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Introduction

Science and technology (S&T) is defined by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as *"...systematic activities which are closely concerned with the generation, dissemination and application of scientific and technical knowledge in all fields of science and technology."*

Canada uses the definition of research and development (R&D) found in the *Frascati Manual*, published by the Organisation for Economic Co-operation and Development (OECD). It is *"...creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications."*

Related scientific activities (RSA) are those activities that complement or extend R&D by contributing to the generation, dissemination and application of S&T knowledge, such as routine data gathering and services provided by technical libraries.

In order to make use of statistics, analysts often put them into context by comparing the measured quantity with some other variable, such as time or geographic location. For practical reasons, it is usually necessary to modify S&T statistics to take into account the wide variation in size of national or provincial economies, populations, etc. Thus, S&T indicators are usually expressed as a ratio of two statistics: the numerator is the specialized statistic, such as R&D spending, and the denominator is a general statistic, such as GDP or population.

Abbreviations

BE	–	business enterprise
BERD	–	business enterprise expenditure on research and development
CAD/CAE	–	computer-assisted design/computer-assisted engineering
CCPC	–	Canadian-controlled private corporation
GDP	–	gross domestic product
GERD	–	gross domestic expenditure on research and development
HERD	–	higher education expenditure on research and development
LAN	–	local area network
PNP	–	private non-profit organization
PRO	–	provincial research organization
R&D	–	research and development
RSA	–	related scientific activities
S&T	–	science and technology
SMEs	–	small and medium-sized enterprises

A publication of this type is a snapshot, freezing information at a particular point in time. New data are constantly becoming available. Data in tables and figures may not necessarily add to the totals shown due to rounding.

National GERD, 1987-1994

	1987	1988	1989	1990	1991	1992	1993 ^p	1994 ^p
	(\$ millions)							
Actual \$	7 775	8 266	8 837	9 650	10 091	10 319	10 579	10 882
1986 \$	7 426	7 542	7 691	8 143	8 299	8 369	8 484	8 685 ^e
	(percent)							
Real growth	0.7	1.6	2.0	5.9	1.9	0.8	1.4	2.4
GERD/GDP	1.41	1.36	1.36	1.44	1.50	1.50	1.49	1.47 ^e

p Preliminary data.

e Estimate.

Source: Statistics Canada.

Expenditures on R&D, by Performing and Funding Sectors, 1994

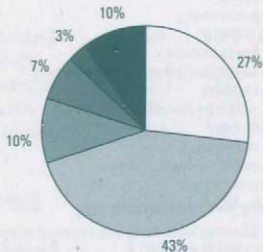
Funder	Performer						Total	Distribution
	Federal	Provincial	PRO	BE	University	PNP		
	(\$ millions)							(%)
Federal	1 596	2	6	462 ^e	893	28	2 987 ^e	27
Provincial	-	195	51	114 ^e	333	18	711 ^e	7
PRO	-	-	1	-	-	-	1	-
BE	7	6	26	4 339 ^e	314	32	4 724 ^e	43
University	-	-	-	-	1 064	-	1 064	10
PNP	-	-	-	-	209	65	274	3
Foreign	-	-	5	1 087 ^e	20	9	1 121 ^e	10
Total	1 603	203	89	6 002	2 833	152	10 882	100
Share of Total (%)	15	2	1	55	26	1	100	

^e Industry Canada estimate.

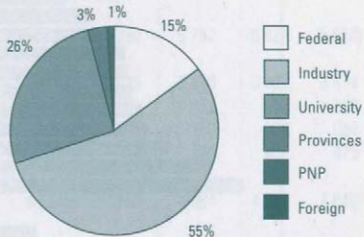
Source: Statistics Canada.

R&D in Canada, 1994

Who Funds R&D?^e



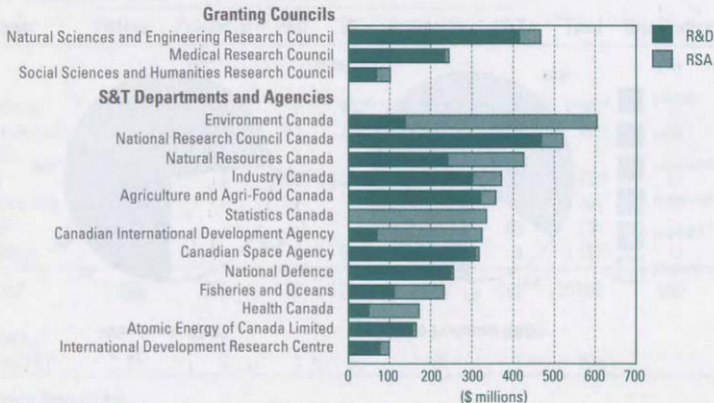
Who Performs R&D?



^e Industry Canada estimate.

Source: Statistics Canada.

Federal S&T Expenditures, by Department and Agency, 1994-95



Source: Statistics Canada.

Federal S&T Expenditures, 1987-88 to 1994-95

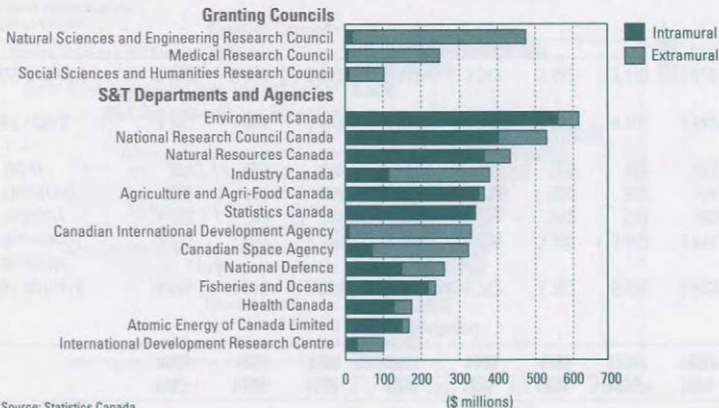
	1987- 1988	1988- 1989	1989- 1990	1990- 1991	1991- 1992	1992- 1993	1993- 1994 ^p	1994- 1995 ^p
	(\$ millions)							
S&T Actual \$	4 505	4 816	5 063	5 472	5 792	5 762	5 826	5 823
of which:								
Intramural	2 721	2 833	3 026	3 304	3 435	3 330	3 402	3 414
Industry	708	799	781	753	931	952	954	980
University	697	761	807	923	938	980	982	954
Other	379	423	449	492	488	500	488	475
S&T 1986 \$	4 303	4 394	4 406	4 614	4 763	4 684	4 702	4 640 ^e
R&D Actual \$	2 583	2 799	2 981	3 168	3 342	3 442	3 470	3 470

p Preliminary data.

e Industry Canada estimate.

Source: Statistics Canada.

Federal S&T Expenditures, by Performing Sector, 1994-95



Source: Statistics Canada.

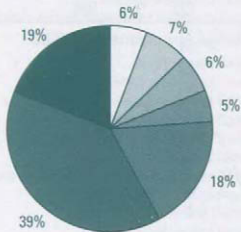
University R&D Funding, by Source, 1992

	Federal	Provincial	Business	Self-funded	Other	Total
	(\$ millions)					
Nfld.	24	1	3	21	2	51
P.E.I.	2	-	1	1	-	4
N.S.	43	4	9	37	2	95
N.B.	14	2	5	16	2	39
Que.	223	121	174	265	61	844
Ont.	323	124	70	428	86	1 031
Man.	29	8	3	50	15	105
Sask.	25	12	4	39	5	85
Alta.	73	32	18	118	21	262
B.C.	110	19	18	59	28	234
Canada	866	323	305	1 034	222	2 750

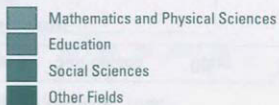
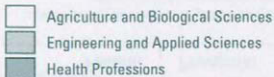
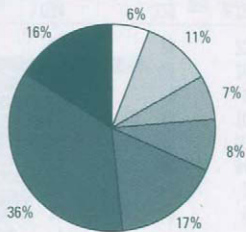
Source: Statistics Canada.

University Degrees, by Field of Study, 1992

**Bachelors and First Professional
(120 738)**

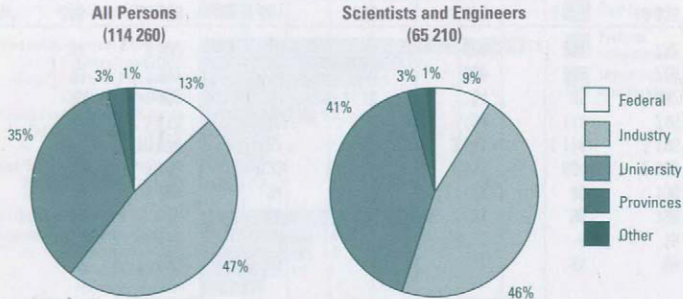


**Masters and Doctorate
(22 574)**



Source: Statistics Canada.

Persons Engaged in R&D, by Sector, 1991



Source: Statistics Canada.

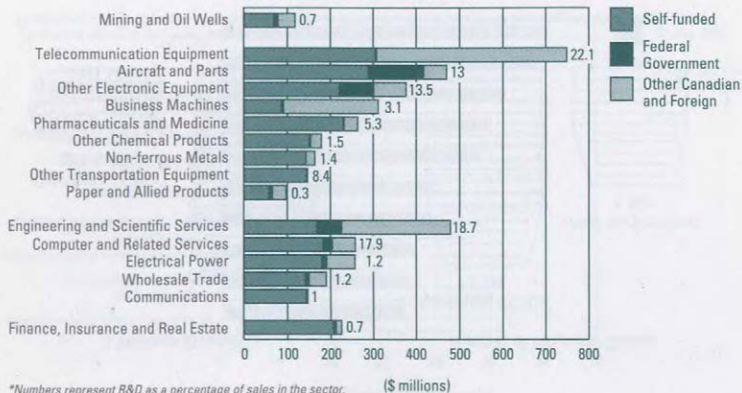
GDP, Population and R&D Performance, by Province, 1992

	GDP	Population	Federal	Provincial and PRO	Industry	University and PNP	Total
	(\$ billions)	(thousands)			(\$ millions)		
Nfld.	9	580	32	4	11	51	98
P.E.I.	2	131	9	-	2	4	15
N.S.	18	922	66	5	31	96	198
N.B.	14	749	34	3	29	40	106
Que.	157	7 182	229	76	1 637	864	2 806
Ont.	277	10 674	932	97	3 041	1 116	5 186
Man.	24	1 114	75	3	54	114	246
Sask.	20	1 002	53	10	54	85	202
Alta.	73	2 647	71	70	326	262	729
B.C.	87	3 500	79	24	388	241	732
Canada*	685	28 593	1 581	292	5 573	2 873	10 319

*Includes Yukon and Northwest Territories.

Source: Statistics Canada.

Industrial R&D, by Source of Funds, 1991



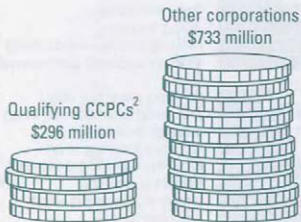
*Numbers represent R&D as a percentage of sales in the sector.

Source: Statistics Canada.

(\$ millions)

Investment Tax Credits for R&D, 1991

\$ Millions Claimed¹



Number of Taxpayer Claims

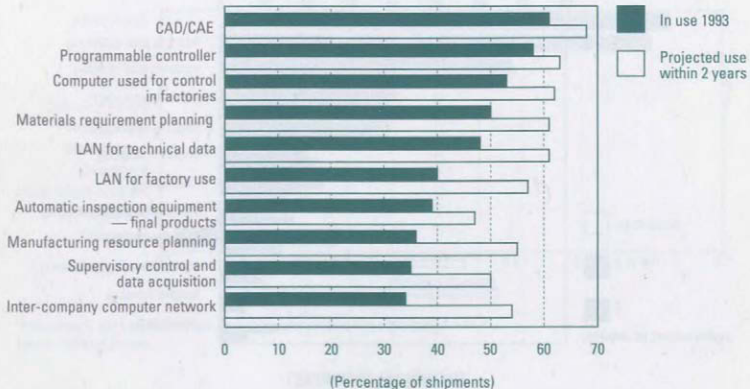


¹The amount claimed is the amount requested by the taxpayer prior to an audit and/or assessment.

²A qualifying CCPC is a Canadian-controlled private corporation whose taxable income for the preceding year was \$200 000 or less.

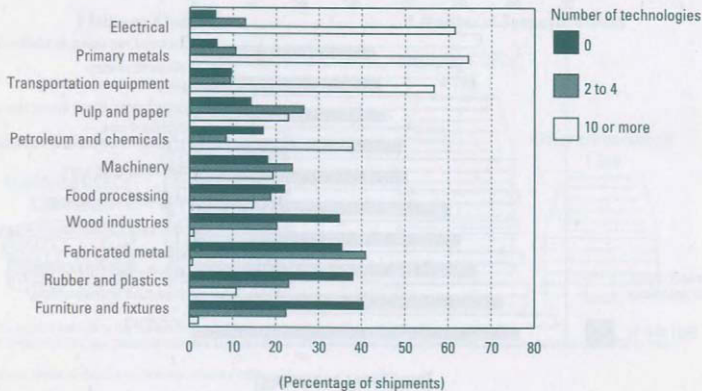
Source: Revenue Canada — Taxation, January 1995.

Use of Leading Technologies, Actual and Projected, 1993 (Shipment Weighted)



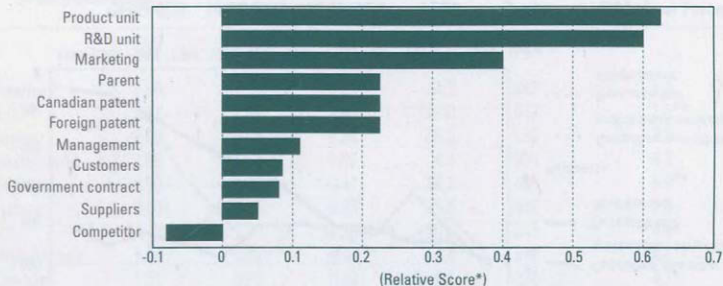
Source: Statistics Canada.

Number of Leading Technologies Used, by Industry, 1993 (Shipment Weighted)



Source: Statistics Canada.

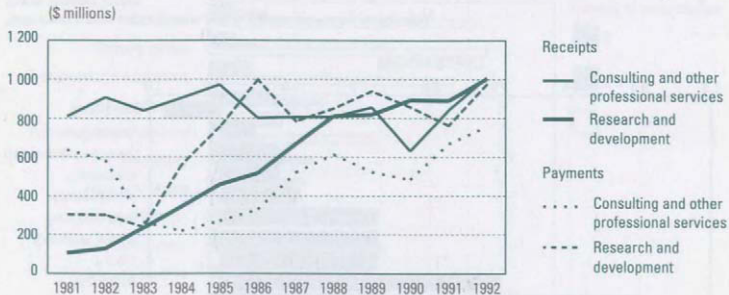
Sources of Innovation in SMEs



*Differences in mean scores between more successful and less successful SMEs.

Source: Statistics Canada.

Trade in Knowledge-based Services, 1981 to 1992



Source: Statistics Canada.

Selected International Comparisons, 1992

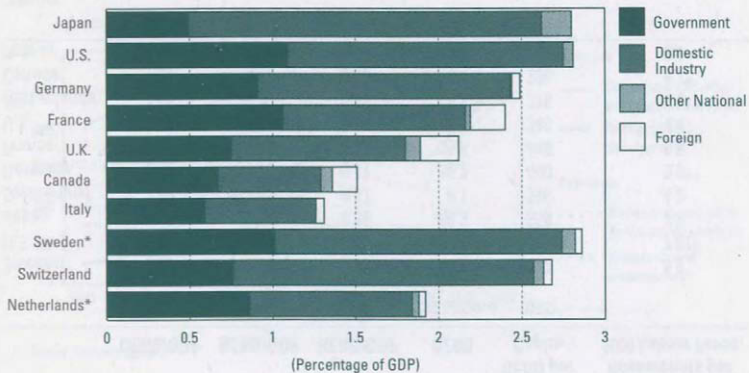
	GERD/GDP	BERD/GDP	HERD/GDP	GERD	GERD per Capita	Researchers per 1000 Labour Force
	(%)	(%)	(%)	(US\$ billions)	(US\$)	
Sweden*	2.86	1.95	0.79	4.2	482	5.9
U.S.	2.81	2.04	0.40	167.0	653	7.6**
Japan	2.80	2.06	0.36	68.3	550	7.8
Switzerland	2.68	1.88	0.67	4.1	596	4.2
Germany	2.50	1.70	0.41	36.2	450	5.9**
France	2.40	1.51	0.37	25.6	446	5.5
U.K.	2.12	1.33	0.36	20.0	345	4.4
Netherlands	1.86	0.97	0.48	4.8	316	4.0**
Canada	1.51	0.82	0.40	8.1	286	4.7*
Italy	1.31	0.77	0.27	13.1	231	3.0

*1991 data.

**1989 data.

Source: OECD.

GERD, by Source of Funds, Selected Countries, 1992



*1991 data.

Source: OECD.