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Total spending on research and development in Canada, 1990 to 2004^P, and provinces, 1990 to 2002

Gross domestic expenditures on research and development (GERD) represents total R&D expenditures performed in a country's national territory during a given year. GERD includes R&D performed within a country and funded from abroad but excludes payments sent abroad for R&D performed in other countries.

Highlights

- ▶ After the first decrease of Gross Domestic Expenditures on Research and Development (GERD) ever reported for 2002, the 2003 and 2004 estimates indicate a recovery. For 2003, GERD is expected to reach \$23.3 billion, an increase of 4.1% over 2002. Preliminary estimates for 2004 (\$24.5 billion) represent a 5.1% increase over 2003. Respondents made their forecasts in late 2003 and early 2004.
- ▶ On the performance of R&D, the higher education sector is responsible for 84% of the increase in 2004 GERD. The business sector R&D performance has risen slightly above the 2000 level and accounts for 16% of the increase of GERD.
- ▶ The increase in funding for GERD is lead by the higher education sector with 38.7% of the increase, followed by the business sector (20.5%), the federal government sector (20.4%) and the provinces (10.2%).
- ▶ The intensity of R&D performance, as measured by the ratio of GERD over Gross Domestic Product (GDP), is expected to reach 1.91% in 2003, a decrease from the 2.05% observed in 2001 and the 1.93% observed in 2002.
- ▶ In 2002, 73% of Canadian R&D was performed in Ontario and Quebec. This level of concentration has been constant for the last five years. Since no attempt is made to forecast or estimate provincial expenditures, only actual expenditures are presented. Thus provincial data are available only to 2002.

Summary statistics for GERD and GERD/GDP ratios are given in Table 1. The figures for 2004 are spending estimates, whereas the 2003 figures are revised preliminary actual expenditures.

December 2004

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Table 1. Gross domestic expenditures on R&D (GERD) in current dollars, in 1997 dollars and as a percentage of the gross domestic product, 1990 to 2004					
Year	GERD	GDP ¹	GERD/GDP	GDP implicit price index ²	GERD ³
	in millions of dollars		%	%	in millions of 1997 dollars
1990	10,260	679,921	1.51	88.8	11,554
1991	10,770	685,367	1.57	91.5	11,770
1992	11,338	700,480	1.62	92.7	12,231
1993	12,184	727,184	1.68	94.0	12,962
1994	13,341	770,873	1.73	95.1	14,028
1995	13,754	810,426	1.70	97.2	14,150
1996 ^f	13,816	836,864	1.65	98.8	13,984
1997 ^f	14,636	882,733	1.66	100.0	14,636
1998 ^f	16,089	914,973	1.76	99.6	16,154
1999 ^f	17,638	982,441	1.80	101.3	17,412
2000 ^f	20,531	1,076,577	1.91	105.5	19,461
2001	22,733	1,108,200	2.05	106.7	21,306
2002 ^f	22,370	1,157,968	1.93	107.8	20,751
2003 ^p	23,293	1,218,772	1.91	111.2	20,947
2004 ^p	24,487	..	..	..	..

1. CANSIM II Table 380-0017.

2. CANSIM II Table 384-0036.

3. GERD data are deflated by the GDP implicit price index.

Direct international comparisons of the levels of effort devoted to R&D can be confounded by constantly fluctuating exchange rates among international currencies and changes in the relative costs of human resources and financial imports into the R&D programs of different nations. One of the methods the OECD employs to circumvent these difficulties is to express the GERD as a ratio of GDP. This ratio has become a standard OECD tool for international comparisons and also a convenient summary statistic. However, as a summary statistic, it is influenced by the economic structure and by the propensity to perform R&D in particular sectors. Both change from country to country.

Table 2 presents the GERD/GDP ratios for selected OECD countries. Most of these countries have a higher ratio than Canada. In part, this is partially due to greater defence R&D expenditures in some countries.

Table 2. Gross domestic expenditures on R&D (GERD) as a percentage of gross domestic product for selected OECD countries							
Country	1997	1998	1999	2000	2001	2002	2003
Canada	1.66	1.76	1.80	1.91	2.05	1.93	1.91
France	2.22	2.17	2.18	2.18	2.23	2.20	2.50
Germany	2.29	2.31	2.44	2.49	2.51	2.52	..
Italy	1.05	1.07	1.04	1.07	1.11	..	..
Japan	2.83	2.95	2.96	2.99	3.07	3.12	..
Sweden ¹	3.54	..	3.65	..	4.27	..	..
U.K.	1.81	1.80	1.87	1.84	1.86	1.88	..
U.S.A. ²	2.58	2.60	2.65	2.72	2.74	2.67	2.62

1. Underestimated or based on underestimated data.

2. Excludes most or all capital expenditures.

Source: Main Science and Technology Indicators, No. 1, DSTI, OECD, 2004

In Table 3, GERD is presented historically by both the performing and the funding sectors.

Table 3. Gross domestic expenditures on R&D (GERD), by performing sector and funding sector, 1990 to 2004							
Year	Federal government	Provincial governments	Business enterprise	Higher education	Private non-profit organizations	Foreign	Total
in millions of dollars							
Performing sector:							
1990	1,654	302	5,169	3,033	102	...	10,260
1991	1,685	328	5,355	3,292	110	...	10,770
1992	1,716	293	5,742 ^e	3,519	68	...	11,338
1993	1,757	269	6,424	3,660	74	...	12,184
1994	1,753	260	7,567 ^e	3,675	86	...	13,341
1995	1,727	254	7,991	3,691	91	...	13,754
1996 ^r	1,792	242	7,996	3,697	89	...	13,816
1997 ^r	1,720	214	8,741	3,879	82	...	14,636
1998 ^r	1,743	216	9,683	4,370	77	...	16,089
1999 ^r	1,859	233	10,401	5,082	63	...	17,638
2000 ^r	2,080	255	12,346	5,793	57	...	20,531
2001	2,103	307	13,847	6,424	52	...	22,733
2002 ^r	2,190	315	12,383	7,429	53	...	22,370
2003 ^p	2,239	322	12,343	8,321	68	...	23,293
2004 ^p	2,234	330	12,534	9,319	70	...	24,487
Funding sector:							
1990	2,859	641	3,960	1,618	233	949	10,260
1991	2,946	696	4,113	1,735	267	1,013	10,770
1992	3,109	644	4,445 ^e	1,867	224	1,049	11,338
1993	3,156	665	5,025	1,892	276	1,170	12,184
1994	3,094	663	5,874 ^e	1,914	298	1,498	13,341
1995	2,989	652	6,288	1,926	309	1,590	13,754
1996 ^r	2,814	629	6,396	1,905	358	1,714	13,816
1997 ^r	2,814	658	7,032	1,971	367	1,794	14,636
1998 ^r	2,830	639	7,356	2,339	372	2,553	16,089
1999 ^r	3,216	770	7,918	2,649	380	2,705	17,638
2000 ^r	3,560	879	9,150	2,892	445	3,605	20,531
2001	4,095	1,045	11,225	2,928	533	2,907	22,733
2002 ^r	4,221	1,182	11,024	3,435	624	1,884	22,370
2003 ^p	4,492	1,287	11,069	3,847	705	1,893	23,293
2004 ^p	4,735	1,409	11,314	4,309	787	1,933	24,487

GERD by performing sector and funding sector, 2004

(in millions of dollars)

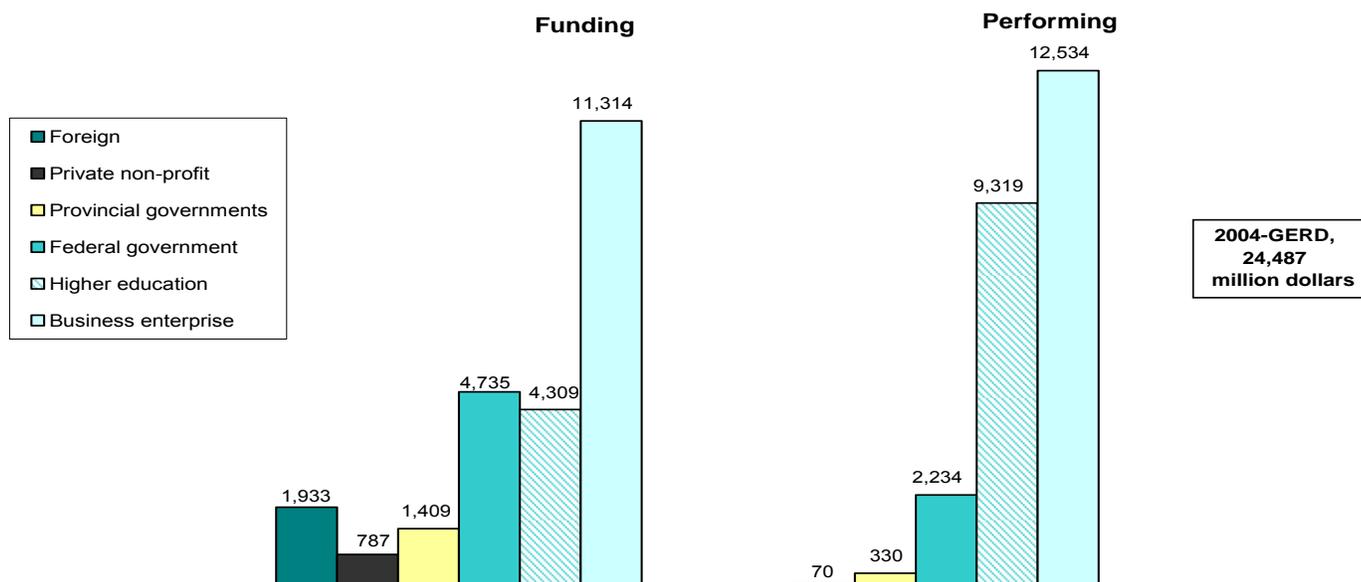


Table 4. Provincial background, 2002								
Province	Provincial gross domestic product ¹ (PGDP)		Gross domestic expenditures on research and development (GERD) [*]		Population ² (000)	GERD/PGDP %	GERD/PGDP ratio	GERD per capita dollars
	(\$000,000)	%	(\$000,000)	%				
Newfoundland and Labrador	16,615	1	148	1	519	2	0.9	285
Prince Edward Island	3,747	0	31	0	137	0	0.8	226
Nova Scotia	27,247	2	373	2	935	3	1.4	399
New Brunswick	21,168	2	184	1	750	2	0.9	245
Quebec	243,763	21	6,451	29	7,446	24	2.6	866
Ontario	479,556	41	9,814	44	12,102	39	2.0	811
Manitoba	36,832	3	444	2	1,156	4	1.2	384
Saskatchewan	34,419	3	419	2	996	3	1.2	421
Alberta	150,660	13	1,641	7	3,116	10	1.1	527
British Columbia	138,368	12	1,846	8	4,115	13	1.3	449
National Capital Region								
Quebec	..		65	0	..	..	..	..
Ontario	..		950	4	..	..	..	..
Canada³	1,157,968	100	22,370	100	31,373	100	1.9	713

1. CANSIM II, Table 384-0002.

2. CANSIM II, Table 051-0005.

3. Includes the Yukon, Northwest Territories and Nunavut.

* Quebec and Ontario figures exclude federal government expenditures performed in the National Capital Region.

Estimates of R&D activities by region may be easily misunderstood. For example, the financial data are identified with the region of the physical location of R&D unit. It would be wrong to assume all of the expenditures of a unit are spent in the region of location. Supplies and equipment can be purchased from other regions or countries. Furthermore, in cases such as the National Capital Region, labour moves freely between Québec and Ontario so that even wages and salaries paid by a unit are partly spent outside the area of location.

Expenditures for R&D performed by the federal government in the National Capital Region (NCR) are excluded from the provincial totals and are reported separately. The NCR is, in effect, treated as a separate entity. However, these expenditures, distributed geographically, are presented in Table 10.

Table 5. Provincial distribution of the GERD, 1990 to 2002													
Year	N.-L.	P.E.I.	N.S.	N.B.	Que.*	Ont.*	Man.	Sask.	Alta.	B.C.	Subtotal Canada ¹	NCR	Total Canada ¹
in millions of dollars													
1990	103	16	236	134	2,594	4,444	263	201	781	772	9,549	711	10,260
1991	106	16	240	121	2,863	4,616	284	216	789	782	10,034	733	10,767
1992	110	14	233	122	3,113	4,818	281	235	779	879	10,585	753	11,338
1993	111	17	245	130	3,294	5,331	296	233	834	916	11,410	774	12,184
1994	108	17	265	134	3,495	5,940	311	239	966	1,067	12,552	789	13,341
1995	100	16	265	140	3,689	6,148	295	254	972	1,068	12,949	805	13,754
1996 ^f	103	17	257	150	3,801	6,175	295	233	1,007	1,002	13,045	771	13,816
1997 ^f	103	17	257	129	3,933	6,787	269	287	1,052	1,039	13,879	757	14,636
1998 ^f	119	23	311	157	4,325	7,465	299	278	1,183	1,113	15,277	812	16,089
1999 ^f	127	26	342	166	4,885	8,115	384	323	1,164	1,290	16,830	808	17,638
2000 ^f	138	36	363	162	5,624	9,562	412	376	1,346	1,614	19,642	889	20,531
2001	142	37	366	159	6,282	10,596	471	394	1,601	1,755	21,807	926	22,733
2002	148	31	373	184	6,451	9,814	444	419	1,641	1,846	21,355	1,015	22,370
as a percentage of the Canada total													
1990	1.0	0.2	2.3	1.3	25.3	43.3	2.6	2.0	7.6	7.5	93.1	6.9	100.0
1991	1.0	0.1	2.2	1.1	26.6	42.9	2.6	2.0	7.3	7.3	93.2	6.8	100.0
1992	1.0	0.1	2.1	1.1	27.5	42.5	2.5	2.1	6.9	7.8	93.4	6.6	100.0
1993	0.9	0.1	2.0	1.1	27.0	43.8	2.4	1.9	6.8	7.5	93.6	6.4	100.0
1994	0.8	0.1	2.0	1.0	26.2	44.5	2.3	1.8	7.2	8.0	94.1	5.9	100.0
1995	0.7	0.1	1.9	1.0	26.8	44.7	2.1	1.8	7.1	7.8	94.1	5.9	100.0
1996 ^f	0.7	0.1	1.9	1.1	27.5	44.7	2.1	1.7	7.3	7.3	94.4	5.6	100.0
1997 ^f	0.7	0.1	1.8	0.9	26.9	46.4	1.8	2.0	7.2	7.1	94.8	5.2	100.0
1998 ^f	0.7	0.1	1.9	1.0	26.9	46.4	1.9	1.7	7.4	6.9	95.0	5.0	100.0
1999 ^f	0.7	0.1	1.9	0.9	27.7	46.0	2.2	1.8	6.6	7.3	95.4	4.6	100.0
2000 ^f	0.7	0.2	1.8	0.8	27.4	46.6	2.0	1.8	6.5	7.9	95.7	4.3	100.0
2001	0.6	0.2	1.6	0.7	27.7	46.8	2.1	1.7	6.7	7.8	95.9	4.1	100.0
2002	0.7	0.1	1.7	0.8	28.8	43.9	2.0	1.9	7.3	8.3	95.5	4.5	100.0
as a percentage of PGDP													
1990	1.1	0.7	1.4	1.0	1.7	1.6	1.1	0.9	1.1	1.0	...	...	1.5
1991	1.1	0.7	1.4	0.9	1.8	1.6	1.2	1.0	1.1	1.0	...	...	1.6
1992	1.2	0.6	1.3	0.9	2.0	1.7	1.2	1.1	1.0	1.0	...	...	1.6
1993	1.1	0.7	1.3	0.9	2.0	1.8	1.2	1.0	1.0	1.0	...	...	1.7
1994	1.1	0.7	1.4	0.9	2.1	1.9	1.2	1.0	1.1	1.1	...	...	1.7
1995	0.9	0.6	1.4	0.9	2.1	1.9	1.1	1.0	1.1	1.0	...	...	1.7
1996 ^f	1.0	0.6	1.3	0.9	2.1	1.8	1.0	0.8	1.0	0.9	...	...	1.7
1997 ^f	1.0	0.6	1.3	0.8	2.1	1.9	0.9	1.0	1.0	0.9	...	...	1.7
1998 ^f	1.1	0.8	1.5	0.9	2.2	2.0	1.0	0.9	1.1	1.0	...	...	1.8
1999 ^f	1.0	0.8	1.5	0.9	2.3	2.0	1.2	1.0	1.0	1.1	...	...	1.8
2000 ^f	1.0	1.1	1.5	0.8	2.5	2.2	1.2	1.1	0.9	1.2	...	...	1.9
2001	1.0	1.1	1.4	0.8	2.7	2.3	1.3	1.2	1.0	1.3	...	...	2.0
2002	0.9	0.8	1.4	0.9	2.6	2.0	1.2	1.2	1.1	1.3	...	...	1.9

1. Includes the Yukon, Northwest Territories and Nunavut.

* Quebec and Ontario figures exclude federal government expenditures performed in the National Capital Region.

Table 6. R&D expenditures in the provinces by the federal government, in terms of performing and funding, 1990 to 2002

Year	N.-L.	P.E.I.	N.S.	N.B.	Que.*	Ont.*	Man.	Sask.	Alta.	B.C.	Subtotal Canada ¹	NCR	Total Canada ¹
in millions of dollars													
Performing													
1990	35	10	81	36	215	249	94	50	77	95	943	711	1,654
1991	35	10	81	37	217	251	95	51	78	96	952	733	1,685
1992	35	9	73	36	234	274	81	56	78	86	963	753	1,716
1993	36	11	75	33	250	276	83	54	75	88	983	774	1,757
1994	33	11	84	28	225	253	79	48	93	103	964	789	1,753
1995	27	9	77	29	218	259	71	52	98	81	922	805	1,727
1996	25	10	79	32	226	348	77	47	94	78	1,021	771	1,792
1997	23	10	70	29	212	302	59	74	96	83	963	757	1,720
1998	26	10	77	31	226	276	49	54	94	85	931	812	1,743
1999 ^f	25	12	72	32	250	322	58	60	108	106	1,051	808	1,859
2000 ^f	30	16	88	27	350	314	69	62	116	111	1,192	889	2,080
2001	27	16	70	26	372	328	77	63	98	97	1,177	926	2,103
2002	31	8	76	46	371	324	72	53	92	99	1,175	1,015	2,190
as a percentage of the Canada total													
1990	2.1	0.6	4.9	2.2	13.0	15.1	5.7	3.0	4.7	5.7	57.0	43.0	100.0
1991	2.1	0.6	4.8	2.2	12.9	14.9	5.6	3.0	4.6	5.7	56.5	43.5	100.0
1992	2.0	0.5	4.3	2.1	13.6	16.0	4.7	3.3	4.5	5.0	56.1	43.9	100.0
1993	2.0	0.6	4.3	1.9	14.2	15.7	4.7	3.1	4.3	5.0	55.9	44.1	100.0
1994	1.9	0.6	4.8	1.6	12.8	14.4	4.5	2.7	5.3	5.9	55.0	45.0	100.0
1995	1.6	0.5	4.5	1.7	12.6	15.0	4.1	3.0	5.6	4.7	53.3	46.7	100.0
1996	1.4	0.6	4.4	1.8	12.6	19.5	4.3	2.6	5.1	4.4	57.1	42.9	100.0
1997	1.3	0.6	4.1	1.7	12.3	17.5	3.4	4.3	5.4	4.8	55.5	44.5	100.0
1998	1.5	0.6	4.4	1.8	13.0	15.8	2.8	3.1	5.4	4.9	53.5	46.5	100.0
1999 ^f	1.3	0.6	3.9	1.7	13.4	17.3	3.1	3.2	5.8	5.7	56.6	43.4	100.0
2000 ^f	1.4	0.8	4.2	1.3	16.8	15.1	3.3	3.0	5.6	5.3	57.3	42.7	100.0
2001	1.3	0.8	3.3	1.2	17.7	15.6	3.7	3.0	4.7	4.6	56.0	44.0	100.0
2002	1.4	0.4	3.5	2.1	16.9	14.8	3.3	2.4	4.2	4.5	53.6	46.4	100.0
in millions of dollars													
Funding													
1990	56	11	133	56	550	730	131	78	162	240	2,148	711	2,859
1991	54	12	135	54	568	746	133	84	168	258	2,213	733	2,946
1992	62	10	125	54	634	848	119	89	167	252	2,361	748	3,109
1993	59	12	120	63	660	849	121	87	164	251	2,388	767	3,156
1994	52	12	127	60	592	799	119	82	190	270	2,310	784	3,094
1995	42	11	113	60	580	756	108	81	207	234	2,193	796	2,989
1996	42	12	112	44	546	718	108	75	191	206	2,059	755	2,814
1997	40	11	107	42	547	741	88	96	195	200	2,074	740	2,814
1998	44	11	113	44	540	737	82	77	183	198	2,032	798	2,830
1999 ^f	48	14	113	49	665	868	98	103	218	238	2,420	796	3,216
2000 ^f	54	19	129	42	806	899	113	121	234	263	2,689	872	3,560
2001	52	20	121	45	999	1,128	124	123	284	289	3,188	907	4,095
2002	61	13	130	67	990	1,110	132	113	281	327	3,227	994	4,221
as a percentage of the Canada total													
1990	2.0	0.4	4.7	2.0	19.2	25.5	4.6	2.7	5.7	8.4	75.1	24.9	100.0
1991	1.8	0.4	4.6	1.8	19.3	25.3	4.5	2.9	5.7	8.8	75.1	24.9	100.0
1992	2.0	0.3	4.0	1.7	20.4	27.3	3.8	2.9	5.4	8.1	75.9	24.1	100.0
1993	1.9	0.4	3.8	2.0	20.9	26.9	3.8	2.8	5.2	8.0	75.7	24.3	100.0
1994	1.7	0.4	4.1	1.9	19.1	25.8	3.8	2.7	6.1	8.7	74.7	25.3	100.0
1995	1.4	0.4	3.8	2.0	19.4	25.3	3.6	2.7	6.9	7.8	73.4	26.6	100.0
1996	1.5	0.4	4.0	1.6	19.4	25.5	3.8	2.7	6.8	7.3	73.2	26.8	100.0
1997	1.4	0.4	3.8	1.5	19.4	26.3	3.1	3.4	6.9	7.1	73.7	26.3	100.0
1998	1.6	0.4	4.0	1.6	19.1	26.0	2.9	2.7	6.5	7.0	71.8	28.2	100.0
1999 ^f	1.5	0.4	3.5	1.5	20.7	27.0	3.0	3.2	6.8	7.4	75.2	24.8	100.0
2000 ^f	1.5	0.5	3.6	1.2	22.6	25.3	3.2	3.4	6.6	7.4	75.5	24.5	100.0
2001	1.3	0.5	3.0	1.1	24.4	27.5	3.0	3.0	6.9	7.1	77.9	22.1	100.0
2002	1.4	0.3	3.1	1.6	23.5	26.3	3.1	2.7	6.7	7.7	76.4	23.6	100.0

1. Includes the Yukon, Northwest Territories and Nunavut.

* Quebec and Ontario figures exclude federal government expenditures performed in the National Capital Region.

Table 7. R&D expenditures in the provinces by business enterprise, in terms of performing and funding, 1990 to 2002

Year	N.-L.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Total Canada ¹
in millions of dollars											
Performing											
1990	10	2	30	46	1,415	2,842	49	47	357	367	5,169
1991	10	2	26	30	1,520	2,952	64	54	349	348	5,355
1992 ^e	10	1	33	29	1,644	3,123	72	66	337	427	5,742
1993	11	2	44	41	1,802	3,507	90	60	396	471	6,424
1994 ^e	12	2	61	49	2,056	4,112	102	70	509	591	7,567
1995	11	3	64	52	2,277	4,320	96	74	491	602	7,991
1996 ^r	17	3	54	59	2,394	4,256	93	58	524	538	7,996
1997 ^r	14	2	54	37	2,519	4,833	89	82	546	564	8,741
1998 ^r	17	2	62	41	2,764	5,394	102	74	618	608	9,683
1999 ^r	18	3	62	40	3,047	5,799	148	78	490	714	10,401
2000 ^r	20	5	67	41	3,586	6,854	133	76	592	971	12,346
2001	20	6	79	39	4,061	7,608	179	85	704	1,065	13,847
2002	17	4	65	32	3,828	6,528	138	97	694	979	12,383
as a percentage of the Canada total											
1990	0.2	0.0	0.6	0.9	27.4	55.0	0.9	0.9	6.9	7.1	100.0
1991	0.2	0.0	0.5	0.6	28.4	55.1	1.2	1.0	6.5	6.5	100.0
1992 ^e	0.2	0.0	0.6	0.5	28.6	54.4	1.3	1.1	5.9	7.4	100.0
1993	0.2	0.0	0.7	0.6	28.1	54.6	1.4	0.9	6.2	7.3	100.0
1994 ^e	0.2	0.0	0.8	0.6	27.2	54.3	1.3	0.9	6.7	7.8	100.0
1995	0.1	0.0	0.8	0.7	28.5	54.1	1.2	0.9	6.1	7.5	100.0
1996 ^r	0.2	0.0	0.7	0.7	29.9	53.2	1.2	0.7	6.6	6.7	100.0
1997 ^r	0.2	0.0	0.6	0.4	28.8	55.3	1.0	0.9	6.2	6.5	100.0
1998 ^r	0.2	0.0	0.6	0.4	28.5	55.7	1.1	0.8	6.4	6.3	100.0
1999 ^r	0.2	0.0	0.6	0.4	29.3	55.8	1.4	0.7	4.7	6.9	100.0
2000 ^r	0.2	0.0	0.5	0.3	29.0	55.5	1.1	0.6	4.8	7.9	100.0
2001	0.1	0.0	0.6	0.3	29.3	54.9	1.3	0.6	5.1	7.7	100.0
2002	0.1	0.0	0.5	0.3	30.9	52.7	1.1	0.8	5.6	7.9	100.0
in millions of dollars											
Funding											
1990	6	2	23	43	1,197	1,996	41	44	315	289	3,960
1991	7	1	18	29	1,354	2,065	46	49	284	260	4,113
1992 ^e	7	1	25	29	1,444	2,181	55	62	301	335	4,445
1993	9	2	35	27	1,585	2,487	78	61	356	378	5,025
1994 ^e	11	2	54	35	1,810	2,880	90	71	448	465	5,874
1995	14	3	57	36	2,005	3,086	86	72	437	483	6,288
1996 ^r	18	2	49	60	2,142	3,108	87	60	467	388	6,396
1997 ^r	19	2	38	41	2,219	3,574	96	80	487	460	7,032
1998 ^r	23	3	44	45	2,461	3,591	105	57	482	531	7,356
1999 ^r	18	2	63	43	2,721	3,852	120	72	407	608	7,918
2000 ^r	21	5	67	45	3,196	4,241	140	77	508	833	9,150
2001	15	6	75	39	3,578	5,622	184	83	683	923	11,225
2002	23	4	64	36	3,390	5,646	138	101	739	864	11,024
as a percentage of the Canada total											
1990	0.2	0.1	0.6	1.1	30.2	50.4	1.0	1.1	8.0	7.3	100.0
1991	0.2	0.0	0.4	0.7	32.9	50.2	1.1	1.2	6.9	6.3	100.0
1992 ^e	0.2	0.0	0.6	0.7	32.5	49.1	1.2	1.4	6.8	7.5	100.0
1993	0.2	0.0	0.7	0.5	31.5	49.5	1.6	1.2	7.1	7.5	100.0
1994 ^e	0.2	0.0	0.9	0.6	30.8	49.0	1.5	1.2	7.6	7.9	100.0
1995	0.2	0.0	0.9	0.6	31.9	49.1	1.4	1.1	6.9	7.7	100.0
1996 ^r	0.3	0.0	0.8	0.9	33.5	48.6	1.4	0.9	7.3	6.1	100.0
1997 ^r	0.3	0.0	0.5	0.6	31.6	50.8	1.4	1.1	6.9	6.5	100.0
1998 ^r	0.3	0.0	0.6	0.6	33.5	48.8	1.4	0.8	6.6	7.2	100.0
1999 ^r	0.2	0.0	0.8	0.5	34.4	48.6	1.5	0.9	5.1	7.7	100.0
2000 ^r	0.2	0.1	0.7	0.5	34.9	46.3	1.5	0.8	5.6	9.1	100.0
2001	0.1	0.1	0.7	0.3	31.9	50.1	1.6	0.7	6.1	8.2	100.0
2002	0.2	0.0	0.6	0.3	30.8	51.2	1.3	0.9	6.7	7.8	100.0

1. Includes the Yukon, Northwest Territories and Nunavut and Industry funding of federal R&D in the NCR.

The business enterprises' participation in the performance of provincial R&D accounts for more than 50% of R&D in the provinces of Ontario, Quebec and British Columbia. The share of the federal government's performance dollars for provincial R&D is more significant in the Atlantic provinces, Manitoba and Saskatchewan than in the other provinces.

Table 8. Provincial distribution of R&D by performing sectors, 2002													
Performing Sector	N.-L.	P.E.I.	N.S.	N.B.	Que.*	Ont.*	Man.	Sask.	Alta.	B.C.	Subtotal Canada ¹	NCR	Total Canada ¹
in millions of dollars													
Federal government	31	8	76	46	371	324	72	53	92	99	1,175	1,015	2,190
Provincial governments ²	5	0	6	4	82	76	3	10	108	21	315	0	315
Business enterprise	17	4	65	32	3,828	6,528	138	97	694	979	12,383	0	12,383
Higher Education ³	95	19	226	102	2,170	2,886	231	259	747	747	7,482	0	7,482
All sectors	148	31	373	184	6,451	9,814	444	419	1,641	1,846	21,355	1,015	22,370
as a percentage of the provincial total													
Federal government	20.9	25.8	20.4	25.0	5.8	3.3	16.2	12.6	5.6	5.4	5.5	100.0	9.8
Provincial governments ²	3.4	0.0	1.6	2.2	1.3	0.8	0.7	2.4	6.6	1.1	1.5	0.0	1.4
Business enterprise	11.5	12.9	17.4	17.4	59.3	66.5	31.1	23.2	42.3	53.0	58.0	0.0	55.4
Higher Education ³	64.2	61.3	60.6	55.4	33.6	29.4	52.0	61.8	45.5	40.5	35.0	0.0	33.4
All sectors	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
as a percentage of the Canada total													
Federal government	1.4	0.4	3.5	2.1	16.9	14.8	3.3	2.4	4.2	4.5	53.7	46.3	100.0
Provincial governments ²	1.6	0.0	1.9	1.3	26.0	24.1	1.0	3.2	34.3	6.7	100.0	0.0	100.0
Business enterprise	0.1	0.0	0.5	0.3	30.9	52.7	1.1	0.8	5.6	7.9	100.0	0.0	100.0
Higher Education ³	1.3	0.3	3.0	1.4	29.0	38.6	3.1	3.5	10.0	10.0	100.0	0.0	100.0
All sectors	0.7	0.1	1.7	0.8	28.8	43.9	2.0	1.9	7.3	8.3	95.5	4.5	100.0

1. Includes the Yukon, Northwest Territories and Nunavut.

2. Includes provincial research councils and foundations.

3. Includes private non-profit institutions.

* Quebec and Ontario figures exclude federal government expenditures performed in the National Capital Region.

Table 9. Provincial distribution of R&D by funding sectors, 2002

Funding Sector	N.-L.	P.E.I.	N.S.	N.B.	Que.*	Ont.*	Man.	Sask.	Alta.	B.C.	Subtotal Canada ¹	NCR	Total Canada ¹
in millions of dollars													
Federal government	61	13	130	67	990	1,110	132	113	281	327	3,227	994	4,221
Provincial governments ²	7	0	13	5	374	400	22	45	210	103	1,179	3	1,182
Business enterprise	23	4	64	36	3,390	5,646	138	101	739	864	11,006	18	11,024
Higher Education ³	55	14	145	74	1,175	1,540	135	151	375	395	4,059	0	4,059
Foreign	2	0	21	2	522	1,118	17	9	36	157	1,884	0	1,884
All sectors	148	31	373	184	6,451	9,814	444	419	1,641	1,846	21,355	1,015	22,370
as a percentage of the provincial total													
Federal government	41.2	41.9	34.9	36.4	15.3	11.3	29.7	27.0	17.1	17.7	15.1	97.9	18.9
Provincial governments ²	4.7	0.0	3.5	2.7	5.8	4.1	5.0	10.7	12.8	5.6	5.5	0.3	5.3
Business enterprise	15.5	12.9	17.2	19.6	52.5	57.5	31.1	24.1	45.0	46.8	51.5	1.8	49.3
Higher Education ³	37.2	45.2	38.9	40.2	18.2	15.7	30.4	36.0	22.9	21.4	19.0	0.0	18.1
Foreign	1.4	0.0	5.6	1.1	8.1	11.4	3.8	2.1	2.2	8.5	8.8	0.0	8.4
All sectors	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
as a percentage of the Canada total													
Federal government	1.4	0.3	3.1	1.6	23.5	26.3	3.1	2.7	6.7	7.7	76.5	23.5	100.0
Provincial governments ²	0.6	0.0	1.1	0.4	31.6	33.8	1.9	3.8	17.8	8.7	99.7	0.3	100.0
Business enterprise	0.2	0.0	0.6	0.3	30.8	51.2	1.3	0.9	6.7	7.8	99.8	0.2	100.0
Higher Education ³	1.4	0.3	3.6	1.8	28.9	37.9	3.3	3.7	9.2	9.7	100.0	0.0	100.0
Foreign	0.1	0.0	1.1	0.1	27.7	59.3	0.9	0.5	1.9	8.3	100.0	0.0	100.0
All sectors	0.7	0.1	1.7	0.8	28.8	43.9	2.0	1.9	7.3	8.3	95.5	4.5	100.0

1. Includes the Yukon, Northwest Territories and Nunavut.

2. Includes provincial research councils and foundations.

3. Includes private non-profit institutions.

* Quebec and Ontario figures exclude federal government expenditures performed in the National Capital Region.

Table 10. R&D Expenditures Performed by the Federal Government in the National Capital Region, 1990 to 2002			
Year	National Capital Region Quebec	National Capital Region Ontario	National Capital Region Total
in millions of dollars			
1990	16	695	711
1991	16	717	733
1992	16	737	753
1993	15	759	774
1994	43	746	789
1995	30	775	805
1996 ^f	21	750	771
1997 ^f	20	737	757
1998 ^f	30	781	812
1999 ^f	33	775	808
2000 ^f	39	850	889
2001	41	885	926
2002	65	950	1,015

GERD estimates have improved in recent years through changes made in the estimation of higher education R&D values (HERD). Details on revisions made to the estimation procedure are published in "Estimation of research and development expenditures in the higher education sector, 2002-2003". More improvements to HERD are expected in future years as investigations into the estimation procedures continue.

More details of the GERD can be found in the working paper titled "Estimates of Canadian research and development expenditures (GERD), Canada, 1993 to 2004^p, and by province 1993 to 2002". This paper provides more detail for both Canada and the provinces in the matrix format.

Note of appreciation

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Symbols

The following standard symbols are used in Statistics Canada publications:

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

This publication was prepared by **Christine Delorey** under the direction of **Janet Thompson**, Science, Innovation and Electronic Information Division.

Current publications of the Science and Innovation Surveys Section include:

Industrial Research and Development, 2004 Intentions, (with 2003 preliminary estimates and 2002 actual expenditures), catalogue No. 88-202-XIE, annual. It presents statistics on research and development (R&D) activities performed and funded by Canadian business enterprises. The report covers current and capital expenditures on R&D, R&D as a percent of performing company revenues, R&D expenditures by province, country of control of company, personnel engaged in R&D and payments for technological services.

<http://www.statcan.ca/english/IPS/Data/88-202-XIE.htm>

Federal Scientific Activities, 2003-2004, Catalogue No. 88-204-XIE, annual. It presents statistics on the federal government's activities in science and technology (S&T). It covers expenditures and person-years by type of science, performing sectors, provinces, Federal departments and agencies.

<http://www.statcan.ca/english/IPS/Data/88-204-XIE.htm>