, by activity and by province and territories, 2004/2005.

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T. N.W.T. & Nvt.	Canada
millions of dollars												
Total Sciences												
Total S&T	78	22	110	54	867	1,464	94	72	283	423	4	3,471
Grants	74	21	99	52	785	1,294	75	64	264	405	2	3,135
Contracts	4	1	11	2	82	170	19	8	19	18	2	336
Total R & D	73	22	101	50	789	1,193	73	67	254	390	2	3,013
Grants	72	21	93	49	745	1,075	69	59	240	379	1	2,803
Contracts	1	0	8	1	44	118	4	8	14	11	0	210
Total RSA	5	0	9	4	78	271	21	5	29	33	2	458
Grants	2	0	6	3	40	219	6	5	24	26	1	332
Contracts	3	1	3	1	38	52	15	0	5	7	2	126
Natural sciences												
Total S&T	70	21	94	45	725	1,234	79	60	236	355	3	2,922
Grants	67	20	83	43	644	1,074	61	53	217	338	2	2,601
Contracts	4	1	11	2	81	160	18	7	19	17	1	322
Total R & D	66	20	86	42	666	1,015	61	56	212	333	2	2,560
Grants	65	20	78	41	622	900	57	49	199	322	1	2,354
Contracts	1	0	8	1	44	115	4	7	14	11	0	205
Total RSA	4	1	8	3	59	219	18	4	24	22	1	362
Grants	2	0	5	2	22	174	4	4	18	16	1	247
Contracts	3	1	3	1	37	45	14	0	5	6	1	117
Social Sciences												
Total S&T	8	1	16	9	142	230	15	12	47	68	1	550
Grants	7	1	16	9	141	220	14	11	47	67	0	534
Contracts	0	0	0	0	1	10	1	1	0	1	1	15
Total R & D	7	1	15	8	123	178	12	11	42	57	0	453
Grants	6	1	15	8	123	176	12	10	41	57	0	449
Contracts	0	0	0	0	0	2	0	1	0	0	0	4
Total RSA	1	0	1	1	19	52	3	1	5	11	1	97
Grants	1	0	1	1	18	44	2	1	6	10	0	85
Contracts	0	0	0	0	1	8	1	0	0	1	1	11

Tableau 5.7 Federal extramural expenditures on science and technology (S&T), by department or agency¹ and by province and territories, 2004/2005.

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T. N.W.T. & Nvt.	Canada
millions of dollars												
Total	78	22	110	54	867	1,464	94	72	283	423	4	3,471
ACOA	31	15	28	23	0	1	0	0	0	0	0	97
CED (QUÉ)	0	0	0	0	36	0	0	0	0	0	0	36
CFI	2	0	7	2	75	103	5	5	26	38	0	263
CIHR	5	1	15	1	182	240	18	9	72	71	0	613
CSA	1	0	0	0	24	66	3	6	6	22	0	129
EC	0	0	2	0	4	107	1	1	6	3	1	125
F&O	3	0	2	1	2	1	1	0	0	3	0	14
GC	0	0	2	0	24	55	0	0	0	0	0	81
HC	0	0	0	0	1	12	0	0	0	1	0	16
IND	12	0	0	0	121	142	0	0	7	35	0	316
NDEF	0	0	8	0	44	73	14	0	12	2	0	152
NRC	4	2	5	3	15	23	3	2	9	56	1	124
NRCan	1	1	2	3	16	118	2	4	8	18	0	173
NSERC	12	1	23	11	173	285	20	28	76	95	0	723
SSHRC	7	1	16	9	136	189	14	11	46	64	0	493
TC	0	0	0	0	2	5	0	0	1	1	0	10
WEDC	0	0	0	0	0	0	6	4	10	8	0	28
Others	0	1	0	1	12	44	7	2	4	6	2	79

¹ List of participating departments and agencies available at the end of publication.

Table 5.8 Federal extramural expenditures on research and development (R & D), by department or agency¹ and by province and territories, 2004/2005.

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T. N.W.T. & Nvt.	Canada
millions of dollars												
Total	73	22	101	50	789	1,193	73	67	254	390	2	3,013
ACOA	31	15	28	23	0	1	0	0	0	0	0	97
CED (QUÉ)	0	0	0	0	36	0	0	0	0	0	0	36
CFI	2	0	7	2	75	103	5	5	26	38	0	263
CIHR	5	1	14	1	179	237	18	9	70	70	0	604
CSA	1	0	0	0	23	66	3	6	6	22	0	128
EC	0	0	0	0	0	4	0	0	1	0	0	7
F&O	0	0	0	0	1	0	0	0	0	0	0	2
GC	0	0	2	0	24	55	0	0	0	0	0	81
HC	0	0	0	0	1	1	0	0	0	1	0	3
IND	12	0	0	0	121	112	0	0	7	35	0	286
NDEF	0	0	7	0	19	40	1	0	9	2	0	77
NRC	4	2	5	3	15	23	3	2	9	56	1	124
NRCan	1	1	2	3	15	117	1	3	5	16	0	164
NSERC	11	1	20	9	155	250	18	26	65	83	0	637
SSHRC	6	1	14	8	120	160	12	10	41	56	0	428
TC	0	0	0	0	0	3	0	0	1	1	0	5
WEDC	0	0	0	0	0	0	6	4	10	8	0	28
Others	0	1	2	1	5	22	6	2	4	2	1	43

¹ List of participating departments and agencies available at the end of publication.

Table 5.9 Federal government grants and contracts to Canadian industry for research and development (R & D) in the natural sciences, by province and territories.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005
	millions of dollars				
Canada	544	814	697	715	685
Newfoundland and Labrador	11	8	17	23	28
Prince Edward Island	5	3	5	6	7
Nova Scotia	12	20	23	19	29
New Brunswick	5	7	9	10	14
Quebec	186	252	239	221	213
Ontario	235	421	298	317	244
Manitoba	11	13	13	8	14
Saskatchewan	8	9	8	9	10
Alberta	21	26	21	36	33
British Columbia	49	54	64	65	93
Yukon Territory, Northwest Territories and Nunavut	1	1	0	0	0

Table 5.10 Federal government grants and contracts to universities for research and development (R & D), by province and territories.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005
	millions of dollars				
Canada	1,150	1,530	1,556	1,925	2,043
Newfoundland and Labrador	18	19	20	31	41
Prince Edward Island	2	2	3	7	14
Nova Scotia	31	43	42	58	64
New Brunswick	11	23	16	23	28
Quebec	291	421	399	513	545
Ontario	456	561	591	716	737
Manitoba	34	40	46	44	58
Saskatchewan	41	55	50	51	54
Alberta	114	164	161	221	211
British Columbia	152	202	228	261	288
Yukon Territory, Northwest Territories and Nunavut	0	0	0	0	0

Table 5.11 Federal government grants and contracts to Canadian industry for research and development (R & D) in the natural sciences, by province and territories¹, 2004/2005

	N.L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Y.T. N.W.T. & Nvt.	Canada
	millions of dollars											
Total, grants and contracts	28	7	29	14	213	244	14	10	33	93	1	685
% of provinces by total amount of grants and contract	4	1	4	2	31	36	2	1	5	14	0	100
Total grants	28	7	21	13	173	138	10	4	23	84	0	501
% of grants	6	1	4	3	35	28	2	1	5	17	0	100
ACOA	11	4	16	9	0	1	0	0	0	0	0	41
NRC	4	2	5	3	15	22	3	2	9	16	0	81
<i>IRAP</i>	4	2	5	3	15	22	3	2	9	16	0	81
CED (Que.)	0	0	0	0	24	0	0	0	0	0	0	24
WEDC	0	0	0	0	0	0	1	2	4	2	0	9
IND	12	0	0	0	121	101	0	0	7	35	0	276
<i>TPC</i>	12	0	0	0	121	101	0	0	7	35	0	276
Other	1	1	0	1	13	14	6	0	3	31	0	70
Total contracts	0	0	7	0	40	106	4	6	10	10	0	184
% of contracts	0	0	4	0	22	58	2	3	5	5	0	100
CSA	0	0	0	0	23	60	3	6	1	7	0	100
NDEF	0	0	7	0	17	37	1	0	8	1	0	71
NRCan	0	0	0	0	0	1	0	0	0	0	0	3
Autres	0	0	0	0	0	8	0	0	1	2	0	10
Other												

1. List of participating departments and agencies available at the end of publication.

Table 5.12 Federal intramural expenditures on science and technology (S&T) for the National Capital Region.

	2000/2001	2001/2002	2002/2003	2003/2004 ^f	2004/2005
	millions of dollars				
National Capital Region (total)					
Science and technology (total)	2,130	2,603	2,608	2,642	2,708
Social sciences and humanities	1,041	1,258	1,226	1,185	1,223
Natural sciences and engineering	1,089	1,345	1,382	1,457	1,485
Research and development	889	926	1,015	999	960
Social sciences and humanities	84	90	115	118	116
Natural sciences and engineering	805	836	900	882	844
Related scientific activities	1,241	1,677	1,593	1,643	1,748
Social sciences and humanities	957	1,168	1,111	1,067	1,107
Natural sciences and engineering	284	509	482	575	641
National Capital Region (Ontario)					
Science and technology (total)	1,875	2,310	2,259	2,361	2,397
Social sciences and humanities	902	1,102	1,030	1,044	1,060
Natural sciences and engineering	973	1,208	1,229	1,316	1,337
Research and development	850	885	950	950	912
Social sciences and humanities	77	82	105	108	107
Natural sciences and engineering	773	803	845	842	805
Related scientific activities	1,025	1,425	1,309	1,411	1,485
Social sciences and humanities	825	1,020	925	936	953
Natural sciences and engineering	200	405	384	475	532
National Capital Region (Quebec)					
Science and technology (total)	255	293	349	281	310
Social sciences and humanities	139	156	196	141	162
Natural sciences and engineering	116	137	153	140	148
Research and development	39	41	65	49	48
Social sciences and humanities	7	8	10	10	9
Natural sciences and engineering	32	33	55	39	38
Related scientific activities	216	252	284	232	262
Social sciences and humanities	132	148	186	131	153
Natural sciences and engineering	84	104	98	101	110

Table 5.13 Federal expenditures on science and technology (S&T) for the National Capital Region, 2004/2005

	Federal government	Business enterprises	Higher education	Other Canadian performers ¹	Total
millions of dollars					
National Capital Region (Ontario)					
Science and technology (total)	2,397	93	114	263	2,867
Social sciences and humanities	1,060	4	28	21	1,113
Natural sciences and engineering	1,337	88	86	241	1,752
Research and development	912	66	105	116	1,199
Social sciences and humanities	107	0	24	8	139
Natural sciences and engineering	805	66	81	107	1,059
Related scientific activities	1,485	26	9	147	1,667
Social sciences and humanities	953	4	4	13	974
Natural sciences and engineering	532	23	5	134	694
National Capital Region (Quebec)					
Science and technology (total)	310	2	5	0	317
Social sciences and humanities	162	0	1	0	163
Natural sciences and engineering	148	2	4	0	154
Research and development	48	1	5	0	54
Social sciences and humanities	9	0	1	0	10
Natural sciences and engineering	38	1	4	0	43
Related scientific activities	262	1	0	0	263
Social sciences and humanities	153	0	0	0	153
Natural sciences and engineering	110	1	0	0	111

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

Table 5.14 Personnel in federal establishments engaged in science and technology (S&T) activities, by type of science, by activity, by category and by province and territories, 2004/2005

	N.L.	P.E.I.	N.S.	N.B.	Que. ¹	Ont. ¹	Man.	Sask.	Alta.	B.C.	Y.T. N.W.T. Nvt.	NCR	Canada
	number ²												
Total sciences													
Scientific and professional personnel													
S&T	176	50	604	183	1,371	1,484	357	233	602	699	107	9,062	14,928
R & D	53	22	234	68	877	997	170	141	303	266	20	2,826	5,977
RSA	123	28	370	115	494	487	187	92	299	433	87	6,236	8,951
Total personnel													
S&T	399	135	1,294	390	3,242	3,668	964	630	1,388	1,510	228	20,491	34,339
R & D	136	70	543	180	1,979	2,344	483	355	771	618	37	6,205	13,719
RSA	263	65	751	210	1,263	1,324	481	275	617	892	191	14,286	20,620
Natural sciences													
Scientific and professional personnel													
S&T	157	46	575	177	1,324	1,434	338	232	578	670	103	5,657	11,291
R & D	53	22	234	68	875	987	170	141	303	266	20	2,477	5,617
RSA	104	24	341	109	449	447	168	91	275	404	83	3,180	5,674
Total personnel													
S&T	353	125	1,151	377	3,059	3,430	889	615	1,292	1,433	205	11,020	23,949
R & D	136	70	543	180	1,974	2,327	483	355	771	618	37	5,508	13,001
RSA	217	55	608	197	1,085	1,103	406	260	521	815	168	5,512	10,948

1. Excludes the National Capital Region.

2. Full-time equivalent, including Administration of Extramural Programs Personnel.

Table 5.15 Personnel in federal establishments engaged in science and technology (S&T) activities, by department or agency¹ and by province and territories, 2004/2005.

	N.L.	P.E.I.	N.S.	N.B.	Que. ²	Ont. ²	Man.	Sask.	Alta.	B.C.	Y.T. N.W.T. & Nvt.	NCR	Canada
	number ³												
Total	399	135	1,294	390	3,242	3,668	964	630	1,388	1,510	228	20,491	34,339
ACOA	11	4	16	20	0	0	0	0	0	0	0	0	50
AECL	0	0	0	0	0	1,175	75	0	0	0	0	0	1,250
AGR	18	62	79	49	257	356	172	260	354	137	0	565	2,309
BC	0	0	3	0	3	8	0	0	2	2	0	249	267
CED (QUÉ.)	0	0	0	0	96	0	0	0	0	0	0	0	96
CFIA	16	7	40	8	55	19	10	68	56	55	0	140	473
CIDA	0	0	0	0	0	0	0	0	0	0	0	256	256
CIHR	0	0	0	0	0	0	0	0	0	0	0	282	282
CMC	0	0	0	0	0	0	0	0	0	0	0	459	459
CMHC	0	0	8	0	16	28	0	0	14	16	0	65	147
CMN	0	0	0	0	0	0	0	0	0	0	0	172	172
CNSC	0	0	0	0	0	0	0	0	0	0	0	7	7
COL	0	0	0	0	0	0	0	0	0	0	0	17	17
CRA	8	0	0	0	8	0	10	0	0	8	0	112	146
CSA	0	0	0	0	520	0	0	0	0	0	0	53	573
CSTM	0	0	0	0	0	0	0	0	0	0	0	220	220
EC	28	2	131	50	522	1,088	182	153	173	311	56	542	3,238
F&O	201	28	383	96	236	89	92	5	10	411	113	194	1,857
FA&IT	0	0	0	0	0	0	0	0	0	0	0	60	60
FIN	0	0	0	0	0	0	0	0	0	0	0	301	301
GC	0	0	0	0	0	0	0	0	0	0	0	37	37
HC	0	0	11	7	92	104	36	6	7	57	0	2,152	2,472
HRSDC	0	0	0	0	0	0	0	0	0	0	0	36	36
IAND	0	0	0	0	0	0	0	0	0	0	0	6	6
IDRC	0	0	0	0	0	0	0	0	0	0	0	158	158
IND	0	0	0	0	0	0	0	0	0	0	0	972	972
JUS	0	0	0	0	0	0	0	0	0	0	0	54	54
LAC	0	0	0	0	0	0	0	0	0	0	0	816	816
NDEF	0	0	251	0	480	217	0	0	302	0	0	840	2,089
NEB	0	0	0	0	0	0	0	0	23	0	0	0	23
NGC	0	0	0	0	0	0	0	0	0	0	0	267	267
NRC	75	27	137	58	503	159	111	115	73	243	0	2,677	4,178
NRCan	19	0	117	96	303	163	0	1	289	222	19	1,994	3,223
NSERC	0	0	0	0	0	0	0	0	0	0	0	311	311
PCA	23	6	63	6	45	105	57	15	22	16	40	277	674
PSEPC	0	0	0	0	0	0	0	0	0	0	0	28	28
PW&GS	0	0	0	0	0	0	0	0	0	0	0	23	23
SSHRC	0	0	0	0	0	0	0	0	0	0	0	177	177
STC	0	0	55	0	66	99	20	8	54	32	0	5,102	5,436
TB	0	0	0	0	0	0	0	0	0	0	0	293	293
TC	0	0	0	0	22	1	0	0	0	0	0	50	73
WEDC	0	0	0	0	0	0	0	0	5	0	0	0	5
Other	0	0	0	0	18	57	199	0	4	0	0	527	808

1. List of participating departments and agencies available at the end of publication.

2. Excludes the National Capital Region.

3. Full-time equivalent, including Administration of Extramural Programs Personnel.

Table 5.16 Personnel in federal establishments engaged in research and development (R & D) activities, by department or agency¹ and by province and territories, 2004/2005.

	N.L.	P.E.I.	N.S.	N.B.	Que. ²	Ont. ²	Man.	Sask.	Alta.	B.C.	Y.T. N.W.T. & Nvt.	NCR	Canada
	number ³												
Total	136	70	543	180	1,979	2,344	483	355	771	618	37	6,205	13,719
ACOA	10	4	16	20	0	0	0	0	0	0	0	0	50
AECL	0	0	0	0	0	1,175	75	0	0	0	0	0	1,250
AGR	9	33	58	34	184	265	145	187	291	87	0	354	1,647
BC	0	0	0	0	0	0	0	0	0	0	0	79	79
CED (Que.)	0	0	0	0	66	0	0	0	0	0	0	0	66
CFIA	0	7	1	0	18	0	5	27	18	16	0	37	128
CIDA	0	0	0	0	0	0	0	0	0	0	0	28	28
CIHR	0	0	0	0	0	0	0	0	0	0	0	278	278
CMC	0	0	0	0	0	0	0	0	0	0	0	56	56
CMHC	0	0	0	0	0	0	0	0	0	0	0	40	40
CMN	0	0	0	0	0	0	0	0	0	0	0	23	23
CNSC	0	0	0	0	0	0	0	0	0	0	0	3	3
CSA	0	0	0	0	492	0	0	0	0	0	0	6	498
EC	2	0	8	3	171	430	17	56	14	52	0	153	906
F&O	50	7	111	27	66	20	22	1	2	122	33	47	510
GC	0	0	0	0	0	0	0	0	0	0	0	37	37
HC	0	0	0	0	16	13	8	0	0	14	0	348	399
HRSDC	0	0	0	0	0	0	0	0	0	0	0	9	9
IDRC	0	0	0	0	0	0	0	0	0	0	0	118	118
IND	0	0	0	0	0	0	0	0	0	0	0	349	349
NDEF	0	0	225	0	408	178	0	0	227	0	0	525	1,563
NGC	0	0	0	0	0	0	0	0	0	0	0	52	52
NRC	54	19	98	42	361	114	80	83	53	175	0	1,921	3,000
NRCan	11	0	26	54	169	124	0	1	158	151	4	958	1,656
NSERC	0	0	0	0	0	0	0	0	0	0	0	272	272
PSEPC	0	0	0	0	0	0	0	0	0	0	0	28	28
PW&GS	0	0	0	0	0	0	0	0	0	0	0	15	15
SSHRC	0	0	0	0	0	0	0	0	0	0	0	101	101
STC	0	0	0	0	0	0	0	0	0	0	0	181	181
TC	0	0	0	0	17	1	0	0	0	0	0	4	22
WEDC	0	0	0	0	0	0	0	0	5	0	0	0	5
Other	0	0	0	0	11	24	131	0	3	1	0	183	350

1. List of participating departments and agencies available at the end of publication.

2. Excludes the National Capital Region.

3. Full-time equivalent, Including Administration of Extramural Programs Personnel.

Table 5.17 Personnel in federal establishments engaged in related scientific activities (RSA), by department or agency¹ and by province and territories, 2004/2005

	N.L.	P.E.I.	N.S.	N.B.	Que. ²	Ont. ²	Man.	Sask.	Alta.	B.C.	Y.T. N.W.T. & Nvt.	NCR	Canada
	number ³												
Total	263	65	751	210	1,263	1,324	481	275	617	892	191	14,286	20,620
ACOA	0	0	0	0	0	0	0	0	0	0	0	0	0
AECL	0	0	0	0	0	0	0	0	0	0	0	0	0
AGR	9	29	21	15	73	91	27	73	63	50	0	211	662
BC	0	0	3	0	3	8	0	0	2	2	0	170	188
CED (Que.)	0	0	0	0	30	0	0	0	0	0	0	0	30
CFIA	16	0	39	8	37	19	5	41	38	39	0	103	345
CIDA	0	0	0	0	0	0	0	0	0	0	0	228	228
CIHR	0	0	0	0	0	0	0	0	0	0	0	4	4
CMC	0	0	0	0	0	0	0	0	0	0	0	403	403
CMHC	0	0	8	0	16	28	0	0	14	16	0	25	107
CMN	0	0	0	0	0	0	0	0	0	0	0	149	149
CSA	0	0	0	0	28	0	0	0	0	0	0	47	75
CSNC	0	0	0	0	0	0	0	0	0	0	0	4	4
EC	26	2	123	47	351	658	165	97	159	259	56	389	2,332
F&O	151	21	272	69	170	69	70	4	8	289	80	147	1,347
GC	0	0	0	0	0	0	0	0	0	0	0	0	0
HC	0	0	11	7	76	91	28	6	7	43	0	1,804	2,073
HRSDC	0	0	0	0	0	0	0	0	0	0	0	27	27
IDRC	0	0	0	0	0	0	0	0	0	0	0	40	40
IND	0	0	0	0	0	0	0	0	0	0	0	623	623
NDEF	0	0	26	0	72	39	0	0	75	0	0	315	526
NGC	0	0	0	0	0	0	0	0	0	0	0	215	215
NRC	21	8	39	16	142	45	31	32	20	68	0	756	1,178
NRCan	8	0	91	42	134	39	0	0	131	71	15	1,036	1,567
NSERC	0	0	0	0	0	0	0	0	0	0	0	39	39
PSEPC	0	0	0	0	0	0	0	0	0	0	0	0	0
PW&GS	0	0	0	0	0	0	0	0	0	0	0	8	8
SSHRC	0	0	0	0	0	0	0	0	0	0	0	76	76
STC	0	0	55	0	66	99	20	8	54	32	0	4,921	5,255
TC	0	0	0	0	5	0	0	0	0	0	0	46	51
WEDC	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	31	5	63	6	60	138	135	14	46	23	40	2,500	3,068

1. List of participating departments and agencies available at the end of publication.

2. Excludes the National Capital Region.

3. Full-time equivalent, Including Administration of Extramural Programs Personnel.

6. Expenditures on science and technology (S&T) by socio-economic objectives

Table 6.1 Federal expenditures on science and technology (S&T), by socio-economic objectives.						
	2002/2003		2003/2004 ¹		2004/2005	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
millions of dollars						
Total S&T expenditures	4,271	3,384	4,275	4,186	4,398	4,250
Exploration and exploitation of the earth	466	83	382	123	414	98
Infrastructure and general planning of land use:						
Transport	112	28	112	33	96	34
Telecommunication	42	25	40	29	58	31
Other	162	32	162	35	145	32
Control and care of the environment	359	188	393	313	396	281
Protection and improvement of human health	344	906	362	1,006	407	1,051
Production, distribution and rational utilization of energy	216	80	249	215	231	186
Agricultural production and technology:						
Agriculture	414	98	396	97	405	89
Fishing	141	23	172	26	168	36
Forestry	91	44	92	63	92	58
Industrial production and technology	246	685	270	810	272	797
Social structures and relationships	997	241	999	262	1,005	291
Exploration and exploitation of space	191	184	135	202	141	194
Non-oriented research	270	242	275	406	283	458
Other civil research	17	2	17	1	19	2
Defence	177	169	193	198	233	184
Other	22	353	26	368	32	429

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

Table 6.2 Federal expenditures on research and development (R & D), by socio-economic objectives.						
	2002/2003		2003/2004 ^f		2004/2005	
	Intramural ¹	Extramural	Intramural ¹	Extramural	Intramural ¹	Extramural
	millions of dollars					
Total R & D expenditures	2,075	2,737	1,976	3,379	1,983	3,371
Exploration and exploitation of the earth	141	59	85	75	98	55
Infrastructure and general planning of land use:						
Transport	65	25	56	19	53	27
Telecommunication	37	24	35	27	43	30
Other	39	28	38	31	38	28
Control and care of the environment	174	141	178	171	181	155
Protection and improvement of human health	186	866	196	960	203	988
Production, distribution and rational utilization of energy	214	75	245	210	199	181
Agricultural production and technology:						
Agriculture	287	90	275	86	269	79
Fishing	55	16	42	23	44	26
Forestry	74	41	72	56	71	49
Industrial production and technology	189	657	189	778	174	732
Social structures and relationships	61	149	60	170	62	190
Exploration and exploitation of space	179	179	121	197	125	190
Non-oriented research	202	213	206	376	208	428
Other civil research	14	2	14	1	15	2
Defence	152	100	157	116	191	94
Other	6	72	6	82	10	119

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

Table 6.3 Federal expenditures on science and technology (S&T), by socio-economic objectives and activity, 2004/2005.									
	Intramural ¹			Extramural			Total		
	R & D	RSA	S&T	R & D	RSA	S&T	R & D	RSA	S&T
millions of dollars									
Total expenditures	1,983	2,415	4,398	3,371	879	4,250	5,354	3,294	8,648
Exploration and exploitation of the earth	98	317	414	55	43	98	153	360	513
Infrastructure and general planning of land use:									
Transport	53	44	96	27	7	34	79	51	130
Telecommunication	43	15	58	30	1	31	73	16	89
Other	38	107	145	28	4	32	66	112	177
Control and care of the environment	181	214	396	155	126	281	337	340	677
Protection and improvement of human health	203	205	407	988	63	1,051	1,191	267	1,458
Production, distribution and rational utilization of energy	199	32	231	181	6	186	380	38	418
Agricultural production and technology:									
Agriculture	269	136	405	79	10	89	348	146	494
Fishing	44	124	168	26	10	36	70	134	204
Forestry	71	21	92	49	9	58	120	29	149
Industrial production and technology	174	98	272	732	65	797	906	163	1,069
Social structures and relationships	62	943	1,005	190	101	291	252	1,044	1,296
Exploration and exploitation of space	125	16	141	190	4	194	315	20	335
Non-oriented research	208	75	283	428	30	458	636	105	741
Other civil research	15	3	19	2	0	2	17	4	21
Defence	191	42	233	94	90	184	285	132	417
Other	10	22	32	119	310	429	128	333	461

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

Chart 6.1 Federal expenditures on science and technology (S&T) and on research and development (R & D), by socio-economic objectives as a percentage of total expenditures, 2004/2005.

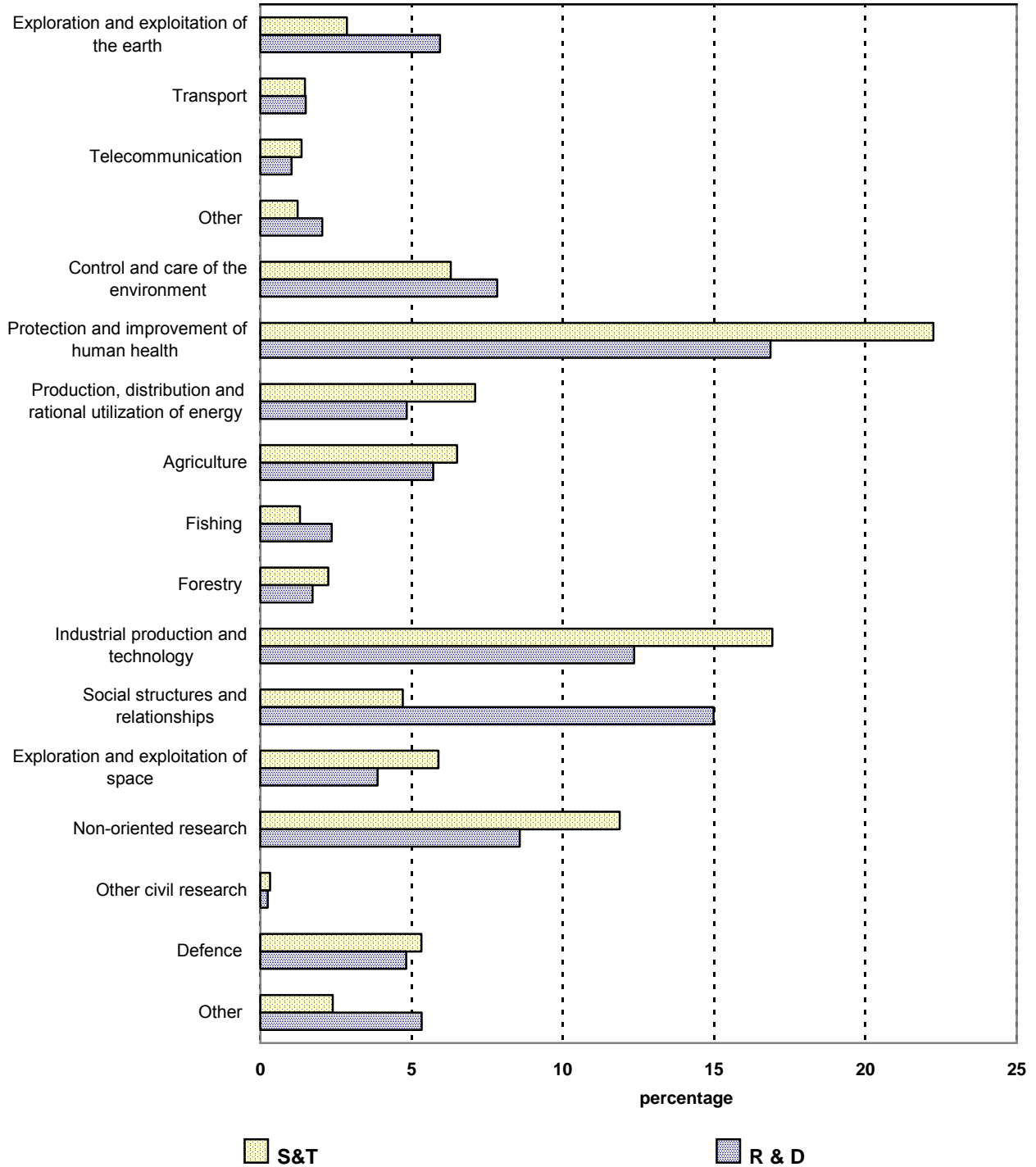


Table 6.4 Federal expenditures on science and technology (S&T) as a percentage of total expenditures, by socio-economic objectives and activity, 2004/2005.

	Intramural ¹			Extramural			Total		
	R & D	RSA	S&T	R & D	RSA	S&T	R & D	RSA	S&T
	percentage								
Total expenditures	100	100	100	100	100	100	100	100	100
Exploration and exploitation of the earth	5	13	9	2	5	2	3	11	6
Infrastructure and general planning of land use:									
Transport	3	2	2	1	1	1	1	2	2
Telecommunication	2	1	1	1	0	1	1	0	1
Other	2	4	3	1	0	1	1	3	2
Control and care of the environment	9	9	9	5	14	7	6	10	8
Protection and improvement of human health	10	8	9	29	7	25	22	8	17
Production, distribution and rational utilization of energy	10	1	5	5	1	4	7	1	5
Agricultural production and technology:									
Agriculture	14	6	9	2	1	2	6	4	6
Fishing	2	5	4	1	1	1	1	4	2
Forestry	4	1	2	1	1	1	2	1	2
Industrial production and technology	9	4	6	22	7	19	17	5	12
Social structures and relationships	3	39	23	6	11	7	5	32	15
Exploration and exploitation of space	6	1	3	6	0	5	6	1	4
Non-oriented research	10	3	6	13	3	11	12	3	9
Other civil research	1	0	0	0	0	0	0	0	0
Defence	10	2	5	3	10	4	5	4	5
Other	1	1	1	4	35	10	2	10	5

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

Table 6.5 Expenditures by socio-economic objectives for the National Research Council of Canada, 2004/2005.						
	Intramural ¹		Extramural		Total	
	R & D	S&T	R & D	S&T	R & D	S&T
	millions of dollars					
Total expenditures	536	634	137	137	673	772
Exploration and exploitation of the earth	4	5	0	0	4	5
Infrastructure and general planning of land use:						
Transport	39	47	3	3	43	50
Telecommunication	10	12	10	10	20	22
Other	36	42	0	0	36	42
Control and care of the environment	30	36	6	6	36	42
Protection and improvement of human health	68	80	7	7	74	87
Production, distribution and rational utilization of energy	2	2	2	2	4	4
Agricultural production and technology:						
Agriculture	26	30	6	6	31	36
Fishing	0	0	2	2	2	2
Forestry	3	3	1	1	4	4
Industrial production and technology	117	138	49	49	166	187
Social structures and relationships	0	0	0	0	0	0
Exploration and exploitation of space	28	33	10	10	38	43
Non-oriented research	163	193	41	41	204	234
Other civil research	12	14	0	0	12	14
Defence	0	0	0	0	0	0
Other	0	0	0	0	0	0

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

Table 6.6 Expenditures by socio-economic objectives for Natural Resources Canada, 2004/2005.						
	Intramural ¹		Extramural		Total	
	R & D	S&T	R & D	S&T	R & D	S&T
millions of dollars						
Total expenditures	201	433	165	174	367	607
Exploration and exploitation of the earth	40	178	4	5	44	183
Infrastructure and general planning of land use:						
Transport	8	34	0	0	8	34
Telecommunication	3	13	0	0	3	13
Other	0	0	0	0	0	0
Control and care of the environment	0	0	0	0	0	0
Protection and improvement of human health	2	3	0	0	2	3
Production, distribution and rational utilization of energy	54	83	130	130	184	213
Agricultural production and technology:						
Agriculture	0	0	0	0	0	0
Fishing	0	0	0	0	0	0
Forestry	67	87	29	36	96	123
Industrial production and technology	24	33	2	3	27	37
Social structures and relationships	0	0	0	0	0	0
Exploration and exploitation of space	0	0	0	0	0	0
Non-oriented research	3	3	0	0	3	3
Other civil research	0	0	0	0	0	0
Defence	0	0	0	0	0	0
Other	0	0	0	0	0	0

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

Table 6.7 Expenditures by socio-economic objectives for the Natural Sciences and Engineering Research Council, 2004/2005.						
	Intramural ¹		Extramural		Total	
	R & D	S&T	R & D	S&T	R & D	S&T
millions of dollars						
Total expenditures	32	37	670	766	702	803
Exploration and exploitation of the earth	1	2	28	32	29	34
Infrastructure and general planning of land use:						
Transport	1	1	14	16	15	17
Telecommunication	0	0	0	0	0	0
Other	1	1	21	24	22	25
Control and care of the environment	4	5	92	105	97	110
Protection and improvement of human health	4	5	83	95	87	99
Production, distribution and rational utilization of energy	2	2	33	38	35	40
Agricultural production and technology:						
Agriculture	2	2	44	50	46	52
Fishing	1	1	13	15	14	16
Forestry	1	1	10	12	11	13
Industrial production and technology	10	12	213	243	223	255
Social structures and relationships	0	0	5	6	6	6
Exploration and exploitation of space	1	1	13	15	14	16
Non-oriented research	5	5	100	114	104	119
Other civil research	0	0	0	0	0	0
Defence	0	0	0	0	0	0
Other	0	0	0	0	0	0

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

Table 6.8 Expenditures by socio-economic objectives for the Social Sciences and Humanities Research Council, 2004/2005.						
	Intramural ¹		Extramural		Total	
	R & D	S&T	R & D	S&T	R & D	S&T
millions of dollars						
Total expenditures	13	22	429	497	442	520
Exploration and exploitation of the earth	0	0	0	0	0	0
Infrastructure and general planning of land use:						
Transport	0	0	2	2	2	2
Telecommunication	0	0	0	0	0	0
Other	0	0	0	0	0	0
Control and care of the environment	0	1	9	12	10	13
Protection and improvement of human health	0	1	12	18	12	19
Production, distribution and rational utilization of energy	0	0	0	0	0	0
Agricultural production and technology:						
Agriculture	0	0	1	1	1	1
Fishing	0	0	1	1	1	1
Forestry	0	0	2	2	2	3
Industrial production and technology	0	1	13	15	13	16
Social structures and relationships	4	11	135	188	140	199
Exploration and exploitation of space	0	0	0	0	0	0
Non-oriented research	8	8	253	256	261	265
Other civil research	0	0	0	0	0	0
Defence	0	0	0	0	0	0
Other	0	0	0	0	0	0

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

Abbreviations**Departments and agencies**

ACOA	Atlantic Canada Opportunities Agency	HRSDC	Human Resources & Skills Development Canada
AECL	Atomic Energy of Canada Limited		
AGR	Agriculture and Agri-Food Canada	IDRC	International Development Research Centre
BC	Bank of Canada	IND	Industry Canada
C&I	Citizenship and Immigration	JUS	Justice
CBC	Canadian Broadcasting Corporation	LAC	Library and Archives Canada
CCMD	Canadian Centre for Management Development	NA	National Archives
CED(Que)	Canada Economic Development (Québec Regions)	NDEF	National Defence
CFI	Canada Foundation for Innovation	NEB	National Energy Board
CFIA	Canadian Food Inspection Agency	NFB	National Film Board
CH	Canadian Heritage	NGC	National Gallery of Canada
CHRC	Canadian Human Rights Commission	NL	National Library
CIDA	Canadian International Development Agency	NRC	National Research Council of Canada
CIHR	Canadian Institutes of Health Research	NRCan	Natural Resources Canada
CMC	Canadian Museum of Civilization	NSERC	Natural Sciences and Engineering Research Council
CMHC	Canada Mortgage and Housing Corporation	PC	Privy Council Office
CMN	Canadian Museum of Nature	PCA	Parks Canada Agency
CNSC	Canadian Nuclear Safety Commission	PHAC	Public Health Agency of Canada
COL	Commissioner of Official Languages	PSC	Public Service Commission
CRA	Canada Revenue Agency	PSEPC	Public Safety and Emergency Preparedness Canada
CSA	Canadian Space Agency	PW&GS	Public Works and Government Services Canada
CSPS	Canada School of Public Service	RCMP	Royal Canadian Mounted Police
CSTM	Canada Science and Technology Museum	SDC	Social Development Canada
EC	Environment Canada	SGEN	Solicitor General
F&O	Fisheries and Oceans Canada	SSHRC	Social Sciences and Humanities Research Council
FA&IT	Foreign Affairs and International Trade	STC	Statistics Canada
FIN	Finance	SWC	Status of Women Canada
GC	Genome Canada	TB	Treasury Board
HC	Health Canada	TC	Transport Canada
		WEDC	Western Economic Diversification Canada
S&P	Scientific and professional	NSE	Natural sciences and engineering
S&T	Science and technology (R&D+RSA = S&T)	SSH	Social sciences and humanities
R & D	Research and development	FTE	Full-time equivalent
RSA	Related scientific activities		
NCR	National Capital Region		

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

Natural sciences and engineering

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

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. The work is normally performed by, or under the supervision of, persons with postgraduate degrees in the natural sciences or engineering.

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. 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 categories under “information services” include

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.

Examples of special studies: a study of the viability of petrochemical complex in a certain region of Canada; the Royal commission of poverty; the MacKenzie valley pipeline inquiry; the Manitoba guaranteed income experiment; and social impact studies resulting from development of the Hibernia oil fields (net costs).

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. Examples of demonstration projects are the Spry Point Ark, the Geothermal heating project, Regina, and the fluidized bed combustion system, P.E.I..

• 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:

Social sciences and humanities

The social sciences and humanities (SSH) field embraces all disciplines involved in studying human actions and conditions and the social, economic and institutional mechanisms affecting humans. Included are such disciplines as anthropology, 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.

Research and experimental development (R&D)

Creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of humans, culture and society and the use of this stock of knowledge to devise new applications.

R&D requires the acquisition of knowledge and not just information. 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 project.

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. 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 costed against 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 bureaux 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 categories 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 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 technologies, 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.

Examples of special studies: a study of the viability of petrochemical complex in a certain region of Canada; the Royal Commission of Poverty; the MacKenzie Valley Pipeline Inquiry; the Manitoba Guaranteed Income Experiment; and social impact studies resulting from development of the Hibernia Oil Fields (net costs).

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. Examples are a study of the viability of an iron foundry in a foreign country, and a cost-benefit study of a proposed paper manufacturing centre in Manitoba.

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.

Both science fields

- **Administration of extramural programs**

The costs of identifiable units engaged in the administration of contracts and grants and contributions for scientific activities that are to be performed outside the Federal Government. These expenditures are broken down by the type of scientific activity supported, i.e., R&D or RSA.

- **Intramural performance**

Where the 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 also 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:

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

Higher education. This sector is made up of all Canadian universities, including affiliated institutes owned, administered or staffed by universities.

Canadian private non-profit institutions. Charitable foundations, voluntary health organizations, scientific and professional societies, and other organizations not established to earn profits comprise this sector. Private non-profit institutions primarily serving or controlled by another sector should be included in that sector (e.g., the Pulp and Paper Research Institute is in Canadian business enterprises).

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

Other Canadian performers. This sector includes all individuals or organizations not belonging to any of the above sectors. In particular, it includes provincial research councils and foundations.

Foreign performers. All foreign governments, 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.

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. Such payments are included as expenditures for R&D activities. Awards intended primarily to support the education of the recipients are reported as education support.

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 (e.g., Professional Engineer P.Eng.), 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.

Federal government expenditures on S&T by 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 at the highest level of aggregation. In many cases, projects have multiple objectives and a department assigned its expenditures consistent with the stated objectives of the department.

The objectives are based on the nomenclature for the *analysis and comparison of scientific programs and budgets (NABS)* produced by the *statistical office of the European communities (Eurostat)*.

The objectives of government funding of R&D have long been of interest to policy makers. *Eurostat* for many years had a sub-committee on R&D statistics which compiled data on government funding of R&D. The system of classification used was the *NABS* which was developed in 1969 and first revised in 1975.

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, 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

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, micro-organisms) 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 paediatric and geriatric research.

Production, distribution and rational utilization of energy

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

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

Industrial production and technology

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 analyzed 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, 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

Scientific activities and development for military purposes. It also includes basic research and nuclear and space research financed by Ministry of Defence. Civil scientific activities financed by ministry of Defence, for example, in the fields of meteorology, telecommunications and health, should be classified in the relevant objectives.

Catalogued publications

Science, Technology and Innovation statistical publications

- 88-001-XIE [Science statistics](#)
- 88-003-XIE [Innovation analysis bulletin](#)
- 88-202-XIE [Industrial research and development, intentions \(with 2004 preliminary estimates and 2003 actual expenditures\) \(annual\)](#)
- 88-204-XIE [Federal scientific activities \(annual\)](#)
- 88F0006XIE [Science, Innovation and Electronic Information Division working papers](#)
- 88F0017MIE [Science, Innovation and Electronic Information Division research papers](#)

88-001-X Volume 31 – 2007

- No. 1 Research and development (R&D) personnel in Canada, 1995 to 2004 (January)
- No. 2 Estimates of total spending on research and development in the health field in Canada, 1989 to 2006 (March)

88-001-X Volume 30 – 2006

- No. 1 Distribution of federal expenditures on science and technology, by province and territories, 2003/2004 (February)
- No. 2 Biotechnology scientific activities in federal government departments and agencies, 2004/2005 (March)
- No. 3 Estimates of total spending on research and development in the health field in Canada, 1988 to 2005 (May)
- No. 4 Industrial Research and Development, 2002 to 2006 (August)
- No. 5 Estimation of research and development expenditures in the higher education sector, 2004/2005 (August)
- No. 6 Federal government expenditures on scientific activities, 2006/2007 (September)
- No. 7 Total spending on research and development in Canada, 1990 to 2006, and provinces, 1990 to 2004 (September)
- No. 8 Nature of Research and Development, 2000 to 2004 (December)
- No. 9 Distribution of federal expenditures on science and technology by province and territories, 2004/2005 (December)

88F0006XIE Working papers – 2006

- No. 1 [Provincial distribution of federal expenditures and personnel on science and technology, 1997/1998 to 2003/2004 \(April\)](#)
- No. 2 [Buying and selling research and development services, 1997 to 2002 \(May\)](#)
- No. 3 [Characteristics of Growth Firms, 2004/2005 \(May\)](#)
- No. 4 [Scientific and Technological Activities of Provincial Governments and Provincial Research Organizations, 2000/2001 to 2004/2005 \(July\)](#)
- No. 5 [Research and Development in the Field of Advanced Materials, 2001 to 2003 \(July\)](#)

- No. 6 [Conceptualizing and Measuring Business Incubation \(July\)](#)
- No. 7 [Characteristics of Business Incubation in Canada, 2005 \(July\)](#)
- No. 8 [Size and Persistence of R&D Performance in Canadian Firms, 1994 to 2002 \(August\)](#)
- No. 9 [Estimates of Canadian Research and Development Expenditures \(GERD\), Canada, 1995 to 2006, and by Province 1995 to 2004 \(September\)](#)
- No. 10 [Are Small Businesses Positioning Themselves for Growth? A Comparative Look at the Use of Selected Management Practices by Firm Size \(October\)](#)
- No. 11 [Survey of Intellectual Property Commercialization in the Higher Education Sector, 2004 \(October\)](#)
- No. 12 [Provincial Distribution of Federal Expenditures and Personnel on Science and Technology, 2000/2001 to 2004/2005 \(December\)](#)