



## **A Portrait of Canadian R&D**

Produced by the

Policy and International Relations Division  
Natural Sciences and Engineering  
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## List of Abbreviations

BERD	Business Enterprise Expenditures on R&D
GERD	Gross Expenditures on R&D
GDP	Gross Domestic Product
GOVERD	Government Expenditures on R&D
HERD	Higher Education Expenditures on R&D
NSE	Natural Sciences and Engineering
PPP	Purchasing Power Parity

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## 1.0 Canadian Landscape

There are 68 universities eligible to administer NSERC grants and endorse applications from their faculty. Of these, 13 are considered as research intensive, 17 are medium-sized institutions, and the rest are considered small (receiving less than \$3 millions in Discovery Grants). Research intensive institutions generally are in Canada's metropolitan areas (Vancouver, Edmonton, Calgary, Toronto, London, Montréal, Québec City, Halifax), while the majority of the small universities are in regions.

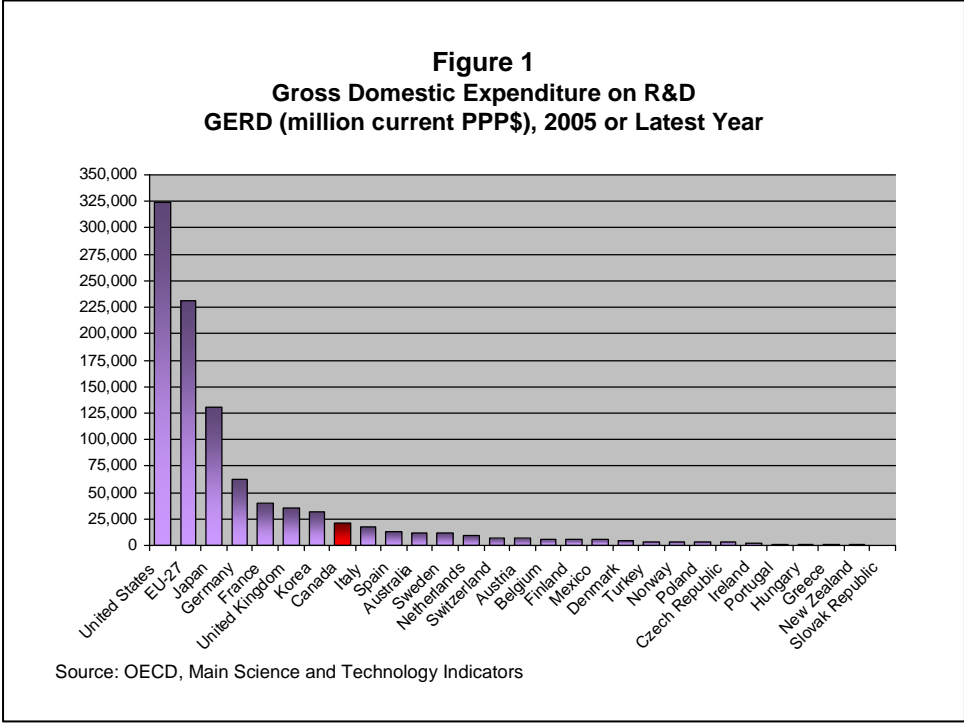
The map below shows the locations of the members of the Association of Universities and Colleges of Canada – AUCC (some of these institutions are liberal arts institutions, that do not perform research in the NSE)



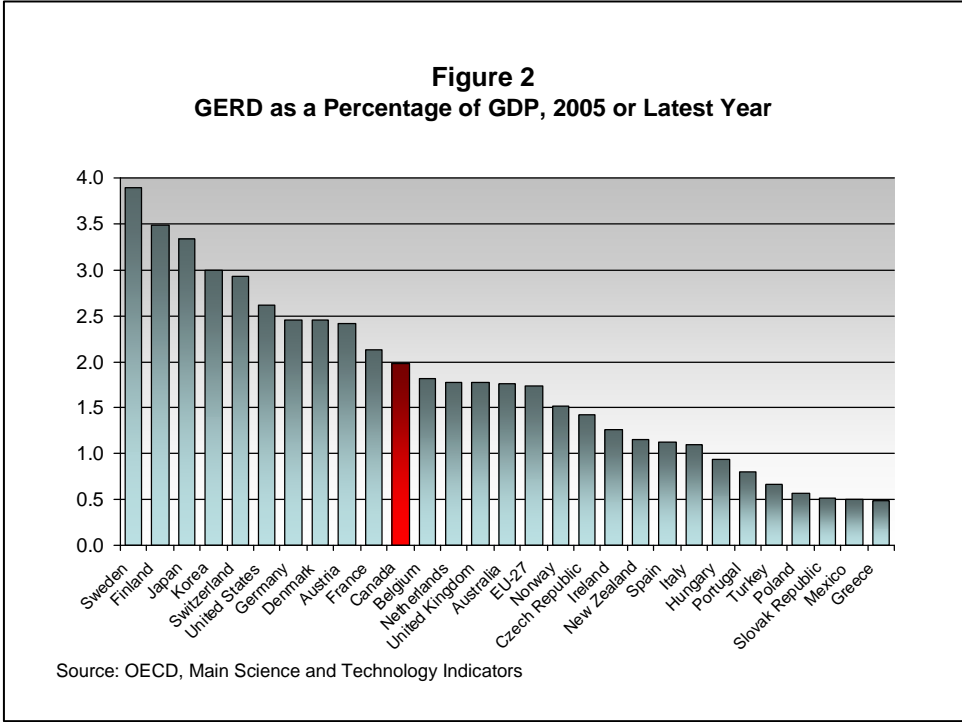
Source: AUCC

## 2.0 Canadian R&D and International Comparisons

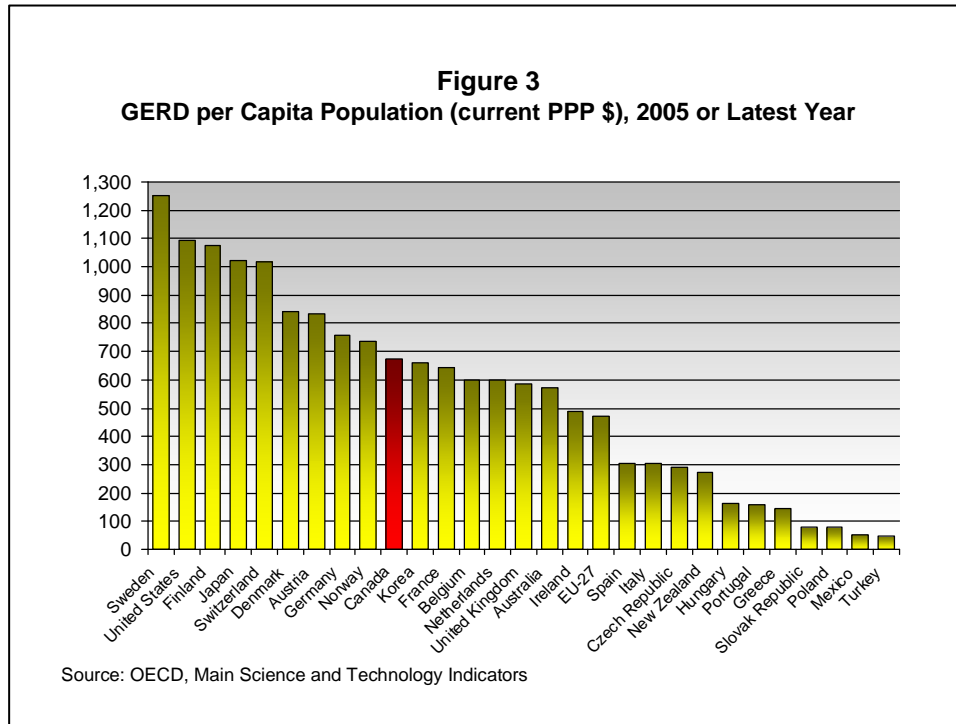
Canada is a leading R&D nation with an annual expenditure of more than \$25B Canadian. Figure 1 presents OECD countries in order of their gross expenditures on R&D (GERD), placing Canada in 7<sup>th</sup> spot. Canada conducts 2.8% of the OECD R&D total.



When measured as a percentage of gross domestic product (GDP), Canada's GERD to GDP ratio stands at 2%. This figure is lower than the 2.25% OECD average. Figure 2 presents the GERD to GDP ratio which places Canada in 11<sup>th</sup> spot.



Another means to compare countries is the GERD per capita figure. Figure 3 presents the GERD per capita figures for OECD countries, for which, Canada's value is \$675 PPP. Canada's ranking for the GERD per capita ratio is 10<sup>th</sup> place.

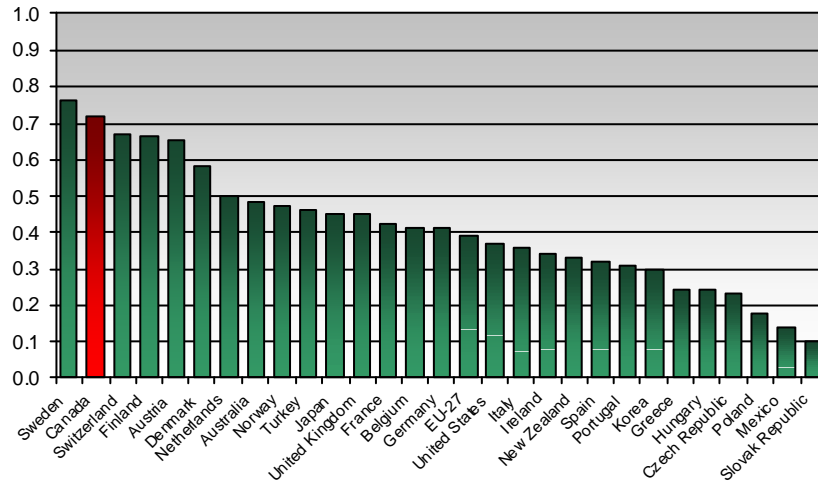


Overall, Canada is a significant R&D player but one that is not as R&D intensive as many other OECD countries, namely Sweden, Finland, Switzerland, Japan, U.S., Germany or Denmark.

An analysis of the R&D contributions by sector (business, higher education, government) in Figures 4 to 9 indicates the following:

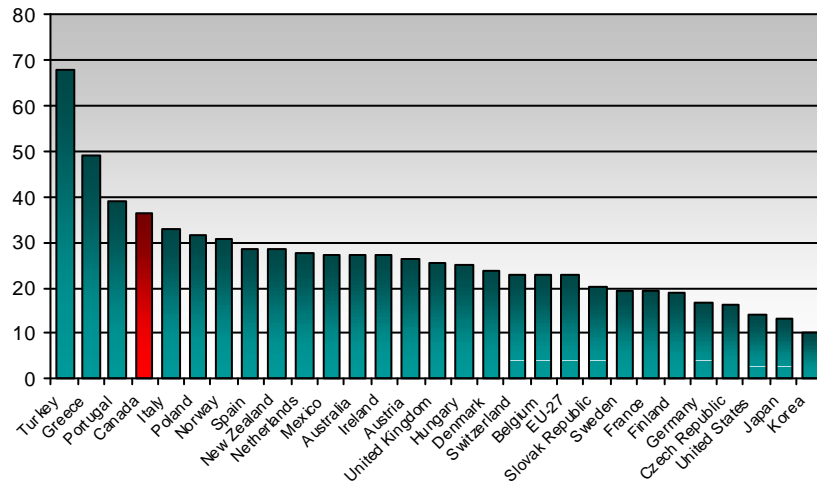
- Canada stands in 2<sup>nd</sup> place for higher education R&D expenditures as a percentage of GDP (Figure 4). In 2005, this sector accounted for more than 35% Canada's R&D (Figure 5, across all fields).
- The situation is considerably worse for Canada's business sector as compared to leading nations. As Figures 6 and 7 indicate, the business sector in Canada spends less on R&D as a percentage of GDP than all other G& nations except for Italy. Only slightly more than 50% of Canada's R&D is performed by the business sector.
- The government sector is the smallest R&D performing sector for almost every OECD country, Canada included (Figure 8). Less than 10% of Canadian R&D is carried out by government researchers (Figure 9). This R&D sector has been contracting in the country for the past decade.

**Figure 4**  
**HERD as a Percentage of GDP, 2005 or Latest Year**



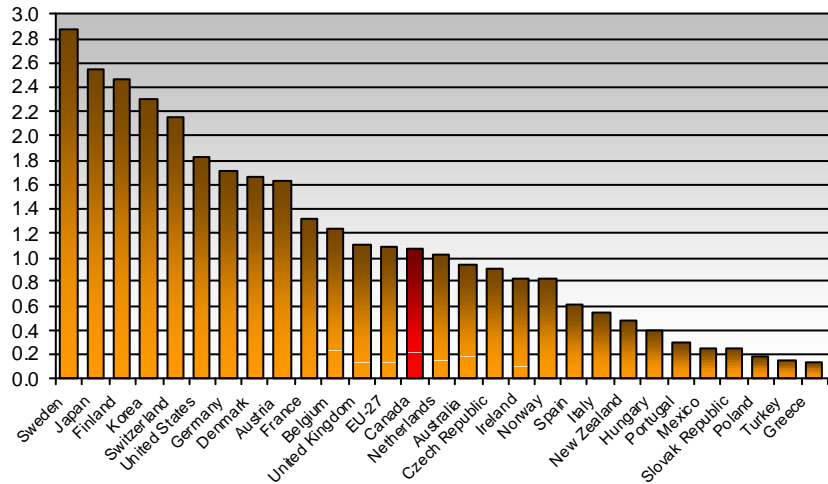
Sources: OECD, Main Science and Technology Indicators

**Figure 5**  
**Percentage of GERD Performed by the Higher Education Sector, 2005 or Latest Year**



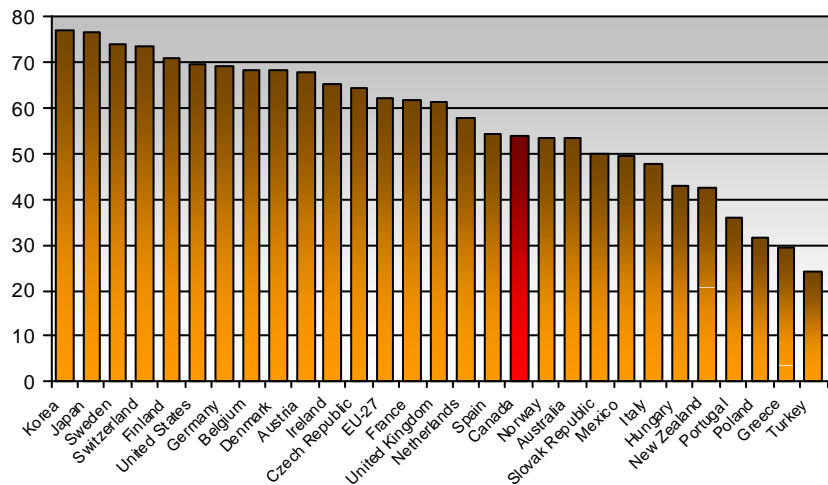
Sources: OECD, Main Science and Technology Indicators

**Figure 6**  
BERD as a Percentage of GDP, 2005 or Latest Year



Sources: OECD, Main Science and Technology Indicators

**Figure 7**  
Percentage of GERD Performed by the Business Enterprise Sector, 2005 or Latest Year



Sources: OECD, Main Science and Technology Indicators

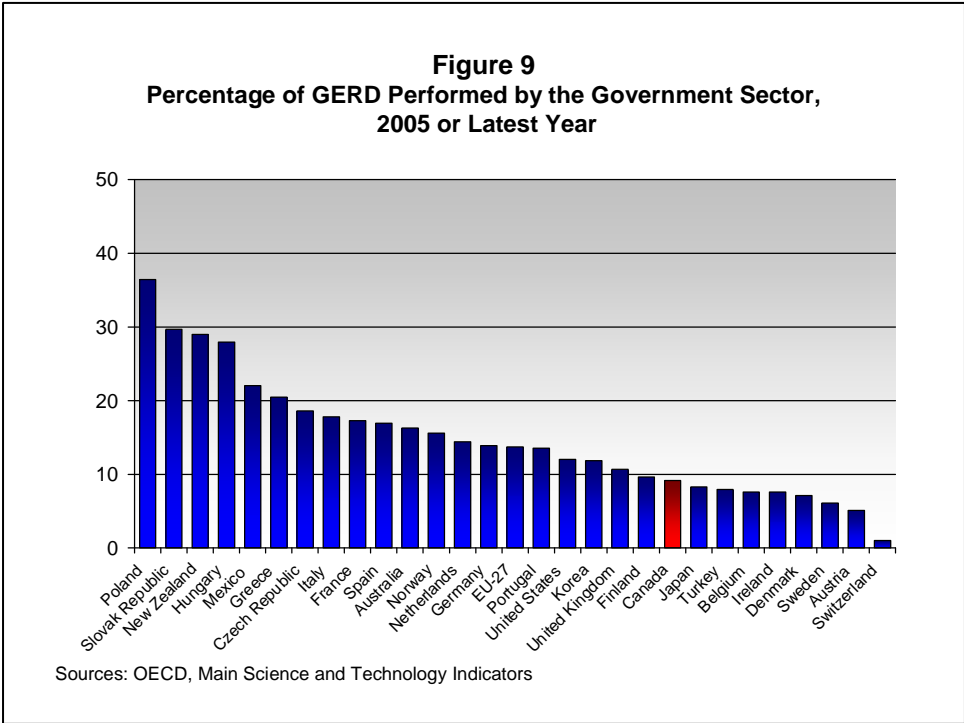
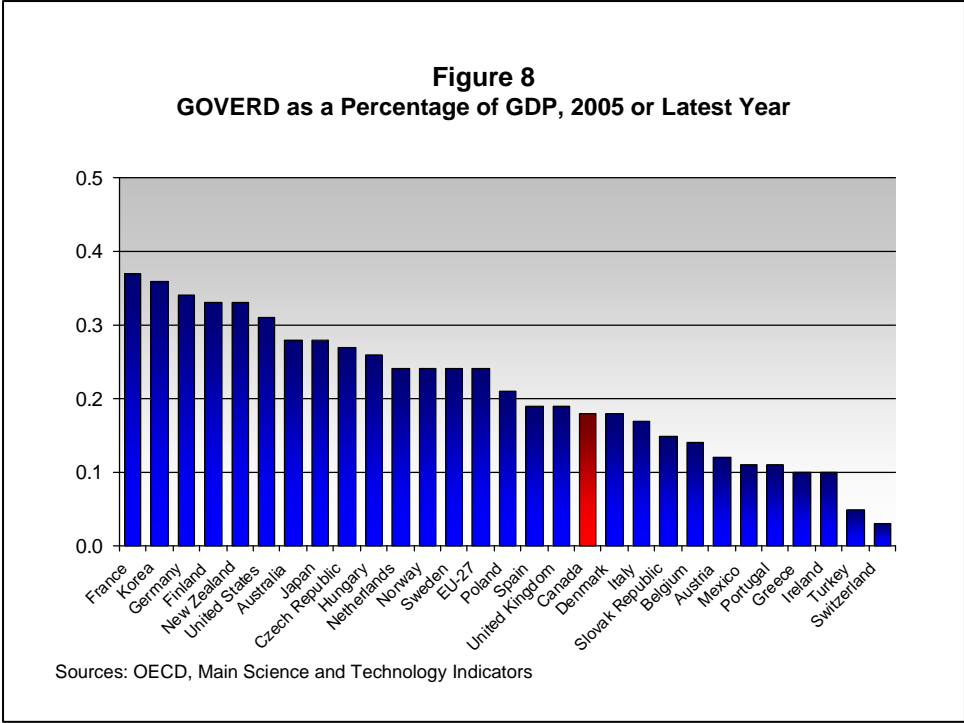


Table 1 presents key R&D data for the OECD and as presented in Figures 1 to 9.

Table 1  
OECD R&D Indicators

	GERD (\$M PPP)		GERD % GDP		GERD per Capita (\$M PPP)		Percentage of R&D Performed by Sector				HERD % GDP (\$M PPP)		HERD % GDP (\$M PPP)		GOVERNMENT % GDP (\$M PPP)		GOVERNMENT % GDP (\$M PPP)		Total Population (000's)		Total Employment (000's)	
							Higher Education	Business Enterprise	Government	Private Non-profit	BERD (\$M PPP)	BERD % GDP	HERD % GDP (\$M PPP)	HERD % GDP (\$M PPP)	GOVERNMENT % GDP (\$M PPP)	GOVERNMENT % GDP (\$M PPP)						
Australia	11,603	1,76	574	81,740	53.5	27.2	16.2	3.1	6.213	0.94	3,151	0.48	47734	1,876	0.28	701,026	20,474	10,018				
Austria	6,844	2.42	831	25,955	67.7	26.7	5.1	0.4	4,637	1.64	1,827	0.65	8,281	352	0.12	283,167	8,233	4,158				
Belgium	6,291	1.82	601	31,465	68.3	22.8	7.7	1.3	4,294	1.24	1,433	0.41	12,742	482	0.14	345,596	10,474	4,212				
Canada	21,777	1.98	675	125,330	53.9	36.4	9.2	0.4	11,745	1.07	7,934	0.72	41,380	2,002	0.18	1,099,064	32,271	16,438				
Czech Republic	2,996	1.42	293	16,300	64.5	16.4	18.7	0.5	1,932	0.92	490	0.23	4,274	560	0.27	210,884	10,234	5,009				
Denmark	4,521	2.45	843	26,167	68.3	23.8	7.2	0.7	3,088	1.67	1,078	0.58	7,846	326	0.18	184,740	5,419	2,767				
Finland	5,648	3.48	1,077	41,004	70.8	19.0	9.6	0.6	4,000	2.47	1,075	0.66	13,037	540	0.33	162,161	5,245	2,398				
France	40,392	2.13	644	200,064	61.9	19.5	17.3	1.2	25,018	1.32	7,880	0.42	65,498	6,997	0.37	1,897,778	62,702	25,028				
Germany	62,493	2.46	758	270,649	69.3	16.9	13.9	n/a	43,297	1.71	10,532	0.41	65,764	8,664	0.34	2,557,961	82,464	38,823				
Greece	1,601	0.49	144	15,631	29.3	49.3	20.5	0.9	469	0.14	789	0.24	9,072	328	0.10	328,435	11,104	4,625				
Hungary	1,664	0.94	165	14,904	43.2	25.1	28.0	n/a	718	0.41	418	0.24	5,902	466	0.26	176,360	10,087	3,879				
Iceland	301	2.81	1,017	1,917	51.5	22.0	23.5	3.0	155	1.45	66	0.62	562	71	0.66	10,705	296	n/a				
Ireland	2,037	1.26	491	11,010	65.3	27.0	7.7	n/a	1,330	0.83	550	0.34	4,151	157	0.10	161,176	4,149	1,956				
Italy	17,726	1.10	305	72,012	47.8	32.8	17.8	1.5	9,057	0.55	5,816	0.36	28,226	2,759	0.17	1,651,073	58,607	24,333				
Japan	130,745	3.33	1,023	677,206	76.4	13.4	8.3	1.9	99,952	2.54	17,525	0.45	177,421	10,839	0.28	3,931,959	127,773	63,918				
Korea	31,959	2.99	662	156,220	76.9	9.9	11.9	1.4	24,562	2.30	3,173	0.30	25,522	3,791	0.36	1,067,214	48,294	22,832				
Luxembourg	501	1.56	1,094	2,031	86.2	1.5	12.2	n/a	432	1.34	8	0.02	143	61	0.19	32,123	457	307				
Mexico	5,641	0.50	54	44,614	49.5	27.4	22.1	1.0	2,789	0.25	1,547	0.14	16,043	1,247	0.11	1,119,071	103,831	40,792				
Netherlands	9,730	1.78	598	37,282	57.8	27.9	14.4	0.0	5,834	1.02	2,711	0.50	10,211	1,378	0.24	573,020	16,316	8,208				
New Zealand	1,094	1.15	273	15,568	42.5	28.5	28.9	n/a	465	0.49	312	0.33	9,701	317	0.33	106,422	4,101	1,646				
Norway	3,396	1.52	735	21,163	53.7	30.7	15.6	n/a	1,824	0.82	1,043	0.47	6,800	530	0.24	222,665	4,622	2,346				
Poland	3,018	0.57	79	60,944	31.8	31.6	36.4	0.3	958	0.18	953	0.18	39,716	1,097	0.21	530,992	38,161	13,171				
Portugal	1,688	0.80	160	20,623	36.2	39.1	13.6	11.0	611	0.29	661	0.31	10,600	230	0.11	211,575	10,549	5,131				
Slovak Republic	459	0.51	82	10,718	49.8	20.4	29.7	0.1	219	0.25	90	0.10	6,509	130	0.15	86,104	5,387	2,084				
Spain	13,264	1.12	306	100,994	54.4	28.6	16.9	0.1	7,212	0.61	3,793	0.32	51,616	2,242	0.19	1,189,114	43,398	19,212				
Sweden	11,287	3.89	1,250	48,784	74.0	19.6	6.1	0.3	8,355	2.88	2,209	0.76	17,794	690	0.24	289,963	9,030	4,328				
Switzerland	7,584	2.93	1,017	25,400	73.7	22.9	1.1	2.3	5,592	2.16	1,737	0.67	24,472	81	0.03	267,408	7,501	4,183				
Turkey	3,485	0.67	49	33,876	24.2	67.9	8.0	n/a	843	0.16	2,365	0.46	2,365	277	0.05	555,681	72,065	21,753				
United Kingdom	35,171	1.78	584	n/a	61.6	25.6	10.6	2.2	21,671	1.10	9,000	0.45	n/a	3,714	0.19	1,978,756	60,218	30,848				
United States	324,465	2.62	1,094	1,415,873	69.6	14.1	12.0	4.3	225,984	1.82	45,831	0.37	n/a	38,829	0.31	12,397,900	296,677	143,980				
EU-27	230,982	1.74	470	1,241,253	62.5	22.7	13.8	1.0	144,408	1.09	52,322	0.39	450,690	31,894	0.24	--	--	--				
<b>Total OECD</b>	<b>771,510</b>	<b>2.25</b>	<b>659</b>	<b>3,790,814</b>	<b>67.9</b>	<b>17.7</b>	<b>11.8</b>	<b>2.6</b>	<b>524,204</b>	<b>1.53</b>	<b>136,528</b>	<b>0.40</b>	<b>n/a</b>	<b>91,244</b>	<b>0.27</b>	<b>--</b>	<b>--</b>	<b>--</b>				

Source: OECD Main Science and Technology Indicators.

## 3.0 Canadian R&D in the Natural Sciences and Engineering

### 3.1 R&D Performers

In 2006, Canadian R&D expenditures came in at \$28.4 billion (Cdn.) of which 52% was conducted by industry, 39% by industry and the remaining 9% by government laboratories (see Figure 10). Sixty-nine percent, or \$19.462 billion, of the Canadian R&D expenditures in 2006 were in the natural sciences and engineering (NSE). Leading NSE R&D performers included industry at 65.3% of the NSE total, the higher education sector at 23.6% and the government sector at 9.4% (see Figure 11). Figure 12 presents the past decade performance of R&D in the NSE by sector. As shown in the figure, the business enterprise share of NSE R&D performance has been falling, while the higher education share has been climbing.

As noted in Figure 10, the university or higher education sector performs 39% of the R&D in Canada. The \$10.9 billion (Cdn.) of university R&D in 2006 by discipline is shown in Figure 13. Forty-two percent or \$4.6 billion of university R&D is conducted in the natural sciences and engineering.

### 3.2 R&D Funders

Figure 14 presents a breakdown of the funding sources for the \$4.6 billion in NSE university R&D. Universities themselves account for 40% of the R&D funding, however, this funding is almost entirely for faculty salaries and indirect costs of research. NSERC is the next most important funder, coming in at 16% of the total. Ten-year funding trends for NSE R&D in the university sector are presented in Figure 15. The federal and provincial government shares of funding have been rising over the past ten years. Table 2 presents the funding data for university R&D in the NSE.

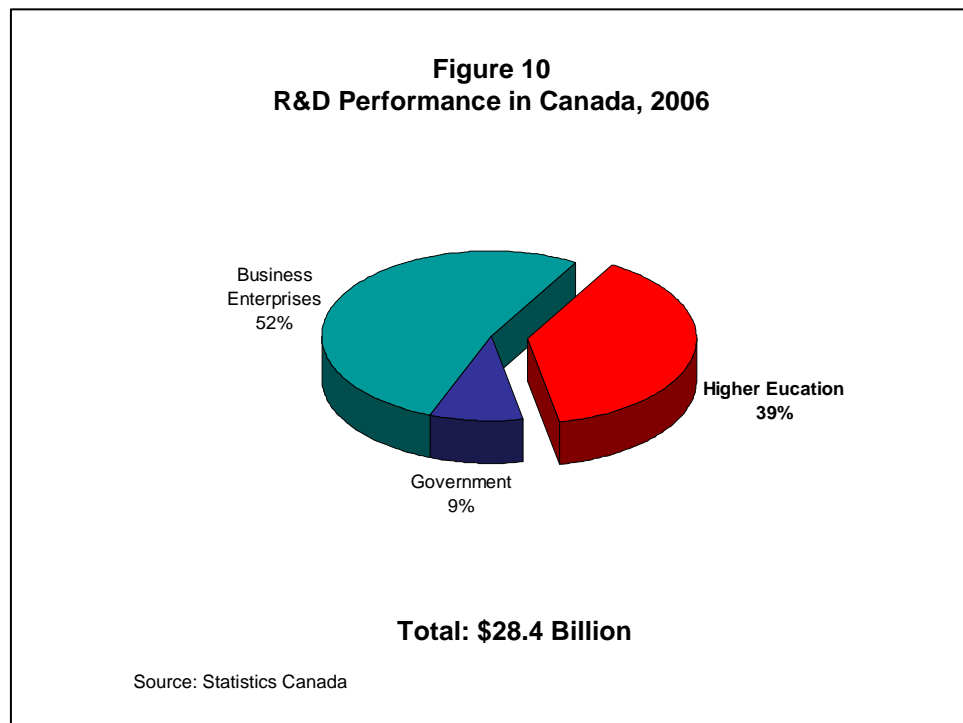
Appendix 1 presents information about the CFI and other federal organizations supporting research.

## 4.0 Major Canadian R&D Players

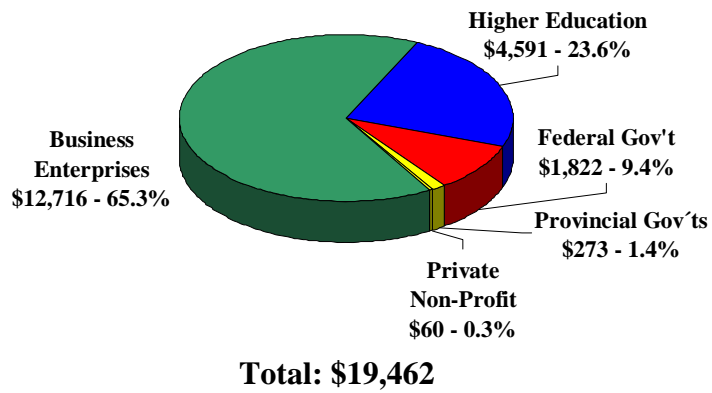
Table 3 presents the top 50 R&D companies in Canada. The list includes a mix of homegrown companies and some large multinationals. Only the top 22 firms spend more than \$100 million per year on R&D. Only a handful of Canadian companies are ranked as one of the top R&D

firms in the world. Thirty-seven of the top 50 firms collaborate with NSERC on research and training projects.

Table 4 presents the top 50 university R&D performers in Canada. The University of Toronto is by far the largest R&D performing university in the country at \$709 million in sponsored research. By 17<sup>th</sup> position the amount of sponsored research falls below \$100 million. Table 5 presents similar data for U.S. institutions. The top U.S. institution (Johns Hopkins) is more than twice as large as the University of Toronto in terms of R&D performance. Only 6 Canadian universities would qualify to be part of the top 50 U.S. institutions for R&D.

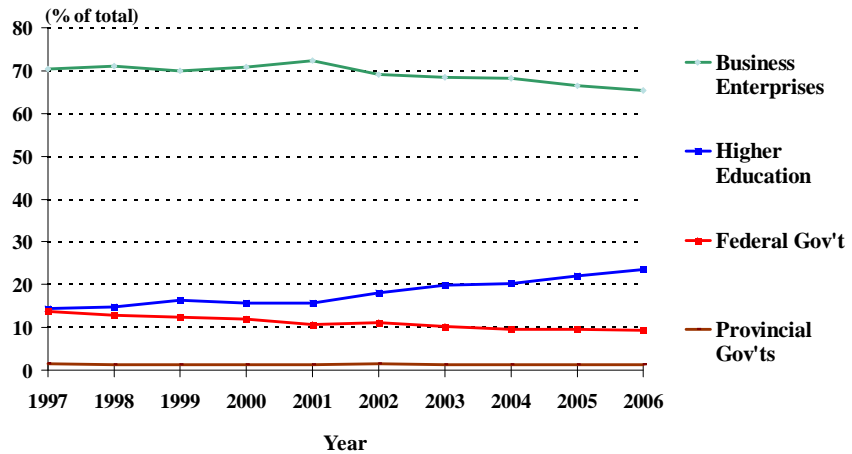


**Figure 11**  
**GERD (NSE) by Performing Sector 2006**  
 (millions of dollars)



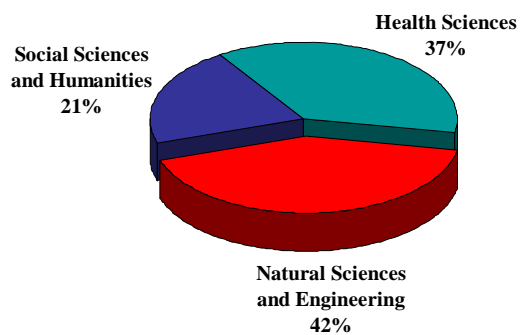
Source: Statistics Canada.

**Figure 12**  
**GERD (NSE) by Performing Sector**



Source: Statistics Canada.

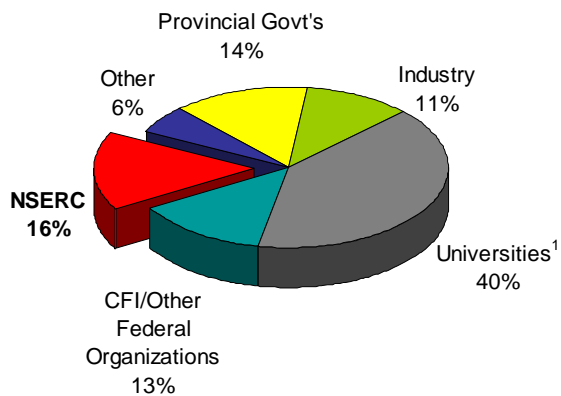
**Figure 13**  
**University R&D Performance in Canada, 2006**



**Total: \$10.9 Billion**

Source: Statistics Canada

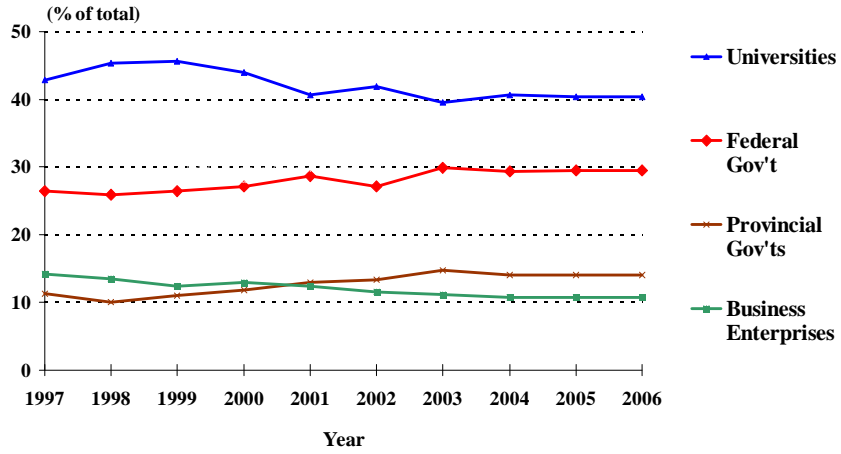
**Figure 14**  
**University R&D Funding in the Natural Sciences and Engineering, 2006**



**Total: \$4.6 Billion**

1. Includes faculty salaries and indirect costs related to research.  
 Source: Statistics Canada

**Figure 15**  
**Canadian University R&D (NSE) Funding**



Source: Statistics Canada.

**Table 2**  
**Canadian University R&D Funding in the Natural Sciences and Engineering**

Year	Federal Government		Provincial Governments		Business Enterprises		Universities		Private Non-Profit		Foreign		Total	
	\$M	% of Total	\$M	% of Total	\$M	% of Total	\$M	% of Total	\$M	% of Total	\$M	% of Total	\$M	% of Total
1997	431	26.4	185	11.3	231	14.2	700	42.9	60	3.7	24	1.5	1,631	1,631
1998	476	25.9	186	10.1	248	13.5	833	45.3	65	3.5	30	1.6	1,838	1,845
1999	581	26.4	241	11.0	273	12.4	1,002	45.6	66	3.0	34	1.5	2,197	2,169
2000	673	27.1	294	11.8	320	12.9	1,092	43.9	78	3.1	30	1.2	2,487	2,357
2001	792	28.6	356	12.9	342	12.4	1,127	40.7	100	3.6	50	1.8	2,767	2,593
2002	836	27.1	414	13.4	358	11.6	1,294	41.9	122	4.0	61	2.0	3,085	2,862
2003	1,032	29.9	508	14.7	387	11.2	1,368	39.6	116	3.4	46	1.3	3,457	3,100
2004	1,085	29.4	519	14.0	394	10.7	1,505	40.7	134	3.6	58	1.6	3,695	3,219
2005	1,230	29.5	584	14.0	447	10.7	1,681	40.3	165	4.0	66	1.6	4,173	3,524
2006	1,353	29.5	643	14.0	492	10.7	1,849	40.3	182	4.0	72	1.6	4,591	3,794

Source: Statistics Canada

**Table 3**  
**Canada's Top 50 Corporate R&D Spenders 2006**

Rank 2005	Company	FYR 2005 (\$000)			Industry Sector
		R&D Expenditures	Revenue	R&D as % of Revenue**	
1	Nortel Networks Corporation*	\$2,248,730	\$12,749,667	17.6	Comm/telecom equipment
2	Bell Canada	\$1,740,000	\$17,250,000	10.1	Telecommunications services
3	Magna International Inc.*	\$823,888	\$27,637,808	3.0	Automotive
4	Pratt & Whitney Canada Corp. (fs)	\$472,000	\$2,700,000	17.5	Aerospace
5	ATI Technologies Inc.*	\$451,372	\$2,692,792	16.8	Computer equipment
6	IBM Canada Ltd. (fs)	\$343,000	\$5,500,000	6.2	Software and computer services
7	Alcan Inc.*	\$275,033	\$24,619,712	1.1	Mining and metals
8	Atomic Energy of Canada Limited	\$264,092	\$286,567	92.2	Energy/oil and gas
9	Bombardier Inc.*	\$212,030	\$17,842,022	1.2	Aerospace
10	Ericsson Canada Inc. (fs)	\$201,000	\$610,000	33.0	Comm/telecom equipment
11	Alcatel Canada Inc. (fs)	\$194,000	nd	-	Comm/telecom equipment
12	Apotex Inc.	\$183,141	\$1,000,000	18.3	Pharmaceuticals/biotechnology
13	Pfizer Canada Inc. (fs)	\$178,730	\$2,162,707	8.3	Pharmaceuticals/biotechnology
14	GlaxoSmithKline Inc. (fs)	\$135,535	\$975,125	13.9	Pharmaceuticals/biotechnology
15	Cognos Incorporated*	\$128,354	\$1,000,213	12.8	Software and computer services
16	TELUS Corporation	\$125,000	\$8,142,700	1.5	Telecommunications services
17	Research In Motion Limited*	\$122,590	\$1,636,202	7.5	Comm/telecom equipment
18	Merck Frosst Canada Ltd. (fs)	\$117,019	\$606,897	19.3	Pharmaceuticals/biotechnology
19	Suncor Energy Inc.	\$108,000	\$11,084,000	1.0	Energy/oil and gas
20	Biovail Corporation*	\$107,692	\$1,133,495	9.5	Pharmaceuticals/biotechnology
21	CAE Inc.	\$107,643	\$986,200	10.9	Aerospace
22	PMC Sierra, Ltd. (fs)	\$103,072	\$200,505	51.4	Electronic parts and components
23	EnCana Corporation*	\$96,933	\$20,356,092	0.5	Energy/oil and gas
24	AstraZeneca Canada Inc. (fs)	\$96,703	\$1,184,761	8.2	Pharmaceuticals/biotechnology
25	Hydro-Québec	\$96,000	\$10,890,000	0.9	Electrical power and utilities
26	Tembec Inc.	\$94,411	\$3,585,000	2.6	Forest and paper products
27	Sanofi Pasteur Limited (fs)	\$92,837	\$325,900	28.5	Pharmaceuticals/biotechnology
28	Honeywell Canada (fs)	\$92,131	\$1,302,048	7.1	Aerospace
29	Ballard Power Systems Inc.*	\$91,466	\$65,103	140.5	Energy/oil and gas
30	QLT Inc.*	\$90,382	\$293,174	30.8	Pharmaceuticals/biotechnology
31	MDS Inc.	\$87,000	\$1,489,000	5.8	Health services
32	Zarlink Semiconductor Inc.*	\$78,996	\$259,525	30.4	Comm/telecom equipment
33	Open Text Corporation*	\$78,922	\$502,606	15.7	Software and computer services
34	CGI Group Inc.	\$78,200	\$3,685,986	2.1	Software and computer services
35	sanofi-aventis Canada Inc. (fs)	\$72,246	\$664,911	10.9	Pharmaceuticals/biotechnology
36	Vasogen Inc.	\$71,635	\$0	-	Pharmaceuticals/biotechnology
37	Geac Computer Corporation Limited* +	\$70,125	\$538,425	13.0	Software and computer services
38	Imperial Oil Limited	\$68,000	\$27,797,000	0.2	Energy/oil and gas
39	Novartis Pharmaceuticals Canada Inc. (fs)	\$65,000	nd	-	Pharmaceuticals/biotechnology
40	Wyeth Pharmaceuticals (fs)	\$60,600	\$570,432	10.6	Pharmaceuticals/biotechnology
41	NOVA Chemicals Corporation*	\$60,580	\$6,804,346	0.9	Chemicals and materials
42	Hummingbird Ltd.*	\$56,209	\$286,061	19.6	Software and computer services
43	Aastra Technologies Limited	\$52,325	\$522,561	10.0	Comm/telecom equipment
44	Motorola Canada Limited (fs)	\$51,000	nd	-	Comm/telecom equipment
45	Neurochem Inc.	\$50,495	\$4,441	1,137.0	Pharmaceuticals/biotechnology
46	Mitel Networks Corporation*	\$50,160	\$414,610	12.1	Comm/telecom equipment
47	Novelis Inc.*	\$49,676	\$10,132,611	0.5	Mining and metals
48	MacDonald, Dettwiler and Associates Ltd.	\$49,038	\$832,933	5.9	Aerospace
49	Gennum Corporation	\$44,666	\$142,766	31.3	Electronic parts and components
50	Syncrude Canada Ltd.	\$44,400	nd	-	Energy/oil and gas

Source R&D Expenditure Data: RESEARCH Infosource Inc. 2006

**Table 4**

**Canada's Top 50 Research Universities 2006**

Rank		University	Sponsored Research Income			Full-time Faculty** 2004-2005 #	Research Intensity \$ per Full-time Faculty \$000	Province
2005	2004		FY2005 \$000	FY2004 \$000	% Change 2004-2005			
1	1	University of Toronto* ++	\$708,642	\$623,995	13.6	2,376	\$298.3	Ontario
2	3	Université de Montréal*	\$429,286	\$446,247	-3.8	1,851	\$231.9	Quebec
3	2	McGill University*	\$423,051	\$543,497	-22.2	1,476	\$286.6	Quebec
4	5	University of Alberta*	\$396,867	\$360,009	10.2	1,524	\$260.4	Alberta
5	4	University of British Columbia*	\$359,544	\$363,337	-1.0	1,875	\$191.8	British Columbia
6	8	McMaster University*	\$344,979	\$246,173	40.1	1,119	\$308.3	Ontario
7	7	University of Calgary*	\$271,513	\$251,379	8.0	1,521	\$178.5	Alberta
8	10	University of Ottawa*	\$238,370	\$190,343	25.2	1,002	\$237.9	Ontario
9	6	Université Laval*	\$231,097	\$279,866	-17.4	1,380	\$167.5	Quebec
10	9	University of Western Ontario*	\$179,883	\$191,231	-5.9	1,260	\$142.8	Ontario
11	11	Queen's University*	\$155,512	\$174,762	-11.0	786	\$197.9	Ontario
12	12	University of Manitoba*	\$146,699	\$126,493	16.0	1,176	\$124.7	Manitoba
13	13	University of Guelph	\$125,885	\$122,943	2.4	798	\$157.8	Ontario
14	14	University of Waterloo	\$117,298	\$109,949	6.7	882	\$133.0	Ontario
15	15	University of Saskatchewan*	\$110,412	\$107,598	2.6	1,030	\$107.2	Saskatchewan
16	16	Dalhousie University*	\$105,332	\$92,898	13.4	969	\$108.7	Nova Scotia
17	17	Université de Sherbrooke*	\$85,452	\$81,929	4.3	849	\$100.7	Quebec
18	18	Carleton University	\$72,040	\$75,680	-4.8	657	\$109.6	Ontario
19	20	University of Victoria	\$71,333	\$58,940	21.0	657	\$108.6	British Columbia
20	19	Université du Québec à Montréal	\$62,361	\$63,309	-1.5	912	\$68.4	Quebec
21	23	Memorial University of Newfoundland*	\$61,472	\$50,300	22.2	843	\$72.9	Newfoundland
22	21	Simon Fraser University	\$59,503	\$57,758	3.0	684	\$87.0	British Columbia
23	24	York University	\$49,117	\$46,496	5.6	1,254	\$39.2	Ontario
24	22	Institut national de la recherche scientifique+	\$41,392	\$52,221	-20.7	147	\$281.6	Quebec
25	26	University of New Brunswick	\$38,677	\$35,365	9.4	543	\$71.2	New Brunswick
26	25	Concordia University	\$37,056	\$39,885	-7.1	780	\$47.5	Quebec
27	27	University of Regina	\$24,998	\$23,231	7.6	393	\$63.6	Saskatchewan
28	28	University of Windsor	\$24,118	\$19,471	23.9	489	\$49.3	Ontario
29	38	Lakehead University	\$18,431	\$9,858	87.0	249	\$74.0	Ontario
30	29	Royal Military College of Canada	\$18,100	\$18,641	-2.9	150	\$120.7	Ontario
31	33	Laurentian University	\$16,554	\$12,719	30.2	398	\$41.6	Ontario
32	32	Université du Québec à Chicoutimi	\$14,604	\$13,616	-7.3	210	\$69.5	Quebec
33	35	Brock University	\$13,431	\$11,170	20.2	453	\$29.6	Ontario
34	31	Université du Québec à Trois-Rivières	\$13,052	\$13,700	-4.7	315	\$41.4	Quebec
35	39	University of Lethbridge	\$12,679	\$9,832	29.0	294	\$43.1	Alberta
36	30	École de technologie supérieure+	\$11,973	\$14,123	-15.2	144	\$83.1	Quebec
37	34	Ryerson University	\$10,771	\$11,594	-7.1	582	\$18.5	Ontario
38	43	Wilfrid Laurier University	\$10,264	\$7,030	46.0	408	\$25.2	Ontario
39	37	Université du Québec à Rimouski	\$10,251	\$10,074	1.8	174	\$58.9	Quebec
40	40	Université du Québec en Abitibi-Témiscamingue	\$10,028	\$9,717	3.2	96	\$104.5	Quebec
41	36	Trent University	\$9,958	\$10,574	-5.8	246	\$40.5	Ontario
42	41	University of Prince Edward Island	\$9,746	\$9,081	7.3	207	\$47.1	Prince Edward Island
43	45	University of Northern British Columbia	\$8,365	\$6,786	23.3	171	\$48.9	British Columbia
44	44	Université de Moncton	\$8,165	\$6,947	17.5	348	\$23.5	New Brunswick
45	42	St. Francis Xavier University	\$7,870	\$7,215	9.1	231	\$34.1	Nova Scotia
46	47	Acadia University	\$5,990	\$5,193	15.3	201	\$29.8	Nova Scotia
47	46	Nova Scotia Agricultural College+	\$5,600	\$6,118	-8.5	60	\$93.3	Nova Scotia
48	50	Saint Mary's University	\$4,619	\$4,198	10.0	231	\$20.0	Nova Scotia
49	51	University of Winnipeg	\$4,399	\$3,879	13.4	219	\$20.1	Manitoba
50	52	Télé-université du Québec (Téluq)+	\$4,012	\$3,839	4.5	42	\$95.5	Quebec

Source: RESEARCH INFOSOURCE 2006

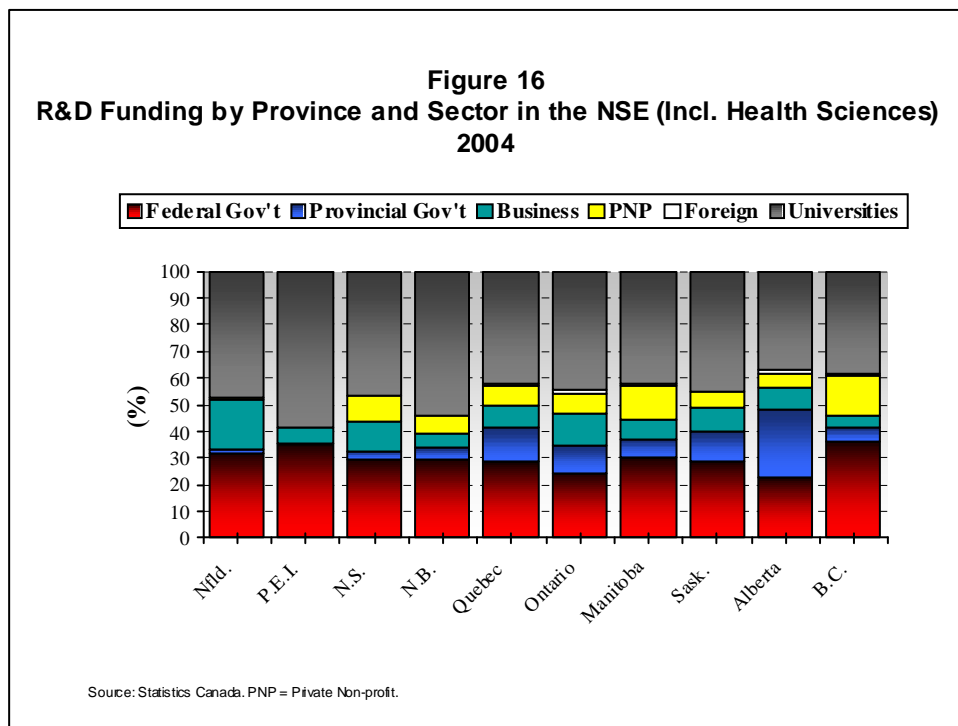
**Table 5**  
**Top 50 U.S. University R&D Performers, 2005**

Rank 2005	University	R&D (\$000's U.S.)
1	Johns Hopkins U., The <sup>a</sup>	1,443,792
2	U. MI all campuses	808,887
3	U. WI Madison	798,099
4	U. CA, Los Angeles	785,625
5	U. CA, San Francisco	754,444
6	U. CA, San Diego	721,035
7	Stanford U.	714,897
8	U. WA	707,519
9	U. PA	654,982
10	Duke U.	630,752
11	PA State U. all campuses	625,764
12	OH State U. all campuses	608,923
13	Cornell U. all campuses	606,804
14	MA Institute of Technology	580,742
15	U. CA, Berkeley	554,551
16	U. MN all campuses	548,873
17	U. CA, Davis	546,978
18	Columbia U. in the City of NY	535,424
19	Washington U. St. Louis	531,846
20	U. FL	530,734
21	U. AZ	530,233
22	U. CO all campuses	517,067
23	U. Pittsburgh all campuses	510,943
24	U. IL Urbana-Champaign	499,711
25	TX A&M U. all campuses	479,735
26	Baylor C. of Medicine	458,694
27	Harvard U.	447,196
28	U. Southern CA	445,036
29	U. NC Chapel Hill	441,033
30	Yale U.	431,618
31	GA Institute of Technology all campuses	425,386
32	U. TX Austin	410,981
33	Northwestern U.	387,242
34	U. TX M. D. Anderson Cancer Ctr.	383,780
35	Purdue U. all campuses	364,986
36	LA State U. all campuses	356,828
37	Vanderbilt U.	350,433
38	U. Rochester	345,337
39	U. MD College Park	338,648
40	Scripps Research Institute, The	338,634
41	U. IA	334,144
42	MI State U.	333,735
43	Emory U.	333,665
44	U. NE all campuses	333,126
45	Case Western Reserve U.	323,618
46	U. TX Southwestern Medical Ctr. Dallas	320,800
47	U. AL Birmingham, The	318,536
48	U. IL Chicago	318,279
49	U. GA	316,806
50	Rutgers, The State U. NJ all campuses	309,531

Source: National Science Foundation, U.S.

## 5.0 University R&D by Province

Figure 16 and Table 6 present university R&D funding by province and sector for the natural sciences and engineering (including the health sciences) for the latest year available, 2004. The data indicates that certain provinces, mainly the smaller provinces, are dependant to a greater extent on federal sources of financing for their university R&D. As indicated in the report *Discovery Grants Program*, it is these provinces that would be most severely impacted by increased selectivity of the program, and it is these provinces that have few other sources of university R&D financing available.



**Table 6**  
**Canadian University R&D Funding in the Natural Sciences and Engineering (incl. Health Sciences)**  
**by Province and Sector, 2004**

Province	Federal Government		Provincial Governments		Business Enterprises		Universities		Private Non-Profit		Foreign		Total
	\$M	% of Total	\$M	% of Total	\$M	% of Total	\$M	% of Total	\$M	% of Total	\$M	% of Total	
Newfoundland	28	32.2	1	1.1	16	18.4	41	47.1	1	1.1	0	0.0	87
P.E.I.	6	35.3	0	0.0	1	5.9	10	58.8	0	0.0	0	0.0	17
Nova Scotia	60	29.6	6	3.0	22	10.8	94	46.3	21	10.3	0	0.0	203
New Brunswick	22	29.7	3	4.1	4	5.4	40	54.1	5	6.8	0	0.0	74
Quebec	556	28.4	254	13.0	171	8.7	830	42.3	131	6.7	19	1.0	1,961
Ontario	766	24.4	313	10.0	381	12.1	1,384	44.1	235	7.5	62	2.0	3,141
Manitoba	60	29.9	15	7.5	15	7.5	85	42.3	24	11.9	2	1.0	201
Saskatchewan	57	28.8	22	11.1	18	9.1	89	44.9	12	6.1	0	0.0	198
Alberta	168	23.0	186	25.5	59	8.1	271	37.1	41	5.6	5	0.7	730
British Columbia	237	36.6	31	4.8	31	4.8	247	38.1	94	14.5	8	1.2	648

Source: Statistics Canada

## Appendix 1

The following is a description of the main federal funders of research in the NSE, besides NSERC.

## **Canada Foundation for Innovation**

The Canada Foundation for Innovation (CFI) is an independent corporation created by the Government of Canada to fund research infrastructure. It is governed by a Board of Directors which meets three to four times a year.

The CFI's mandate is to strengthen the capacity of Canadian universities, colleges, research hospitals, and non-profit research institutions to carry out world-class research and technology development that benefits Canadians. Since its creation in 1997, the CFI has committed more than \$3.75 billion in support of 5,400 projects at 128 research institutions in 64 municipalities across Canada.

The CFI normally funds up to 40 percent of a project's infrastructure costs which are invested in partnership with eligible institutions and their funding partners from the public, private, and voluntary sectors who provide the remainder. Infrastructure corresponds to state-of-the-art equipment, buildings, laboratories, and databases required to conduct research.

The CFI provides funds that are limited in amount (up to 30% of the CFI capital contribution) and duration (in the first 3 to 5 years of operation) towards the costs of running and maintaining the facilities.

## **Genome Canada**

Genome Canada is the primary funding and information resource relating to genomics and proteomics in Canada. Dedicated to developing and implementing a national strategy in genomics and proteomics research for the benefit of all Canadians.

It has so far received \$700 million from the Government of Canada. Genome Canada has established six Genome Centres across the country (Atlantic, Québec, Ontario, Prairies, Alberta and British Columbia) and has as a main objective to ensure that Canada becomes a world leader in genomics and proteomics research.

Together with its six Genome Centres and with other partners, Genome Canada invests and manages large-scale research projects in key selected areas such as agriculture, environment, fisheries, forestry, health and new technology development. Genome Canada also supports research projects aimed at studying and analyzing the ethical, environmental, economic, legal and social issues related to genomics research (GE3LS).

To date, Genome Canada has invested more than \$700 million across Canada, which, when combined with funding from other partners, totals \$1.5 billion in 115 innovative research projects and sophisticated science and technology platforms.

## **Canadian Foundation for Climate and Atmospheric Sciences**

The Canadian Foundation for Climate and Atmospheric Sciences (CFCAS) funds research that improves the scientific understanding of processes and predictions, provides relevant science to policy makers and improves understanding of the ways in which these challenges affect human health and the natural environment in addition to strengthening Canada's scientific capacity.

It was established in 2000 as an autonomous Foundation, and in 2001 attained charitable status. The Foundation is managed by a Board of Directors drawn from all sectors and regions of Canada. It has a Secretariat based in Ottawa and five full-time staff.

CFCAS provides research grants through a competitive (peer-reviewed) process from a total budget of \$110 million. Its mandate extends to March 2011.

As of April 2006, the Foundation had invested over \$93.8 M in university-based research related to climate and atmospheric sciences, in 19 collaborative networks, 2 major initiatives, and 123 projects. Several of the networks are linked to international research programs; all involve multiple partners. Complementary (leveraged) support for networks has doubled the resources available to them. The Foundation has also hosted or co-hosted a number of workshops and symposia on topics such as extreme weather and Arctic climate, and provides partial support to two international project offices in Canada and to the National Secretariat for International Polar Year (2007).

CFCAS is differentiated from other funding bodies by its targeting of support (e. g. to strategic themes), its ability to respond to national needs or scientific imperatives, and its partnerships. CFCAS-funded work provides new knowledge to policymakers, weather forecasters, businesses and governments.

## **Canadian Institutes for Health Research and Social Sciences and Humanities Research Council**

As the major federal agency responsible for funding health research in Canada, the Canadian Institutes of Health Research (CIHR) supports more than 10,000 researchers and staff each year. Together they are challenging the frontiers of science in order to increase our knowledge and understanding of health sciences and ultimately, to improve the health of Canadians.

In fiscal year 2006-2007, CIHR is planning to invest over \$835 million in research projects and personnel support across the full spectrum of health sciences research.

The Social Sciences and Humanities Research Council of Canada (SSHRC) is an arm's-length federal agency that promotes and supports university-based research and training in the social sciences and humanities. Created by an act of Parliament in 1977, SSHRC is governed by a 22-member Council that reports to Parliament through the Minister of Industry.

SSHRC-funded research fuels innovative thinking about real life issues, including the economy, education, health care, the environment, immigration, globalization, language, ethics, peace, security, human rights, law, poverty, mass communication, politics, literature, addiction, pop culture, sexuality, religion, Aboriginal rights, the past, our future.

In 2006-07, its budget exceeds \$300 million.

There are a number of NSERC-funded researchers working at the interface between the NSE and health, or NSE and the social sciences or humanities, who receive from these funding agencies.

## **Federal Departments**

There are a number of science-based departments and agencies that support university research through grants, contributions or contracts: Environment Canada, Department of National Defense, Agriculture and Agri-Food Canada, Fisheries and Oceans, Canadian Space Agency, etc.