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Scientific and technological activities of provincial governments and provincial research organizations, 1995-96 to 2003-04

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

Note
Due to rounding, components may not add to the totals.

Abbreviations:

PGDP		Provincial gross domestic product
GERD		Gross Domestic Expenditures on Research and Development
S&T		Science and Technology
R&D		Research and Development
RSA		Related Scientific Activities
S&T	=	R&D plus RSA
NSE		Natural Sciences and Engineering
SSH		Social Sciences and Humanities

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Note of appreciation

Canada owes the success of its statistical system to a long-standing partnership between Statistics Canada, the citizens of Canada, its businesses, governments and other institutions. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

Foreword

The fundamental mandate of the Science, Innovation and Electronic Information Division of Statistics Canada is to assure the availability of pertinent statistical information, to monitor science and technology activities in Canada and to support the development of science and technology policy. This report is one of many produced by the Science and Innovation Surveys Section to respond to these needs.

The information in this document is intended primarily to be used by scientific and technological (S&T) policy makers, both federal and provincial, largely as a basis for interprovincial and intersectoral comparisons. The surveys which generate these statistics also provide input for the development of a national aggregate Research and Development (R&D) series. These national R&D estimates are used to complete international questionnaires for the Organization for Economic Co-operation and Development (OECD) and the United Nations Education, Scientific and Cultural Organization (UNESCO).

The statistics are aggregates of the provincial government science surveys conducted by Statistics Canada under contract with the provinces, and cover the period 1995-96 to 2003-04 preliminary. The provincial government sector consists of all provincial government departments, ministries, agencies and provincial research organizations (PRO). The PRO are surveyed separately, however, their data are included in this working paper.

This working paper also provides nine years of data for the purpose of historical comparisons. In the past, surveys have been conducted in as many as nine provinces, the exception being Prince Edward Island. Currently, surveys are being done in Ontario, Manitoba, Alberta and British Columbia. The following ministries sponsor the scientific surveys: Ontario Economic Development and Trade; Manitoba Energy, Science and Technology; Alberta Innovation and Science; and British Columbia Small Business and Economic Development. The Institut de la Statistique du Québec conducts a similar survey collecting only research and development (R&D) data instead of total S&T activities for the province of Quebec. More detailed information for the individual provinces is available from the aforementioned ministries.

Science surveys, like other surveys, depend on respondents' interpretation of definitions and methods of calculation. Accounting records are rarely available which use a science-based classification. Recognizing the fact that the data are estimates, they are still a good representation of science expenditures for the provinces. As in any ongoing statistical exercise, revisions will be necessary as definitions and procedures become clarified. It is also important to note that the same standards have been applied to the data of each province as are applied to data of the federal government.

For the national R&D statistics (GERD), estimates are made for provinces for which there is no survey. Total spending on R&D in Canada and the provinces has been published in Catalogue no. 88-001, volume 28 no.12.

The subsequent tables present data relating to various provincial government and provincial research organization scientific expenditures and person-years.

This publication was prepared by **Lorraine Chapman** under the direction of **Janet Thompson**, Unit Head, Science and Innovation Surveys Section, Science, Innovation and Electronic Information Division.

We want to thank those who replied to each of the provincial and PRO surveys. Without their invaluable help and cooperation, the production of this report would not have been possible.

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Highlights

- In 2002-03, provincial governments performed 1.3% ($289 million) of R&D in Canada, up 1.8% from 2001-02. The PROs performed 0.1% ($26 million), an increase of 13%. The Alberta government was the largest performer with $108 million (table on page 12). In the same year, the provincial governments funded 5.3% ($1,182 million) of R&D in Canada, up 8.5%. The Ontario government was the largest contributor with $400 million.

- In 2002-03, the list below shows the three most relevant objectives of scientific expenditures for the following provincial governments, as shown in tables 6 to 10:

  Ontario – Basic research (38%); Health (21%); and Environment (10%)

  Manitoba – Social development (25%); Infrastructure (23%); and Health (13%)

  Alberta – Health (33%); Agriculture, (18%); and Basic Research (18%)

  British Columbia – Basic research (37%)**;** Infrastructure (25%) and Health (19%).

  Please note that Agriculture includes fishing, hunting and forestry; Environment includes pollution control, conservation and protection of the environment; and Infrastructure includes transportation systems, telecommunications and other general planning of land use.

History of provincial government S&T surveys

Prior to 1974, estimates were made for provincial government S&T expenditures using provincial estimates and public accounts.

In 1974, Ontario, Alberta and Nova Scotia sought the assistance of Statistics Canada in conducting surveys of S&T spending by their respective governments. In 1975, Saskatchewan joined this group, followed by British Columbia in 1977, Manitoba and New Brunswick in 1984, Newfoundland and Labrador in 1986 and Quebec in 1989.

In 1993-94, three provinces, Newfoundland, New Brunswick and Nova Scotia, did not contract with Statistics Canada for a survey due to budget constraints. In 1994-95, the province of Quebec collected only R&D expenditures instead of total S&T. In 2001-02 Saskatchewan did not contract with Statistics Canada for a survey. For the national R&D statistics, estimates are made for provinces for which there is no survey.

Provincial research organizations

Statistics presented are derived from the seven *Provincial Research Organizations* mentioned on page 10 of this working paper.

All of these organizations have been established by their respective provincial and territorial governments, with a variety of enabling legislation and powers, to provide technical support to primary and secondary industries, to assist in the exploitation of provincial and territorial natural resources and to enhance the economy of their provinces and territories. Small and medium-sized companies with limited in-house technical capability use the services of the provincial research organizations.

In the historical tables you will see other organizations listed that are no longer included in our survey for the following reasons:

In 2000, the transition of the incorporation of the Alberta Research Council as a not-for-profit business under the Business Corporation Act was completed. As a result, activities of ARC are now reported on the Alberta Provincial Government Scientific Activities survey.

In Ontario, privatization of ORTECH Corporation was completed in January 1999.

InNOVAcorp was dissolved in 1999, they disposed of their chemistry, microbiology and materials laboratories and are now involved in investment, mentoring and incubation services for emerging Nova Scotia companies.

Federal / provincial workshops on S&T statistics

In the fall of 1977, the first federal-provincial meeting was held in Ottawa. Representatives from British Columbia, Alberta, Saskatchewan, Ontario and Nova Scotia attended; as well as Statistics Canada and members of the Ministry of State for Science and Technology (MOSST).

The next meeting was held in 1984 with representatives from British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec and New Brunswick attending. Statistics Canada sponsored the meeting and invited representatives from MOSST, Energy, Mines and Resources (EMR) and the Science Council. The objectives of the conference were:

- To provide provincial science policy and statistical users with an overview of products and services of the Science and Technology Statistics division (STSD);
- To provide a forum to allow discussion between STSD and provincial representatives to exchange views on science statistics;
- Achievement of consensus on how to proceed with future provincial surveys.

In 1999, Ontario proposed to Statistics Canada to renew federal/provincial conferences and make them an annual event. Statistics Canada agreed and co-hosted the 1999 conference in Toronto. The agenda included topics such as innovation surveys, biotechnology surveys, intellectual properties in higher education, e-commerce and provincial needs and proposals.

Quebec and Statistics Canada co-hosted the 2000 conference held in Quebec City. Discussions included economic indicators, an innovation study for Ontario, and biotechnology measurement.

In the fall of 2001, British Columbia and Statistics Canada co-hosted the conference in Victoria. Provincial representatives discussed high technology indicators, innovation index, and user needs and challenges. Statistics Canada presented an overview of current program developments and future plans.

Alberta and Statistics Canada co-hosted the 2002 conference held in Edmonton. Discussions included provincial indicators and an overview of current program developments and future plans.

In the fall of 2003, Statistics Canada was supposed to host the 5th annual conference in Ottawa. Due to budget constraints of many provincial governments, the conference was postponed.

Due to budget constraints, the 2004 conference was cancelled.

Definitions

This report covers those scientific and technological activities which involve the generation, dissemination and application of new scientific and technological knowledge. The central activity is research and experimental development (R&D). In addition, there are a number of activities closely related to R&D these are termed related scientific activities (RSA).

R&D is creative work undertaken on a systematic basis in order to increase the stock of scientific and technical knowledge, including knowledge of culture and society and the use of this stock of knowledge to devise new applications.

It requires the acquisition of knowledge and not just information. New knowledge involves the integration of newly acquired information into existing hypotheses or the re-evaluation of existing observations.

The major related scientific activities are education support, technical surveys, statistical surveys, information services, special services and studies, and museum services. Education support and museum services are largely self-explanatory.

Technical surveys are activities directed towards exploration and systematic description of the earth and its natural resources. The activities include gathering, processing, collating and analyzing of data on natural phenomena except when part of a research project or a museum service. The preparation of maps and survey reports, their printing and cataloguing, are also included.

Statistical surveys are activities directed toward the collecting, processing and disseminating of statistics on humankind, their economic and social activities. Included are the development of technical methodology, statistical analysis and vital statistics.

Information services are all work directed to recording, classifying, translating, and disseminating information resulting from R&D in the social sciences or required in support of such R&D. Included are the operations of specialized libraries and archives, the publication of scholarly journals and bibliographies, and the organizing of scientific conferences. Grants for the publication of scholarly works are also included.

Special services and studies in the natural sciences are activities 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.

In the social sciences, special services and studies are systematic investigations carried out in order to provide information needed for planning or policy formulation, including feasibility studies and demonstration projects.

Scientific and technological activities take place in both natural sciences and social sciences and humanities. The natural sciences consist of disciplines concerned with understanding, exploring, developing or utilizing the natural world. The social sciences and humanities embrace all disciplines involving the study of human actions and conditions and the social, economic and institutional mechanisms affecting humans.

Six performing sectors are identified.

Intramural refers to the provincial ministry, department or agency performing a scientific activity.

Business enterprise denotes largely private corporations but also includes crown corporations with a commercial function (e.g., power utilities) and industrial research institutes not controlled by another institution.

The higher education sector covers post secondary educational institutions and affiliated teaching and research facilities.

Hospitals and health organizations are health organizations such as the Heart foundation and hospitals which do not belong in the university sector.

Provincial research organizations include the New Brunswick Research and Productivity Council, le Centre de recherche industriel du Québec, Industrial Technology Centre (Manitoba), the Saskatchewan Research Council, Yukon Research Council, the Nunavut Research Institute, and the Aurora Research Institute (Aurora College N.W.T.)

Other includes the federal government, municipal governments, individuals, institutions not identified with any other sector, and foreign performers.

Departmental personnel are classified into three major categories. Scientific and professional includes persons in a job requiring at least one academic degree or nationally recognized professional qualification. The Technical category includes people in jobs requiring specialized vocational or technical training beyond the secondary level. Other includes clerical, secretarial, administrative, operational and other support personnel. Personnel data are reported in full-time equivalent which is simply the portion of a person's time spent on S&T activities.

The objectives listed in this survey do not represent the total range of possible objectives; however, they are intended to cover the major areas of current technological interest. Respondents are asked to report expenditures under the objective which is primary to that expenditure.

Provincial indicators, 2002

Province	Population[1]	PGDP[2]	GERD[3]	GERD/ PGDP[3]	GERD/ Capita
	(000)	($000,000)	($000,000)	ratio	dollars
Newfoundland and Labrador	519	16,615	148	0.9	285
Prince Edward Island	137	3,747	31	0.8	226
Nova Scotia	935	27,247	373	1.4	399
New Brunswick	750	21,168	184	0.9	245
Quebec*	7,446	243,763	6,451	2.6	866
Ontario*	12,102	479,556	9,814	2.0	811
Manitoba	1,156	36,832	444	1.2	384
Saskatchewan	996	34,419	419	1.2	421
Alberta	3,116	150,660	1,641	1.1	527
British Columbia	4,115	138,368	1,846	1.3	449
Canada[4]	**31,373**	**1,157,968**	**22,370**	**1.9**	**713**

1. CANSIM, Table 051-0001.
2. CANSIM, Table 384-0002.
3. Estimates of Canadian Research and Development Expenditures (GERD), Canada, 1990 to 2004, and by province 1990 to 2002, 88-001–XIE Vol.28 No. 12, December 2004, or in CANSIM, Table 358-0001.
4. Includes Nunavut, the Northwest Territories and the Yukon, and the National Capital Region (see note below).
** Quebec and Ontario GERD figures exclude federal government expenditures of $1,015 million performed in the National Capital Region.*

Provincial indicators for 2002 in this table provide analysts information to compare the gross domestic expenditures on research and development by each province to their individual provincial gross domestic products. These indicators also show the gross domestic expenditures on research and development per capita for every province.

Distribution of provincial governments' R&D[1] personnel, 2002-03

Province	NSE			SSH		
	Scientific and professional	Technical	Other	Scientific and professional	Technical	Other
	full-time equivalent					
Quebec	235	215	74	144	30	26
Ontario	591	297	99	29	10	7
Manitoba	21	6	14	10	0	0
Saskatchewan[2]	41	2	10	2	0	0
Alberta	239	277	222	1	1	0
British Columbia	123	64	22	5	0	0

1. Includes personnel in administration of extramural programs.
2. R&D data has been estimated for Saskatchewan in 2002-03.

This table shows the detail of the provincial governments' R&D personnel for 2002-03.

Provincial distribution of Gross expenditures on R&D by performing and funding sectors, 2002-03

Province	N.-L.	P.E.I.	N.S.	N.B.	Que.*	Ont.*	Man.	Sask.	Alta.	B.C.	Subtotal Canada[1]	NCR	Total Canada[1]
						millions of dollars							
Performing Sector													
Federal government	31	8	76	46	371	324	72	53	92	99	1,175	1,015	**2,190**
Provincial governments	5	0	6	2	65	76	3	3	108	21	289	0	**289**
PRO	0	0	0	2	17	0	0	7	0	0	26	0	**26**
Business enterprise	17	4	65	32	3,828	6,528	138	97	694	979	12,383	0	**12,383**
Higher Education[2]	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**
Funding Sector													
Federal government	61	13	130	67	990	1,110	132	113	281	327	3,227	994	**4,221**
Provincial governments	7	0	13	5	374	400	22	45	210	103	1,179	3	**1,182**
PRO	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Business enterprise	23	4	64	36	3,390	5,646	138	101	739	864	11,006	18	**11,024**
Higher Education[2]	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**

1. Includes the Yukon, Northwest Territories and Nunavut.
2. Includes private non-profit institutions.
** Quebec and Ontario figures exclude federal government expenditures performed in the National Capital Region.*

Gross domestic expenditures on research and development (GERD) is a statistical series, constructed by adding together the intramural expenditures on R&D as reported by the performing sectors. The GERD for 2002-03 is shown in this table in order to indicate the relevance that both the Provincial government and the PRO sectors have on the total GERD.

Provincial governments

Table 1. Total expenditures of provincial governments on scientific activities, by activity, 1995-96 to 2003-04

Province	1995-96[r]	1996-97[r]	1997-98[r]	1998-99[r]	1999-00[r]	2000-01[r]	2001-02[r]	2002-03[r]	2003-04[p]
	thousands of dollars								
S&T									
Quebec[1]	..	..	..	..	..	..	..	..	..
Ontario	419,980	336,718	314,809	344,778	455,445	619,779	684,382	675,850	717,422
Manitoba	45,825	41,926	39,833	49,082	43,286	52,098	54,185	66,166	70,967
Saskatchewan[2]	49,146	41,832	70,164	75,146	64,040	96,030	93,780	..	..
Alberta[3]	168,424	168,846	178,388	214,417	234,592	263,794	317,744	333,421	313,546
British Columbia	232,159	247,787	260,839	249,245	235,686	338,512	240,602	297,707	233,822
R&D									
Quebec[1]	218,307	216,246	206,676	213,342	454,994	429,399	426,353	412,961	559,537
Ontario	250,863	210,577	210,196	213,553	280,836	421,015	443,513	438,385	472,900
Manitoba	12,458	12,033	8,980	16,937	16,558	19,830	20,545	19,639	22,175
Saskatchewan[2]	31,555	27,908	55,444	56,700	45,941	76,253	71,785	75,374	79,143
Alberta[3]	101,551	110,143	126,120	157,065	172,898	197,756	245,295	248,785	241,407
British Columbia	77,985	89,274	88,684	72,829	72,674	199,949	93,555	175,814	121,132

1. Since 1994-95, the province of Quebec collects only R&D activities.
2. R&D data has been estimated for Saskatchewan in 2002-03 and 2003-04.
3. All data for 2003-04 is preliminary with the exception of the Alberta provincial government.

In 2003-04, both the Ontario and Manitoba governments indicated a 6% and 7% increase in S&T expenditures. The Quebec, Ontario and Manitoba governments showed increases of 35%, 8% and 13%, respectively, in R&D expenditures for the same year.

The British Columbia government showed the largest increase (24%) in expenditures on S&T activities in 2002-03 (Table 1) and also indicated a significant increase (88%) in total expenditures on R&D. This increase in R&D was due to the fact that the BC government funded $45 million for BC Leadership Chairs, $35 million in health research and development, and $7.5 million for Regional Innovation Chairs.

In 2001-02, the government of BC provided $45 million in funding to the Leading Edge Endowment Fund and $2 million to the University of British Columbia to establish a BC leadership chair with the Rick Hansen Institute in the area of spinal cord research.

The BC government provided a one-time funding of $110 million to create the Michael Smith Foundation for health research which is responsible for the large increase in expenditures in 2000-01.

Table 2. Personnel of provincial governments engaged in scientific activities, by activity and by province, 1995-96 to 2003-04

Province	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02 r	2002-03 r	2003-04 p
	full-time equivalent[1]								
S&T									
Quebec[2]	..	..	..	..	..	..	..	..	..
Ontario	2,768	2,003	1,863	1,957	2,101	2,366	2,390	2,632	2,642
Manitoba	364	391	407	416	403	427	440	501	509
Saskatchewan[3]	291	203	213	246	250	253	275	..	..
Alberta[4]	1,048	713	768	812	818	815	1,345	1,205	1,198
British Columbia	1,618	1,555	1,513	1,441	1,378	1,216	1,739	1,364	1,233
R&D									
Quebec[2]	806	793	755	666	486	605	598	724	721
Ontario	976	613	567	575	659	688	891	1,033	1,040
Manitoba	13	12	27	27	36	41	36	51	48
Saskatchewan[3]	78	52	56	49	52	52	52	55	57
Alberta[4]	337	247	284	299	287	300	839	740	656
British Columbia	270	320	310	302	307	325	282	214	186

1. *Including personnel in administration of extramural programs.*
2. *Since 1994-95, the province of Quebec collects only R&D activities.*
3. *R&D data has been estimated for Saskatchewan in 2002-03 and 2003-04.*
4. *All data for 2003-04 is preliminary with the exception of the Alberta provincial government.*

In Table 2, most of the provincial governments showed a slight decrease in personnel engaged in R&D for 2003-04 with the exception of the Ontario government.

Table 3. Provincial governments scientists and professionals engaged in scientific activities, by activity and by province, 1995-96 to 2003-04

Province	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02[r]	2002-03[r]	2003-04[p]
	full-time equivalent[1]								
S&T									
Quebec[2]	..	..	..	..	..	..	..	..	..
Ontario	1,232	857	814	1,118	1,191	1,307	1,331	1,540	1,570
Manitoba	204	215	239	250	236	267	280	290	298
Saskatchewan[3]	178	126	134	165	166	172	187	..	..
Alberta[4]	412	329	390	424	373	384	597	523	553
British Columbia	827	787	733	690	657	660	665	556	503
R&D									
Quebec[1]	354	340	329	290	263	336	328	379	385
Ontario	493	393	357	385	396	412	520	620	642
Manitoba	12	10	19	20	22	33	28	31	30
Saskatchewan[3]	46	36	40	34	34	38	41	43	45
Alberta[4]	169	141	152	167	120	127	319	240	241
British Columbia	159	196	166	167	172	178	148	128	115

1. Including personnel in administration of extramural programs.
2. Since 1994-95, the province of Quebec collects only R&D activities.
3. R&D data has been estimated for Saskatchewan in 2002-03 and 2003-04.
4. All data for 2003-04 is preliminary with the exception of the Alberta provincial government.

Table 4. Total expenditures of provincial governments on scientific activities, by activity and by sector of performance, 2003-04

Province	Intramural	Business enterprise	Higher education	Hospitals and health organizations	Provincial research organizations	Other	**Total**
				thousands of dollars			
S&T							
Quebec[1]	..	..	..	..	..	..	**..**
Ontario	227,412	23,633	330,472	58,081	…	77,824	**717,422**
Manitoba	48,173	873	13,874	2,925	805	4,317	**70,967**
Saskatchewan[2]	..	..	..	..	..	..	**..**
Alberta[3]	147,983	29,011	119,652	2,751	…	14,149	**313,546**
British Columbia	117,345	10,121	64,634	38,927	…	2,795	**233,822**
R&D							
Quebec[1]	67,792	66,063	343,612	32,768	9,957	39,344	**559,537**
Ontario	78,777	17,371	302,146	50,049	…	24,557	**472,900**
Manitoba	2,900	700	13,817	2,925	765	1,068	**22,175**
Saskatchewan[2]	3,749	6,208	39,448	1,558	9,473	18,707	**79,143**
Alberta[3]	102,567	11,084	117,916	1,796	…	8,044	**241,407**
British Columbia	16,545	6,482	60,316	37,435	…	354	**121,132**

1. Since 1994-95, the province of Quebec collects only R&D activities.
2. R&D data has been estimated for Saskatchewan in 2003-04.
3. All data for 2003-04 is preliminary with the exception of the Alberta provincial government.

Although most provincial governments out west performed S&T activities intramurally, the Ontario government contracted out 68% of their activities (Table 4) in 2003-04. Seventy-two percent of extramural expenditures on R&D are contracted out to the higher education sector by the five major provincial governments mentioned in this paper.

Table 5. Personnel of provincial governments engaged in scientific activities, by activity and category, 2003-04

Activity / category	Quebec[1]	Ontario	Manitoba	Saskatchewan[2]	Alberta[3]	British Columbia
			full-time equivalent			
Research and development:						
Scientific and professional	284	612	27	30	206	95
Technical	183	274	6	2	193	47
Other	51	98	10	3	165	17
Sub-total	*518*	*984*	*43*	*35*	*564*	*159*
Administration of extramural programs for R&D:						
Scientific and professional	101	30	3	15	35	20
Technical	65	10	0	0	12	3
Other	37	16	2	7	45	4
Sub-total	*203*	*56*	*5*	*22*	*92*	*27*
Related scientific activities:						
Scientific and professional	..	858	263	..	286	378
Technical	..	385	129	..	183	364
Other	..	250	62	..	36	292
Sub-total	..	*1,493*	*454*	..	*505*	*1,034*
Administration of extramural programs for RSA:						
Scientific and professional	..	*70*	5	..	26	10
Technical	..	1	0	..	5	0
Other	..	39	2	..	6	3
Sub-total	..	*110*	*7*	..	*37*	*13*
Total scientific activities:						
Scientific and professional	385	1,570	298	..	553	503
Technical	248	670	135	..	393	414
Other	88	403	76	..	252	316
Sub-total	*721*	*2,643*	*509*	..	*1,198*	*1,233*
Total	**721**	**2,643**	**509**	**..**	**1,198**	**1,233**

1. *Since 1994-95, the province of Quebec collects only R&D activities.*
2. *R&D data has been estimated for Saskatchewan in 2003-04.*
3. *All data for 2003-04 is preliminary with the exception of the Alberta provincial government.*

Table 6. Total expenditures of the Ontario government on scientific activities, by objective, 2000-01 to 2003-04

Objective	2000-01	2001-02	2002-03[r]	2003-04[p]
		thousands of dollars		
Exploration and utilization of the earth	29,238	32,088	24,778	23,037
Infrastructure and general planning of land use:				
Transportation systems	4,332	3,850	4,195	4,782
Telecommunications	12,961	4,526	2,493	1,911
Other	1,116	2,893	7,150	5,704
Pollution, conservation and protection of the environment	50,266	62,083	64,490	68,665
Public health	123,734	134,549	141,375	164,191
Production, distribution and rational utilization of energy	2,543	350	251	296
Agriculture production and technology	48,887	51,572	51,624	53,994
Fishing	6,846	6,270	6,355	6,132
Forestry	13,197	12,334	13,388	14,910
Industrial production and technology	47,690	59,788	37,734	31,789
Social development	48,473	48,687	54,508	56,985
Exploration and exploitation of space	1,667	1,209	2,647	1,339
Basic research	223,434	259,648	255,873	267,477
Other civil research	5,395	4,535	8,989	16,210
Total	**619,779**	**684,382**	**675,850**	**717,422**

Table 7. Total expenditures of the Manitoba government on scientific activities, by objective, 2000-01 to 2003-04

Objective	2000-01	2001-02	2002-03[r]	2003-04[p]
		thousands of dollars		
Exploration and utilization of the earth	4,320	6,002	6,543	6,689
Infrastructure and general planning of land use:				
Transportation systems	2,579	2,494	2,526	2,645
Telecommunications	0	0	12,664	11,184
Other	0	0	24	136
Pollution, conservation and protection of the environment	1,383	1,548	3,085	2,895
Public health	9,145	9,173	8,460	10,021
Production, distribution and rational utilization of energy	43	49	1,637	2,023
Agriculture production and technology	4,172	5,350	5,085	4,658
Fishing	1,435	1,451	1,425	1,428
Forestry	1,712	1,660	2,249	2,845
Industrial production and technology	2,444	2,542	2,263	2,817
Social development	17,775	16,782	16,431	18,680
Exploration and exploitation of space	0	0	0	0
Basic research	7,035	7,068	3,591	4,856
Other civil research	55	66	183	170
Total	**52,098**	**54,185**	**66,166**	**70,967**

Table 8. Total expenditures of the Saskatchewan government on scientific activities, by objective, 2000-01 to 2003-04

Objective	2000-01	2001-02	2002-03[e]	2003-04[e]
		thousands of dollars		
Exploration and utilization of the earth	3,139	3,669	..	..
Infrastructure and general planning of land use:				
Transportation systems	1,939	1,821	..	..
Telecommunications	1,072	640	..	..
Other	999	1,271	..	..
Pollution, conservation and protection of the environment	4,239	5,796	..	..
Public health	10,272	11,238	..	..
Production, distribution and rational utilization of energy	1,100	1,216	..	..
Agriculture production and technology	28,254	30,016	..	..
Fishing	101	101	..	..
Forestry	640	955	..	..
Industrial production and technology	3,517	3,773	..	..
Social development	10,290	9,925	..	..
Exploration and exploitation of space	0	0	..	..
Basic research	30,463	23,359	..	..
Other civil research	5	0	..	..
Total	**96,030**	**93,780**	**..**	**..**

Table 9. Total expenditures of the Alberta government on scientific activities, by objective, 2000-01 to 2003-04

Objective	2000-01	2001-02	2002-03[r]	2003-04[r]
	thousands of dollars			
Exploration and utilization of the earth	5,345	4,749	12,846	7,537
Infrastructure and general planning of land use:				
Transportation systems	8,052	9,688	12,120	10,906
Telecommunications	0	0	0	0
Other	5,163	2,530	993	4,299
Pollution, conservation and protection of the environment	18,681	37,722	22,788	31,785
Public health	71,353	92,412	109,601	74,506
Production, distribution and rational utilization of energy	7,113	23,805	33,108	35,235
Agriculture production and technology	42,050	56,829	49,284	47,624
Fishing	0	0	0	0
Forestry	4,289	16,773	10,690	13,220
Industrial production and technology	9	11,200	11,765	12,330
Social development	10,820	12,329	11,561	11,371
Exploration and exploitation of space	0	0	0	0
Basic research	84,722	48,941	58,240	64,294
Other civil research	6,197	766	425	439
Total	**263,794**	**317,744**	**333,421**	**313,546**

Table 10. Total expenditures of the British Columbia government on scientific activities, by objective, 2000-01 to 2003-04

Objective	2000-01	2001-02	2002-03[r]	2003-04[p]
		thousands of dollars		
Exploration and utilization of the earth	5,831	4,454	3,654	3,787
Infrastructure and general planning of land use:				
Transportation systems	532	655	655	630
Telecommunications	4,660	4,621	3,935	3,935
Other	25	79,387	70,912	59,747
Pollution, conservation and protection of the environment	34,999	15,225	10,280	10,053
Public health	124,703	20,299	53,314	31,618
Production, distribution and rational utilization of energy	1,002	0	310	310
Agriculture production and technology	1,513	1,828	1,840	1,495
Fishing	4,649	4,435	1,973	277
Forestry	72,267	30,171	5,558	15,692
Industrial production and technology	20,716	6,091	15,970	4,327
Social development	32,549	17,892	14,712	11,190
Exploration and exploitation of space	0	0	0	0
Basic research	30,304	52,086	109,009	87,841
Other civil research	4,763	3,458	3,584	2,920
Total	**338,512**	**240,602**	**297,707**	**233,822**

Table 11. Total expenditures of the Ontario government on R&D, by objective, 2000-01 to 2003-04

Objective	2000-01	2001-02	2002-03[r]	2003-04[p]
		thousands of dollars		
Exploration and utilization of the earth	1,570	1,978	1,517	1,710
Infrastructure and general planning of land use:				
Transportation systems	1,710	728	1,248	1,706
Telecommunications	12,016	4,079	2,021	1,571
Other	0	0	427	1,205
Pollution, conservation and protection of the environment	6,180	4,884	6,626	6,270
Public health	104,618	102,761	143,126	134,695
Production, distribution and rational utilization of energy	1,819	170	10	35
Agriculture production and technology	37,603	41,049	40,963	43,028
Fishing	6,761	6,070	6,155	5,925
Forestry	11,293	10,444	10,465	11,763
Industrial production and technology	41,236	52,869	28,854	25,703
Social development	10,993	8,919	8,185	8,961
Exploration and exploitation of space	1,427	946	1,888	1,076
Basic research	182,706	208,229	216,860	229,239
Other civil research	1,083	387	40	13
Total	**421,015**	**443,513**	**438,385**	**472,900**

Table 12. Total expenditures of the Manitoba government on R&D, by objective, 2000-01 to 2003-04

Objective	2000-01	2001-02	2002-03[r]	2003-04[p]
	thousands of dollars			
Exploration and utilization of the earth	0	34	415	190
Infrastructure and general planning of land use:				
Transportation systems	62	62	63	62
Telecommunications	0	0	1,392	926
Other	0	0	11	113
Pollution, conservation and protection of the environment	0	0	385	356
Public health	7,193	7,221	8,334	9,895
Production, distribution and rational utilization of energy	0	0	78	0
Agriculture production and technology	1,280	2,002	2,845	2,372
Fishing	14	0	0	0
Forestry	361	285	389	605
Industrial production and technology	1,399	1,585	1,351	1,797
Social development	636	680	785	1,003
Exploration and exploitation of space	0	0	0	0
Basic research	7,035	6,826	3,591	4,856
Other civil research	0	0	0	0
Total	**17,980**	**18,695**	**19,639**	**22,175**

Table 13. Total expenditures of the Saskatchewan government on R&D, by objective, 2000-01 to 2003-04

Objective	2000-01	2001-02	2002-03[e]	2003-04[e]
	thousands of dollars			
Exploration and utilization of the earth	1,723	1,649	1,731	1,818
Infrastructure and general planning of land use:				
Transportation systems	1,781	1,671	1,755	1,842
Telecommunications	846	480	504	529
Other	0	0	0	0
Pollution, conservation and protection of the environment	2,502	3,041	3,193	3,353
Public health	8,155	9,085	9,539	10,016
Production, distribution and rational utilization of energy	839	869	912	958
Agriculture production and technology	26,975	28,290	29,705	31,190
Fishing	0	0	0	0
Forestry	0	400	420	441
Industrial production and technology	3,149	3,067	3,220	3,381
Social development	52	55	58	61
Exploration and exploitation of space	0	0	0	0
Basic research	30,226	23,178	24,337	25,554
Other civil research	5	0	0	0
Total	**76,253**	**71,785**	**75,374**	**79,143**

Table 14. Total expenditures of the Alberta government on R&D, by objective, 2000-01 to 2003-04

Objective	2000-01	2001-02	2002-03[r]	2003-04[r]
	thousands of dollars			
Exploration and utilization of the earth	0	9	1,576	102
Infrastructure and general planning of land use:				
Transportation systems	1,587	1,392	2,571	2,534
Telecommunications	0	0	0	0
Other	469	363	0	2,226
Pollution, conservation and protection of the environment	3,241	22,960	13,970	10,192
Public health	65,921	76,791	75,812	65,166
Production, distribution and rational utilization of energy	7,113	23,721	32,806	34,941
Agriculture production and technology	28,329	42,948	36,924	35,652
Fishing	0	0	0	0
Forestry	3,192	13,808	10,073	11,067
Industrial production and technology	9	10,981	11,319	12,032
Social development	3,317	4,537	6,195	3,749
Exploration and exploitation of space	0	0	0	0
Basic research	84,652	47,974	57,467	63,746
Other civil research	287	159	72	0
Total	**198,117**	**245,643**	**248,785**	**241,407**

Table 15. Total expenditures of the British Columbia government on R&D, by objective, 2000-01 to 2003-04

Objective	2000-01	2001-02	2002-03[r]	2003-04[p]
	thousands of dollars			
Exploration and utilization of the earth	544	0	200	400
Infrastructure and general planning of land use:				
Transportation systems	38	0	0	0
Telecommunications	4,100	2,281	2,640	2,640
Other	25	0	0	0
Pollution, conservation and protection of the environment	3,140	3,100	2,096	2,046
Public health	114,720	6,040	52,507	28,346
Production, distribution and rational utilization of energy	992	0	0	0
Agriculture production and technology	884	1,379	756	552
Fishing	3,240	3,010	1,926	94
Forestry	31,539	29,261	4,940	15,426
Industrial production and technology	5,397	1,398	12,270	686
Social development	9,363	1,198	5,234	3,737
Exploration and exploitation of space	0	0	0	0
Basic research	22,498	43,375	91,468	67,025
Other civil research	3,469	2,513	1,777	180
Total	**199,949**	**93,555**	**175,814**	**121,132**

Table 16. Total expenditures of provincial governments on scientific activities, by activity, in the natural sciences and engineering, 1995-96 to 2003-04

Province	1995-96	1996-97[r]	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03[r]	2003-04[p]
	thousands of dollars								
S&T									
Quebec[1]	..	..	..	..	..	..	..	..	..
Ontario	309,494	243,370	241,142	259,321	342,756	462,904	524,230	516,891	541,398
Manitoba	28,396	27,265	22,657	31,268	27,394	31,010	34,053	45,144	47,159
Saskatchewan[2]	36,483	31,747	58,912	60,649	48,945	80,629	77,779	..	..
Alberta[3]	156,114	157,212	164,917	202,152	219,770	249,333	292,842	311,509	291,865
British Columbia	180,046	196,079	199,575	190,577	166,366	280,761	202,445	214,022	182,558
R&D									
Quebec[1]	171,187	167,935	156,645	149,787	372,682	323,267	339,779	301,518	436,550
Ontario	212,252	176,840	181,163	186,070	235,049	350,567	402,306	389,385	412,518
Manitoba	9,422	9,571	6,374	14,424	14,192	16,934	17,380	16,394	18,611
Saskatchewan[2]	28,808	25,449	52,400	52,900	41,902	72,750	68,304	71,719	75,305
Alberta[3]	101,419	110,086	125,870	156,815	172,598	193,558	240,482	242,518	235,564
British Columbia	74,612	86,477	85,377	69,152	69,663	189,863	87,718	115,614	93,426

1. *Since 1994-95, the province of Quebec collects only R&D activities.*
2. *R&D data has been estimated for Saskatchewan in 2002-03 and 2003-04.*
3. *All data for 2003-04 is preliminary with the exception of the Alberta provincial government.*

Table 17. Intramural expenditures of provincial governments on scientific activities in the natural sciences and engineering, 1995-96 to 2003-04

Province	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01[r]	2001-02	2002-03[r]	2003-04[p]
	thousands of dollars								
Quebec[1]	..	..	..	..	..	..	..	..	..
Ontario	140,042	109,790	97,145	105,481	133,812	133,403	152,938	150,694	158,860
Manitoba	12,515	14,157	13,073	13,933	12,700	14,281	15,177	28,800	28,801
Saskatchewan	8,182	6,741	7,282	8,426	8,016	9,092	10,388	..	..
Alberta[2]	71,859	57,983	49,432	52,885	58,841	68,020	150,807	141,406	142,742
British Columbia	81,915	87,258	112,791	92,163	70,451	69,395	128,311	111,893	98,124

1. *Since 1994-95, the province of Quebec collects only R&D activities.*
2. *All data for 2003-04 is preliminary with the exception of the Alberta provincial government.*

Table 18. Payments to business enterprises by provincial governments on scientific activities in the natural sciences and engineering, 1995-96 to 2003-04

Province	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03[r]	2003-04[p]
	thousands of dollars								
Quebec[1]	..	..	..	..	..	..	..	..	..
Ontario	32,793	11,936	12,079	7,401	6,428	2,184	27,786	12,896	17,517
Manitoba	4,341	4,978	2,477	2,304	288	653	1,629	250	390
Saskatchewan	10,424	2,357	3,641	8,263	5,992	5,297	6,919	..	..
Alberta[2]	11,503	9,932	15,841	26,242	16,552	21,794	21,516	25,954	17,768
British Columbia	68,836	74,198	56,499	72,402	71,762	63,064	38,574	26,925	8,861

1. *Since 1994-95, the province of Quebec collects only R&D activities.*
2. *All data for 2003-04 is preliminary with the exception of the Alberta provincial government.*

Table 19. Payments to the higher education sector by provincial governments on scientific activities in the natural sciences and engineering, 1995-96 to 2003-04

Province	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03[r]	2003-04[p]
	thousands of dollars								
Quebec[1]	..	..	..	..	..	..	..	..	..
Ontario	115,376	101,748	111,635	118,384	165,622	271,229	279,313	296,378	288,156
Manitoba	2,414	2,354	2,897	5,936	7,853	9,390	9,314	10,329	11,476
Saskatchewan	9,312	10,247	16,505	17,690	16,851	42,105	35,295	..	..
Alberta[2]	27,244	45,974	55,486	72,634	91,799	101,021	99,749	106,710	116,525
British Columbia	18,584	21,230	22,989	19,148	19,943	34,406	27,431	64,553	60,284

1. *Since 1994-95, the province of Quebec collects only R&D activities.*
2. *All data for 2003-04 is preliminary with the exception of the Alberta provincial government.*

Table 20. Payments to other performers[1] by provincial governments on scientific activities in the natural sciences and engineering, 1995-96 to 2003-04

Province	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03[r]	2003-04[p]
	thousands of dollars								
Quebec[2]	..	..	..	..	..	..	..	..	..
Ontario	4,273	5,718	3,531	8,226	11,684	19,851	22,770	24,133	27,097
Manitoba	1,638	1,624	1,653	2,156	1,307	1,662	3,111	2,999	2,817
Saskatchewan	2,910	2,438	21,558	17,094	9,008	14,208	15,166	..	..
Alberta[3]	21,158	8,011	10,424	14,444	9,136	18,089	12,339	29,639	13,034
British Columbia	10,539	13,143	6,967	6,824	3,920	2,527	4,042	2,439	1,082

1. *Other performers include the federal government, municipal governments, individuals, institutions not identified with any other sector, and foreign performers.*
2. *Since 1994-95, the province of Quebec collects only R&D activities.*
3. *All data for 2003-04 is preliminary with the exception of the Alberta provincial government.*

Table 21. Intramural expenditures of provincial governments on R&D in the natural sciences and engineering, 1995-96 to 2003-04

Province	1995-96	1996-97[r]	1997-98	1998-99	1999-00[r]	2000-01	2001-02	2002-03[r]	2003-04[p]
	thousands of dollars								
Newfoundland and Labrador[e]	4,000	4,000	4,000	4,000	5,000	5,000	5,000	5,000	5,000
Nova Scotia[e]	5,000	5,000	5,000	5,000	6,000	6,000	6,000	6,000	6,000
New Brunswick[e]	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000
Quebec	39,602	39,288	37,436	35,546	32,042	34,242	40,750	48,775	50,489
Ontario	66,732	49,119	41,299	43,183	58,839	65,014	70,952	72,768	75,895
Manitoba	529	436	1,078	1,212	1,560	1,890	1,772	2,083	2,351
Saskatchewan[1]	3,835	3,002	3,233	2,885	2,771	2,980	3,263	3,426	3,597
Alberta[2]	25,301	18,439	18,529	21,513	26,077	28,894	113,273	107,920	101,140
British Columbia	21,054	25,294	27,239	23,729	25,814	25,155	21,857	19,715	15,705

***Note**: The source is from Estimates of Canadian Research and Development Expenditures (GERD), Canada 1993 to 2004, and by province 1993 to 2002 no. 88F0006XIE no. 020, December 2004, or in CANSIM, table 358-0001.*

1. R&D data has been estimated for Saskatchewan in 2002-03 and 2003-04.

2. All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.

[e] Estimated data.

Table 22. Payments to business enterprises by provincial governments on R&D in the natural sciences and engineering, 1995-96 to 2003-04

Province	1995-96	1996-97[r]	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03[r]	2003-04[p]
	thousands of dollars								
Quebec	24,192	18,712	14,672	13,138	27,082	22,105	23,295	25,948	65,606
Ontario	18,214	11,247	11,168	6,225	4,520	1,527	25,960	11,053	15,557
Manitoba	4,103	3,487	615	447	87	62	587	196	335
Saskatchewan[1]	8,244	908	2,241	6,637	4,423	4,305	5,631	5,913	6,208
Alberta[2]	5,305	5,565	10,705	19,777	5,702	7,741	9,673	13,892	8,328
British Columbia	28,973	31,593	30,627	26,427	23,357	19,438	32,390	25,165	6,412

1. R&D data has been estimated for Saskatchewan in 2002-03 and 2003-04.

2. All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.

Table 23. Payments to the higher education sector by provincial governments on R&D in the natural sciences and engineering, 1995-96 to 2003-04

Province	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03[r]	2003-04[p]
	thousands of dollars								
Quebec	63,680	59,451	56,216	50,896	122,809	145,018	227,400	176,433	267,307
Ontario	108,450	101,558	111,613	115,419	144,607	247,947	258,457	269,122	265,348
Manitoba	2,389	2,354	2,897	5,934	7,853	9,390	9,142	10,105	11,419
Saskatchewan[1]	8,872	9,751	15,975	17,372	16,841	41,936	34,995	36,745	38,582
Alberta[2]	27,056	45,807	55,404	68,922	91,369	101,019	99,696	104,389	116,256
British Columbia	17,016	20,023	21,707	17,493	18,125	32,394	25,756	61,190	56,997

1. *R&D data has been estimated for Saskatchewan in 2002-03 and 2003-04.*
2. *All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.*

Table 24. Payments to other performers[1] by provincial governments on R&D in the natural sciences and engineering, 1995-96 to 2003-04

Province	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02[r]	2002-03[r]	2003-04[p]
	thousands of dollars								
Quebec[2]	7,004	11,671	11,327	12,328	111,612	60,973	16,255	33,605	35,464
Ontario	2,180	938	621	1,414	4,272	2,435	7,792	9,273	11,433
Manitoba	278	185	261	779	333	568	1,057	1,244	831
Saskatchewan[3]	2,288	1,874	21,075	16,830	8,789	13,602	14,410	15,131	15,887
Alberta[4]	19,916	6,359	8,711	11,824	6,983	16,130	9,792	8,517	8,044
British Columbia	7,423	9,317	5,519	1,503	2,367	1,846	3,963	1,371	144

1. *Other performers include the federal government, municipal governments, individuals, institutions not included with any other sector, and foreign performers.*
2. *Since 1994-95, the province of Quebec collects only R&D activities.*
3. *R&D data has been estimated for Saskatchewan in 2002-03 and 2003-04.*
4. *All data for 2003-04 is preliminary with the exception of the Alberta provincial government.*

Table 25. Personnel of provincial governments engaged in scientific activities, by activity, in the natural sciences and engineering, 1995-96 to 2003-04

Province	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02[r]	2002-03[r]	2003-04[p]
	full-time equivalent[1]								
S&T									
Quebec[2]	..	..	..	..	..	..	..	..	..
Ontario	1,723	1,288	1,209	1,256	1,408	1,622	1,663	1,960	1,971
Manitoba	209	214	192	195	196	210	218	288	288
Saskatchewan[3]	158	107	110	121	125	127	143	..	..
Alberta[4]	926	611	664	705	675	766	1,300	1,113	1,120
British Columbia	1,045	1,023	943	895	853	790	1,471	1,198	1,049
R&D									
Quebec[2]	677	634	606	558	386	434	438	524	510
Ontario	817	500	479	461	607	633	850	987	993
Manitoba	11	9	22	22	30	29	26	41	39
Saskatchewan[3]	73	46	48	48	51	49	50	53	55
Alberta[4]	337	246	283	299	287	299	833	738	642
British Columbia	260	311	298	295	300	319	276	208	177

1. Including personnel in administration of extramural programs.
2. Since 1994-95, the province of Quebec collects only R&D activities.
3. R&D data has been estimated for Saskatchewan in 2002-03 and 2003-04.
4. All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.

Table 26. Total expenditures of provincial governments on scientific activities, by activity, in the natural sciences and engineering, 2003-04

Activity	Ontario	Manitoba	Saskatchewan[1]	Alberta	British Columbia
			thousands of dollars		
Research and development: Current expenditures					
In-house	63,609	1,962	..	53,038	590
Contracts	46,900	353	..	38,147	1,508
Grants	289,555	14,342	..	123,314	76,217
Research fellowships	1,948	1,629	..	5,257	0
Administration of extramural R&D programs	6,691	325	..	10,312	883
Sub-total	*408,703*	*18,611*	..	*230,068*	*93,198*
Capital expenditures	3,815	0	..	5,496	228
Total R&D	**412,518**	**18,611**	**79,143**	**235,564**	**93,426**
Related scientific activities: Current expenditures					
Education support	15,253	21	..	246	3,934
Technical surveys	54,518	11,226	..	28,206	24,077
Information services	15,436	4,880	..	11,727	41,461
Special services and studies	26,868	6,122	..	13,197	2,789
Museum services	9,181	443	..	2,087	9,880
Administration of extramural RSA programs	2,677	59	..	714	1,591
Sub-total	*123,933*	*22,751*	..	*56,177*	*83,732*
Capital expenditures	4,947	5,797	..	124	5,400
Total RSA	**128,880**	**28,548**	**..**	**56,301**	**89,132**
Total	**541,398**	**47,159**	**..**	**291,865**	**182,558**

1. Total R&D data has been estimated for Saskatchewan in 2003-04.

Table 27. Total expenditures of provincial governments on scientific activities, in the natural sciences and engineering, by activity and sector of performance, 2003-04

Province	Intramural	Business enterprises	Higher education	Hospitals and health organizations	Provincial research organizations	Other	**Total**
				thousands of dollars			
S&T							
Quebec[1]	..	..	..	..	..	..	**..**
Ontario	158,860	17,517	288,156	49,768	…	27,097	**541,398**
Manitoba	28,801	390	11,476	2,925	750	2,817	**47,159**
Saskatchewan[2]	..	..	..	..	..	..	**..**
Alberta[3]	142,742	17,768	116,525	1,796	…	13,034	**291,865**
British Columbia	98,124	8,861	60,284	14,207	…	1,082	**182,558**
R&D							
Quebec[1]	50,489	65,606	267,307	14,273	3,411	35,464	**436,550**
Ontario	75,895	15,557	265,348	44,285	…	11,433	**412,518**
Manitoba	2,351	335	11,419	2,925	750	831	**18,611**
Saskatchewan[2]	3,597	6,208	38,582	1,558	9,473	15,887	**75,305**
Alberta[3]	101,140	8,328	116,256	1,796	…	8,044	**235,564**
British Columbia	15,705	6,412	56,997	14,168	…	144	**93,426**

1. *Since 1994-95, the province of Quebec collects only R&D activities.*
2. *R&D data has been estimated for Saskatchewan in 2003-04.*
3. *All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.*

Table 28. Personnel of provincial governments engaged in scientific activities by activity and category, in the natural sciences and engineering, 2003-04

Activity / category	Quebec[1]	Ontario	Manitoba	Saskatchewan[2]	Alberta[3]	British Columbia
			full-time equivalent			
Research and development:						
Scientific and professional	158	586	18	28	196	89
Technical	159	268	6	2	192	47
Other	37	96	10	3	163	17
Sub-total	*354*	*950*	*34*	*33*	*551*	*153*
Administration of extramural programs for R&D:						
Scientific and professional	78	23	3	15	35	19
Technical	50	8	0	0	12	3
Other	28	12	2	7	44	3
Sub-total	*156*	*43*	*5*	*22*	*91*	*25*
Related scientific activities:						
Scientific and professional	..	565	104	..	253	297
Technical	..	300	118	..	180	350
Other	..	29	25	..	27	219
Sub-total	..	*894*	*247*	..	*460*	*866*
Administration of extramural programs for RSA:						
Scientific and professional	..	48	2	..	8	7
Technical	..	0	0	..	5	0
Other	..	36	0	..	5	0
Sub-total	..	*84*	*2*	..	*18*	*7*
Total scientific activities:						
Scientific and professional	236	1,222	127	..	492	412
Technical	209	576	124	..	389	400
Other	65	173	37	..	239	239
Sub-total	*510*	*1,971*	*288*	..	*1,120*	*1,051*
Total	**510**	**1,971**	**288**	**..**	**1,120**	**1,051**

1. *Since 1994-95, the province of Quebec collects only R&D activities.*
2. *R&D data has been estimated for Saskatchewan in 2003-04.*
3. *All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.*

Table 29. Total expenditures of provincial governments on scientific activities in the natural sciences and engineering, by objective, 2003-04

Objective	Ontario	Manitoba	Saskatchewan	Alberta[1]	British Columbia
			thousands of dollars		
Exploration and utilization of the earth	23,037	6,669	..	7,472	3,787
Infrastructure and general planning of land use:					
Transportation systems	4,138	2,645	..	10,906	630
Telecommunications	1,906	11,184	..	0	3,935
Other	2,216	136	..	3,942	59,747
Pollution, conservation and protection of the environment	68,172	2,861	..	31,497	10,053
Public health	101,280	8,107	..	63,999	4,964
Production, distribution and rational utilization of energy	251	310	..	35,235	310
Agriculture production and technology	51,805	4,345	..	47,624	1,495
Fishing	6,132	1,428	..	0	277
Forestry	14,900	2,845	..	13,220	15,692
Industrial production and technology	31,646	1,854	..	12,124	2,694
Social development	4,099	443	..	2,087	744
Exploration and exploitation of space	1,339	0	..	0	0
Basic research	230,214	4,332	..	63,759	76,735
Other civil research	263	0	..	0	1,495
Total	**541,398**	**47,159**	**..**	**291,865**	**182,558**

1. All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.

Table 30. Total expenditures of provincial governments on R&D in the natural sciences and engineering, by objective, 2003-04

Objective	Ontario	Manitoba	Saskatchewan[1]	Alberta[2]	British Columbia
			thousands of dollars		
Exploration and utilization of the earth	1,710	190	1,730	102	3,787
Infrastructure and general planning of land use:					
Transportation systems	1,112	62	1,753	2,534	630
Telecommunications	1,571	926	503	0	3,935
Other	1,029	113	0	2,226	59,747
Pollution, conservation and protection of the Environment	6,270	356	3,190	10,192	10,053
Public health	91,680	7,981	9,530	63,072	4,964
Production, distribution and rational utilization of energy	0	0	911	34,941	310
Agriculture production and technology	40,849	2,249	29,678	35,652	1,495
Fishing	5,925	0	0	0	277
Forestry	11,763	605	420	11,067	15,692
Industrial production and technology	25,703	1,797	3,217	12,032	2,694
Social development	88	0	58	0	744
Exploration and exploitation of space	1,076	0	0	0	0
Basic research	223,742	4,332	24,315	63,746	76,735
Other civil research	0	0	0	0	1,495
Total	**412,518**	**18,611**	**75,305**	**235,564**	**182,558**

1. *R&D data has been estimated for Saskatchewan in 2003-04.*
2. *All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.*

Table 31. Total expenditures of provincial governments on scientific activities, by activity, in the social sciences and humanities, 1995-96 to 2003-04

Province	1995-96	1996-97[r]	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03[r]	2003-04[p]
	thousands of dollars								
S&T									
Quebec[1]	..	..	..	..	..	..	..	..	..
Ontario	110,486	93,348	73,667	85,457	112,689	156,875	160,152	158,959	176,024
Manitoba	17,429	14,661	17,176	17,814	15,892	21,088	20,132	21,022	23,808
Saskatchewan[2]	12,663	10,085	11,252	14,497	15,095	15,401	16,001	..	..
Alberta[3]	12,310	11,655	13,471	12,265	14,822	14,461	24,902	21,912	21,681
British Columbia	52,113	51,708	61,264	58,668	69,320	57,752	38,157	83,685	51,264
R&D									
Quebec[1]	47,120	48,312	50,031	63,555	83,312	106,132	86,574	111,443	122,986
Ontario	38,611	33,737	29,033	27,483	45,787	70,448	41,207	49,000	60,382
Manitoba	3,036	2,462	2,606	2,513	2,366	2,896	3,165	3,245	3,564
Saskatchewan[2]	2,747	2,459	3,044	3,800	4,039	3,503	3,481	3,655	3,838
Alberta[3]	132	78	250	250	300	4,198	4,813	6,267	5,843
British Columbia	3,373	2,797	3,307	3,677	3,011	10,086	5,837	60,200	27,706

1. *Since 1994-95, the province of Quebec collects only R&D activities.*
2. *R&D data has been estimated for Saskatchewan in 2002-03 and 2003-04.*
3. *All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.*

Table 32. Intramural expenditures of provincial governments on scientific activities in the social sciences and humanities, 1995-96 to 2003-04

Province	1995-96	1996-97[r]	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03[r]	2003-04[p]
	thousands of dollars								
Quebec[1]	..	..	..	..	..	..	..	..	..
Ontario	66,001	50,048	46,413	50,903	50,993	57,405	73,221	56,713	68,552
Manitoba	9,859	11,732	13,799	14,491	13,050	18,338	16,949	17,768	19,372
Saskatchewan	8,850	6,185	6,772	9,377	9,316	9,200	9,457	..	..
Alberta[2]	8,230	7,405	7,551	7,908	9,185	3,741	1,811	3,989	5,241
British Columbia	43,058	40,895	41,720	43,133	50,339	41,002	25,763	17,612	19,221

1. *Since 1994-95, the province of Quebec collects only R&D activities.*
2. *All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.*

Table 33. Personnel of provincial governments engaged in scientific activities in the social sciences and humanities, 1995-96 to 2003-04

Province	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02[r]	2002-03[r]	2003-04[p]
	full-time equivalent								
Quebec[1]	..	..	..	..	..	..	..	..	..
Ontario	1,045	715	654	701	694	744	727	672	672
Manitoba	155	177	215	221	206	217	222	213	221
Saskatchewan	133	96	103	125	125	126	132	..	..
Alberta[2]	122	102	104	107	143	49	45	92	78
British Columbia	573	532	570	546	525	426	268	166	182

1. *Since 1994-95, the province of Quebec collects only R&D activities.*
2. *All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.*

Table 34. Total expenditures of provincial governments on scientific activities, by activity, in the social sciences and humanities, 2003-04

Activity	Ontario	Manitoba	Saskatchewan[1]	Alberta[2]	British Columbia
			thousands of dollars		
Research and development:					
Current expenditures					
In-house	1,866	524	..	1,487	840
Contracts	4,621	613	..	332	2,103
Grants	52,959	2,242	..	2,650	24,763
Research fellowships	65	160	..	0	0
Administration of extramural R&D programs	871	25	..	100	0
Sub-total	*60,382*	*3,564*	..	*4,569*	*27,706*
Capital expenditures	0	0	..	0	0
Total R&D	**60,382**	**3,564**	**3,838**	**4,569**	**27,706**
Related scientific activities:					
Current expenditures	106,186	20,118	..	15,288	23,200
Administration of extramural RSA programs	2,542	90	..	823	309
Sub-total	*108,728*	*20,208*	..	*16,111*	*23,509*
Capital expenditures	6,914	36	..	10	49
Total RSA	**115,642**	**20,244**	**..**	**16,121**	**23,558**
Total	**176,024**	**23,808**	**..**	**20,690**	**51,264**

1. *Total R&D data has been estimated for Saskatchewan in 2003-04.*
2. *All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.*

Table 35. Total expenditures of provincial governments on scientific activities, by activity and by sector of performance, in the social sciences and humanities, 2003-04

Province	Intramural	Business enterprises	Higher education	Hospitals and health organizations	Provincial research organizations	Other	**Total**
				thousands of dollars			
S&T							
Quebec[1]	..	..	..	..	..	..	**..**
Ontario	68,552	6,116	42,316	8,313	…	50,727	**176,024**
Manitoba	19,372	483	2,398	0	55	1,500	**23,808**
Saskatchewan[2]	..	…	..	..	..	..	**..**
Alberta[3]	5,241	11,243	3,127	955	…	1,115	**21,681**
British Columbia	19,221	1,260	4,350	24,720	…	1,713	**51,264**
R&D							
Quebec[1]	17,303	457	76,305	18,495	6,546	3,880	**122,986**
Ontario	2,882	1,814	36,798	5,764	…	13,124	**60,382**
Manitoba	549	365	2,398	0	15	237	**3,564**
Saskatchewan[2]	151	0	867	0	0	2,820	**3,838**
Alberta[3]	1,427	2,756	1,660	0	…	0	**5,843**
British Columbia	840	70	3,319	23,267	…	210	**27,706**

1. *Since 1994-95, the province of Quebec collects only R&D activities.*
2. *R&D data has been estimated for Saskatchewan in 2003-04.*
3. *All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.*

Table 36. Personnel of provincial governments engaged in scientific activities by activity and category in the social sciences and humanities, 2003-04

Activity / category	Quebec[1]	Ontario	Manitoba	Saskatchewan[2]	Alberta[3]	British Columbia
			full-time equivalent			
Research and development:						
Scientific and professional	126	26	9	2	10	6
Technical	24	6	0	0	1	0
Other	14	2	0	0	2	0
Sub-total	*164*	*34*	*9*	*2*	*13*	*6*
Administration of extramural programs for R&D:						
Scientific and professional	23	6	0	0	0	1
Technical	15	2	0	0	0	0
Other	9	5	0	0	1	1
Sub-total	*47*	*13*	*0*	*0*	*1*	*2*
Related scientific activities:						
Scientific and professional	..	292	159	..	33	81
Technical	..	85	11	..	3	14
Other	..	221	37	..	9	73
Sub-total	..	*598*	*207*	..	*45*	*168*
Administration of extramural programs for RSA:						
Scientific and professional	..	23	3	..	18	3
Technical	..	1	0	..	0	0
Other	..	3	2	..	1	3
Sub-total	..	*26*	*5*	..	*19*	*6*
Total scientific activities:						
Scientific and professional	149	347	171	..	61	91
Technical	39	94	11	..	4	14
Other	23	231	39	..	13	77
Sub-total	211	672	221	..	78	182
Total	**211**	**672**	**221**	**..**	**78**	**182**

1. *Since 1994-95, the province of Quebec collects only R&D activities.*
2. *R&D data has been estimated for Saskatchewan in 2003-04.*
3. *All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.*

Table 37. Total expenditures of provincial governments on scientific activities in the social sciences and humanities, by objective, 2003-04

Objective	Ontario	Manitoba	Saskatchewan	Alberta[1]	British Columbia
			thousands of dollars		
Exploration and utilization of the earth	0	0	..	65	0
Infrastructure and general planning of land use:					
Transportation systems	644	0	..	0	0
Telecommunications	5	0	..	0	0
Other	3,488	0	..	603	0
Pollution, conservation and protection of the environment	493	34	..	364	0
Public health	62,911	1,914	..	10,399	26,654
Production, distribution and rational utilization of energy	45	1,713	..	0	0
Agriculture production and technology	2,189	313	..	0	0
Fishing	0	0	..	0	0
Forestry	10	0	..	0	0
Industrial production and technology	143	963	..	144	1,633
Social development	52,886	18,177	..	8,258	10,446
Exploration and exploitation of space	0	0	..	0	0
Basic research	37,263	524	..	510	11,106
Other civil research	15,947	170	..	347	1,425
Total	**176,024**	**23,808**	**..**	**20,690**	**51,264**

1. All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.

Table 38. Total expenditures of provincial governments on R&D in the social sciences and humanities, by objective, 2003-04

Objective	Ontario	Manitoba	Saskatchewan[1]	Alberta[2]	British Columbia
			thousands of dollars		
Exploration and utilization of the earth	0	0	88	0	0
Infrastructure and general planning of land use:					
Transportation systems	594	0	89	0	0
Telecommunications	0	0	26	0	0
Other	176	0	0	0	0
Pollution, conservation and protection of the Environment	0	0	163	0	0
Public health	43,015	1,914	486	1,969	23,583
Production, distribution and rational utilization of energy	35	0	47	0	0
Agriculture production and technology	2,179	123	1,512	0	0
Fishing	0	0	0	0	0
Forestry	0	0	21	0	0
Industrial production and technology	0	0	164	0	0
Social development	8,873	1,003	3	2,600	3,537
Exploration and exploitation of space	0	0	0	0	0
Basic research	5,497	524	1,239	0	586
Other civil research	13	0	0	0	0
Total	**60,382**	**3,564**	**3,838**	**4,569**	**27,706**

1. *R&D data has been estimated for Saskatchewan in 2003-04.*
2. *All data for 2003-2004 is preliminary with the exception of the Alberta provincial government.*

Provincial research organizations

Table 39. Total expenditures of provincial research organizations on scientific activities, by activity and by institute, 1995 to 2003

Institute	1995	1996	1997	1998	1999	2000	2001	2002[r]	2003[p]
					thousands of dollars				
S&T									
InNOVAcorp	7,996	9,517	9,822	8,362	…	…	…	…	…
New Brunswick Research and Productivity Council	8,046	7,475	7,918	8,280	8,817	7,942	8,183	8,606	8,392
Centre de recherche industrielle du Québec	35,801	33,607	34,217	37,381	33,097	33,259	35,658	39,072	37,243
ORTECH Corporation	25,018	25,806	25,766	..	…	…	…	…	…
Industrial Technology Centre (Manitoba)	9,622	2,505	2,408	2,778	2,876	2,845	3,244	2,367	1,993
Saskatchewan Research Council	19,222	21,129	18,150	18,940	18,649	21,554	20,843	21,472	25,278
Alberta Research Council	39,176	44,871	47,798	60,457	70,615	77,629	…	...	…
Yukon Research Institute	...	...	...	497	767	664	542	867	850
NUNAVUT Research Institute	885	947	899	944	..	..	..	..	..
Aurora Research Institute (N.W.T.)	...	...	...	1,140	1,251	1,225	1,130	1,395	1,395
Total	**145,766**	**145,857**	**146,978**	**138,779**	**136,072**	**145,118**	**69,600**	**73,779**	**75,151**
R&D									
InNOVAcorp	1,280	1,523	1,669	1,421	…	…	…	…	…
New Brunswick Research and Productivity Council	161	75	2,138	2,153	1,852	1,350	1,554	1,808	1,762
Centre de recherche industrielle du Québec	23,345	22,516	11,223	16,743	13,372	12,868	14,275	16,243	14,901
ORTECH Corporation	9,256	9,548	9,466	..	…	…	…	…	…
Industrial Technology Centre (Manitoba)	2,117	526	..	..	..	..	..	..	..
Saskatchewan Research Council	9,611	10,565	8,349	7,766	6,527	7,328	6,670	7,301	8,847
Alberta Research Council	21,468	34,237	24,734	32,305	38,550	44,549	…	...	…
Yukon Research Institute	...	...	...	108	171	173	299	442	310
NUNAVUT Research Institute	133	241	350	374	..	..	..	..	..
Aurora Research Institute (N.W.T.)	...	...	...	..	..	..	..	..	..
Total	**68,369**	**79,232**	**57,929**	**60,870**	**60,472**	**66,268**	**22,798**	**25,794**	**25,820**

The provincial research organizations' sector spent $73.8 million on scientific expenditures in 2002, which was a 6% increase from 2001. The Centre de recherche industrielle du Québec had the highest total expenditures of $39.1 million in 2002, and the Saskatchewan Research Council was second with $21.5 million. These two largest performers made up 82% of the PRO sector's scientific activities.

Since 2001, the Centre de recherche industrielle du Québec has been the largest performer in the PRO sector representing more than 50% of total S&T expenditures and more than 58% of R&D expenditures.

Table 40. Sources of funds for scientific activities of the provincial research organizations, 1995 to 2002

Sources and types of funds	1995	1996	1997	1998	1999	2000	2001	2002
				percent				
Provincial governments:								
Subsidies, grants and contributions	42.5	39.9	30.4	33.5	34.0	30.4	33.3	39.1
Contracts	5.9	8.0	15.1	16.6	15.4	21.5	7.6	7.8
Federal government:								
Subsidies, grants, contributions and contracts	7.4	7.2	6.8	6.2	3.6	5.3	6.3	6.1
Canadian industry contracts	31.7	33.3	32.1	31.0	29.7	29.6	39.3	36.3
Other Canadian sources	4.2	2.7	7.9	8.7	12.1	4.0	11.0	8.4
Foreign	8.3	8.9	7.6	4.0	5.2	9.2	2.5	2.3
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Table 40 provides the sources of funds of the provincial research organizations from 1995 to 2002. In 2002, the largest funders of the provincial research organizations were the provincial governments (47%) and Canadian industry (36%).

Table 41. Distribution of provincial research organization personnel, by institute, 2002

Institution	R&D[1]			S&T		
	Scientific and professional	Technical	Other	Scientific and professional	Technical	Other
			full-time equivalent[1]			
New Brunswick Research and Productivity Council	47	30	19	47	30	19
Centre de recherche industrielle du Québec	75	52	71	119	68	115
Industrial Technology Centre (Manitoba)	0	0	0	10	13	4
Saskatchewan Research Council	57	90	11	69	90	39
Yukon Research Institute	6	1	0	6	1	0
NUNAVUT Research Institute	..	..	..	4	7	11
Aurora Research Institute (N.W.T.)	4	6	11	4	7	11

1. Including personnel of extramural programs in R&D.

Provincial co-ordinators

Five provincial governments are currently sponsoring the Science and Innovation Surveys Section in the collection of similar scientific activity data. Below is a list of co-ordinators for the various sponsoring departments/ministries/agencies.

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Catalogued publications

Statistical Publications

88-001-XIE Science Statistics (irregular)

88-202-XIE Industrial Research and Development, ntentions (with 2003 preliminary estimates and 2002 actual expenditures) (annual)

88-204-XIE Federal Scientific Activities, (annual)

Volume 29, 88-001-XIE

No. 1 Distribution of federal expenditures on science and technology by province and territories, 2002-2003 (January 2005)

No. 2 Research and development (R&D) personnel in Canada, 1993 to 2002 (May 2005)

No. 3 Biotechnology scientific activities in federal government departments and agencies, 2003-2004 (May 2005)

No. 4 Industrial Research and Development, 2001 to 2005 (June 2005)

No. 5 Estimates of total spending on research and development in the health field in Canada, 1988 to 2004 (July 2005)

Volume 28, 88-001-XIE

No. 1 Estimation of research and development expenditures in the higher education sector, 2001-2002 HERD (January 2004)

No. 2 Total spending on research and development in Canada, 1990 to 2003 and provinces, 1990 to 2001 GERD (January 2004)

No. 3 Distribution of federal expenditures on science and technology, by province and territories, 2001-2002 (February 2004)

No. 4 Research and development (R&D) expenditures of private non-profit (PNP) organizations, 2002 (April 2004)

No. 5 The provincial research organizations, 2001 (May 2004)

No. 6 Scientific and technological (S&T) activities of provincial governments, 1994-95 to 2002-03 (June 2004)

No. 7 Biotechnology scientific activities in selected federal government departments and agencies, 2002-2003 (July 2004)

No. 8 Estimates of total spending on research and development in the health field in Canada, 1988 to 2003 (July 2004)

No. 9 Industrial research and development, 2000 to 2004 (August 2004)

No. 10 Estimation of research and development expenditures in the higher education sector, 2002-2003 (November 2004)

No. 11 Federal government expenditures on scientific activities, 2004-2005[p] (November 2004)

No. 12 Total spending on research and development in Canada, 1990 to 2004[p], and provinces, 1990 to 2002 (December 2004)

Working papers – 2005

ST-05-01E Federal government expenditures and personnel in the natural and social sciences 1995-96 to 2004-05 (January 2005)

ST-05-02E Provincial distribution of federal expenditures and personnel on science and technology, 1996-97 to 2002-2003 (January 2005)

ST-05-03E Industrial R&D statistics by region, 1994 to 2002 (January 2005)

ST-05-04E Knowledge sharing succeeds: how selected service industries rated the importance of using knowledge management practices to their success (February 2005)

ST-05-05E Characteristics of firms that grow from small to medium size: Industrial and geographic distribution of small high-growth firms (February 2005)

ST-05-06E Summary: Joint Statistics Canada – University of Windsor Workshop on Intellectual Property Commercialization Indicators, Windsor (November 2004)

ST-05-07E Summary: Meeting on Commercialization Measurement, Indicators, Gaps and Frameworks, Ottawa (December 2004)

ST-05-08E Estimates of research and development, personnel in Canada, 1979 to 2002 (May 2005)

ST-05-09E Overview of the Biotechnology Use and Development Survey – 2003 (April 2005)

ST-05-10E Access to Financing Capital by Canadian Innovative Biotechnology Firms (April 2005)

Working papers – 2004

ST-04-01E Starting the new century: technological change in the Canadian private sector, 2000-2002, (January 2004)

ST-04-02E Estimation of research and development expenditures in the higher education sector, 2001-2002 (January 2004)

ST-04-03E Estimates of Canadian research and development expenditures (GERD), Canada, 1992 to 2003[p], and by province, 1992 to 2001 (January 2004)

ST-04-04E The Many Guises of Innovation: What we have learnt and where we are heading (January 2004)

ST-04-05E Provincial distribution of federal expenditures and personnel on science and technology, 1995-1996 to 2001-2002 (February 2004)

ST-04-06E Biotechnology Use and development Survey: methodology, issues and responses (February 2004)

ST-04-07E An historical comparison of technological change, 1998-2000 and 2000-2002, in the private and public sectors (March 2004)

ST-04-08E Technological change in the public sector, 2000-2002 (March 2004)

ST-04-09E Regional disparities of research and development in the business services sector (April 2004)

ST-04-10-E Innovative firms: A look at small firms (May 2004)

ST-04-11-E Scientific and technological activities of provincial governments, 1994-95 to 2002-03 (June 2004)

ST-04-12-E Federal government payments to industry, 1997-1998 to 2001-2002 (July 2004**)**

ST-04-13-E Community innovation: Industrial specialization in Canadian cities (July 2004)

ST-04-14-E Estimates of total expenditures on research and development in the health field in Canada, 1988 to 2003 (July 2004)

ST-04-15-E Community innovation: innovation performance of manufacturing firms in Canadian communities (September 2004)

ST-04-16-E List of papers published by Kluwer Academic Publishers, in the Economics of Science, Technology and Innovation Series (October 2004)

ST-04-17-E Trends in Canadian biotechnology activity: 1997 to 2001 (October 2004)

ST-04-18-E Public sector technology transfer in Canada, 2003 (November 2004)

ST-04-19-E Estimation of research and development expenditures in the higher education sector, 2002-2003 (November 2004)

ST-04-20-E Estimates of Canadian research and development expenditures (GERD), Canada, 1993 to 2004^{p}, and by province 1993 to 2002 (December 2004)

ST-04-21-E Characteristics of firms that grow from small to medium size: growth factors--interviews and measurability, 1999 (December 2004)

ST-04-22-E Characteristics of firms that grow from small to medium size: innovation and growth in small manufacturing firms, 1997 to 1999 (December 2004)

Research papers

No. 1 The state of science and technology indicators in the OECD countries, by Benoit Godin (August 1996)

No. 2 Knowledge as a capacity for action, by Nico Stehr (June 1996)

No. 3 Linking outcomes for workers to changes in workplace practices: an experimental Canadian workplace and employee survey, by Garnett Picot and Ted Wannell (June 1996)

No. 4 Are the costs and benefits of health research measurable? by M.B. Wilk (February 1997)

No. 5 Technology and economic growth: a survey, by Peter Hanel and Jorge Niosi (April 1998)

No. 6 Diffusion of biotechnologies in Canada, by Anthony Arundel (February 1999)

No. 7 Barriers to innovation in services industries in Canada, by Pierre Mohnen and Julio Rosa (November 1999)

No. 8 Explaining rapid growth in Canadian biotechnology firms, by Jorge Niosi (August 2000)

No. 9 Internationally comparable indicators on biotechnology: a stocktaking, a proposal for work and supporting material, by W. Pattinson, B. Van Beuzekom and A. Wyckoff (January 2001)

No. 10 Analysis of the survey on innovation, advanced technologies and practices in the construction and related industries, 1999, by George Seaden, Michael Guolla, Jérôme Doutriaux and John Nash (January 2001)

No. 11 Capacity to innovate, innovation and impact: the Canadian engineering services industry, by Daood Hamdani (March 2001)

No. 12 Patterns of advanced manufacturing technology (AMT) use in Canadian manufacturing: 1998 AMT survey results, by Anthony Arundel and Viki Sonntag (November 2001)