

2021 Annual Survey of Research and Development in Canadian Industry Industrial Non-profit Organizations

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This information is collected under the authority of the *Statistics Act*, Revised Statutes of Canada, 1985, Chapter S-19.
COMPLETION OF THIS QUESTIONNAIRE IS A LEGAL REQUIREMENT UNDER THIS ACT.

Introduction

Survey purpose

This survey collects information on scientific activities of Canadian businesses and industrial non-profit organizations. The research and development expenditures and personnel information is used by federal, provincial and territorial governments and agencies, academics, trade associations and international organizations for statistical analyses and policy purposes. These data also contribute to national totals of research and development activities. The payments and receipts information is used by these agencies to monitor knowledge flows across international borders and between Canadian organizations.

Your information may also be used by Statistics Canada for other statistical and research purposes.

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To reduce respondent burden, Statistics Canada has entered into data-sharing agreements with provincial and territorial statistical agencies and other government organizations, which have agreed to keep the data confidential and use them only for statistical purposes.

Information on confidentiality, data-sharing agreements and record linkages can be found on the last page of this questionnaire.

Please return the questionnaire within 21 days.

Please mail the completed questionnaire in the enclosed envelope or fax it to Statistics Canada at 1-888-883-7999.

If you are unable to complete within 21 days **OR** if you need help, call us at **1-877-949-9492** or **TTY 1-800-363-7629**.

Statistics Canada
Operations and Integration Division
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Ottawa, Ontario K1A 0T6

Visit our website, www.statcan.gc.ca

Reporting instructions

- Please print in ink.
- Report dollar amounts **in thousands of Canadian dollars**.
- **Exclude** sales tax.
- Percentages should be rounded to whole numbers.
- When precise figures are not available, provide your best estimates.
- Do not report dollars in decimals. Round all values to the nearest whole number.
- If this organization **performs in-house R&D** and **outsources R&D**, complete **all** questions.
- If this organization **performs in-house R&D** and **does not outsource R&D**, complete questions 1-6, 9-22.
- If this organization **outsources R&D** and **does not perform in-house R&D**, complete questions 1-4, 6-8, 13, 17-22.
- If this organization **does not perform in-house R&D** and **does not outsource R&D**, complete questions 1-4, 6, 13, 17, 18 & 20-22.
- Consult the reporting guide at www.statcan.gc.ca/guides-e for further information.

Business or organization and contact information

1. **Verify or provide** the business or organization's **legal and operating name** and correct where needed.

Note: Legal name modifications should only be done to correct a spelling error or typo.

Legal name

Operating name (if applicable)

2. **Verify or provide the contact information** of the designated business or organization **contact person** for this questionnaire and correct where needed.

Note: The designated contact person is the person who should receive this questionnaire. The designated contact person may not always be the one who actually completes the questionnaire.

First name

Last name

Title

Preferred language of communication

English

French

Mailing address (number and street)

City

Province, territory or state

Postal code or ZIP code

Example: A9A 9A9 or 12345 1234

Country

Email address

Example: user@example.gov.ca

Telephone number (including area code)

Example: 123-123-1234

Extension number
(if applicable)

Fax number (including area code)

Example: 123-123-1234

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3. **Verify or provide the current operational status** of the business or organization identified by the legal and operating name above.

B00323

1 Operational → **Go to question 4**

2 Not currently operational

e.g., temporarily or permanently closed, change of ownership

Why is this business or organization not currently operational?

B00309

2 Seasonal operations → **Go to question 3a**

3 Ceased operations → **Go to question 3b**

4 Sold operations → **Go to question 3c**

5 Amalgamated with other businesses or organizations → **Go to question 3d**

6 Temporarily inactive but will re-open → **Go to question 3e**

7 No longer operating due to other reasons → **Go to question 3f**

3a. Seasonal operations

When did this business or organization close for the season?

Date B00217
YYYY MM DD

When does this business or organization expect to resume operations?

Date B00218
YYYY MM DD → **Go to question 4**

3b. Ceased operations

When did this business or organization cease operations?

Date B00211
YYYY MM DD

Why did this business or organization cease operations?

B00311

1 Bankruptcy

2 Liquidation

3 Dissolution

4 Other
Specify the other reasons why the operations ceased

B00312

} → **Go to question 4**

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3c. Sold operations

When was this business or organization sold?

YYYY MM DD
B00212

What is the legal name of the buyer?

B00406

→ Go to question 4

3d. Amalgamated with other businesses or organizations

When did this business or organization amalgamate?

YYYY MM DD
B00213

What is the legal name of the resulting or continuing business or organization?

B00407

What are the legal names of the other amalgamated businesses or organizations?

B00408

→ Go to question 4

3e. Temporarily inactive but will re-open

When did this business or organization become temporarily inactive?

YYYY MM DD
B00214

When does this business or organization expect to resume operations?

YYYY MM DD
B00215

Why is this business or organization temporarily inactive?

B00313

→ Go to question 4

3f. No longer operating due to other reasons

When did this business or organization cease operations?

YYYY MM DD
B00216

Why did this business or organization cease operations?

B00314

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4. **Verify or provide the current main activity** of the business or organization identified by the legal and operating name.

Note: The described activity was assigned using the North American Industry Classification System (NAICS).

B05002

1 This is the current main activity → **Go to next section**

2 This **is not** the current main activity
Provide a **brief but precise description** of this business or organization's **main activity**
e.g., breakfast cereal manufacturing, shoe store, software development

B05003



5. Was this business or organization's main activity ever classified as:

B05111

1 Yes

2 No → **Go to next section**

6. When did the main activity change?

Date B00219

YYYY	MM	DD
<input type="text"/>	<input type="text"/>	<input type="text"/>

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In-house research and development (R&D) expenditures

4. In 2021, 2022 and 2023, did this organization have or does it plan to have expenditures for R&D performed in-house within Canada?

Exclude payments for outsourced (contracted out or granted) R&D, which should be reported in question 7.

1 Yes

2 No → Go to question 6

5. In 2021, 2022 and 2023, what are this organization's actual and planned expenditures for R&D performed in-house within Canada?

Please report all amounts in thousands of Canadian dollars.

Report '0' for no R&D expenditures.

	Made in 2021	Planned in 2022	Planned in 2023
	CAN\$ '000	CAN\$ '000	CAN\$ '000
Current in-house R&D expenditures within Canada			
a. Wages, salaries of permanent, temporary and casual R&D employees Include fringe benefits	E45077_sr1 \$ [input] ,000		
b. Services to support R&D Include services of self-employed individuals or contractors who are working on-site on this organization's R&D projects. Exclude contracted out or granted expenditures to other organizations to perform R&D (report in question 7)	E45077_sr2 \$ [input] ,000		
c. R&D materials	E45077_sr3 \$ [input] ,000		
d. All other current R&D costs Include overhead costs	E45077_sr4 \$ [input] ,000		
Total current in-house R&D expenditures within Canada	E45050 \$ [input] ,000	E45079 \$ [input] ,000	E45082 \$ [input] ,000
Capital in-house R&D expenditures within Canada			
e. Software Exclude capital depreciation	E45078_sr1 \$ [input] ,000		
f. Land Exclude capital depreciation	E45078_sr2 \$ [input] ,000		
g. Buildings and structures Exclude capital depreciation	E45078_sr3 \$ [input] ,000		
h. Equipment, machinery and all other capital Exclude capital depreciation	E45078_sr4 \$ [input] ,000		
2021 - Total capital in-house R&D expenditures within Canada	E45060 \$ [input] ,000	E45081 \$ [input] ,000	E45083 \$ [input] ,000
2021 - Total in-house R&D expenditures within Canada	E45070 \$ [input] ,000		

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Outsourced (contracted out or granted) R&D expenditures

6. In 2021, did this organization have **outsourced** (contracted out or granted) **R&D expenditures** within Canada or outside Canada?

- Include:**
- funding or grants provided to other organizations to perform **R&D**
 - contracted out expenditures for **R&D**.

Exclude services of self-employed individuals or contractors who are working on-site on this organization's **R&D** projects, which should be reported earlier as part of in-house **R&D** expenditures in question 5.

B05152_tp 1 Yes

2 No → Go to question 8

7. In 2021, what were this organization's **outsourced** (contracted out or granted) **R&D expenditures** within Canada or outside Canada?

Please report all amounts in **thousands** of Canadian dollars.
Report '0' for no R&D expenditures.

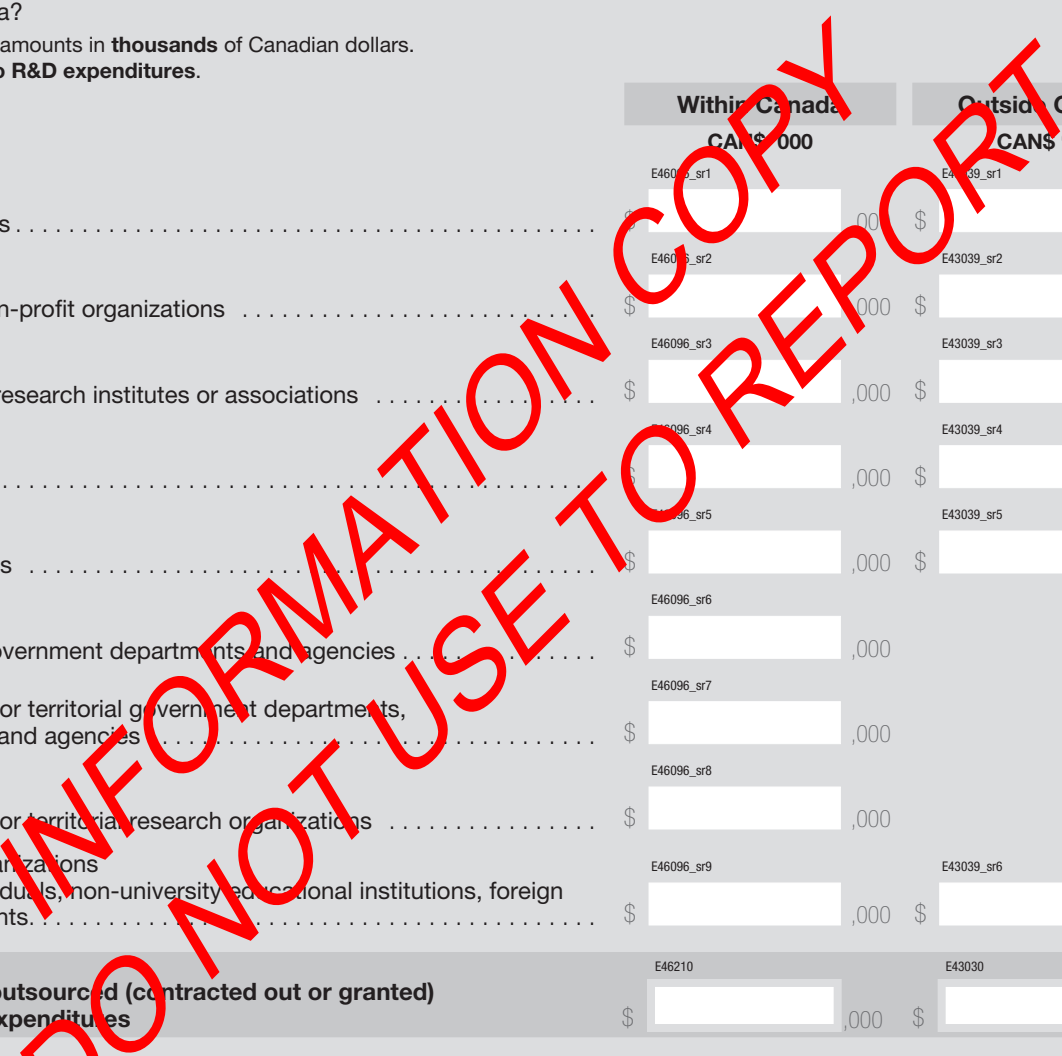
	Within Canada CAN\$ '000	Outside Canada CAN\$ '000
a. Companies	E46096_sr1 \$ _____ ,000	E43039_sr1 \$ _____ ,000
b. Private non-profit organizations	E46096_sr2 \$ _____ ,000	E43039_sr2 \$ _____ ,000
c. Industrial research institutes or associations	E46096_sr3 \$ _____ ,000	E43039_sr3 \$ _____ ,000
d. Hospitals	E46096_sr4 \$ _____ ,000	E43039_sr4 \$ _____ ,000
e. Universities	E46096_sr5 \$ _____ ,000	E43039_sr5 \$ _____ ,000
f. Federal government departments and agencies	E46096_sr6 \$ _____ ,000	
g. Provincial or territorial government departments, ministries and agencies	E46096_sr7 \$ _____ ,000	
h. Provincial or territorial research organizations	E46096_sr8 \$ _____ ,000	
i. Other organizations e.g., individuals, non-university educational institutions, foreign governments.	E46096_sr9 \$ _____ ,000	E43039_sr6 \$ _____ ,000
2021 - Total outsourced (contracted out or granted) R&D expenditures	E46210 \$ _____ ,000	E43030 \$ _____ ,000

8. In 2022 and 2023, what are this organization's **planned outsourced** (contracted out or granted) **R&D expenditures** within Canada or outside Canada?

Report '0' for no R&D expenditures.

Please report all amounts in **thousands** of Canadian dollars.

	Within Canada CAN\$ '000	Outside Canada CAN\$ '000
2022 - Total outsourced (contracted out or granted) R&D expenditures	E46097 \$ _____ ,000	E43041 \$ _____ ,000
2023 - Total outsourced (contracted out or granted) R&D expenditures	E46098 \$ _____ ,000	E43042 \$ _____ ,000



Geographic distribution of in-house R&D expenditures within Canada in 2021

9. In 2021, how were this organization's total expenditures for R&D performed in-house distributed by province or territory?

Exclude:

- payments for outsourced (contracted out or granted) R&D, which should be reported in question 7
- capital depreciation.

Please report all amounts in **thousands** of Canadian dollars.

Current in-house R&D expenditures	Capital in-house R&D expenditures
-----------------------------------	-----------------------------------

	CAN\$ '000	CAN\$ '000
a. Newfoundland and Labrador	E45077_g1 \$ <input type="text"/> ,000	E45078_g1 \$ <input type="text"/> ,000
b. Prince Edward Island	E45077_g2 \$ <input type="text"/> ,000	E45078_g2 \$ <input type="text"/> ,000
c. Nova Scotia	E45077_g3 \$ <input type="text"/> ,000	E45078_g3 \$ <input type="text"/> ,000
d. New Brunswick	E45077_g4 \$ <input type="text"/> ,000	E45078_g4 \$ <input type="text"/> ,000
e. Quebec	E45077_g5 \$ <input type="text"/> ,000	E45078_g5 \$ <input type="text"/> ,000
f. Ontario	E45077_g6 \$ <input type="text"/> ,000	E45078_g6 \$ <input type="text"/> ,000
g. Manitoba	E45077_g7 \$ <input type="text"/> ,000	E45078_g7 \$ <input type="text"/> ,000
h. Saskatchewan	E45077_g8 \$ <input type="text"/> ,000	E45078_g8 \$ <input type="text"/> ,000
i. Alberta	E45077_g9 \$ <input type="text"/> ,000	E45078_g9 \$ <input type="text"/> ,000
j. British Columbia	E45077_g10 \$ <input type="text"/> ,000	E45078_g10 \$ <input type="text"/> ,000
k. Yukon	E45077_g11 \$ <input type="text"/> ,000	E45078_g11 \$ <input type="text"/> ,000
l. Northwest Territories	E45077_g12 \$ <input type="text"/> ,000	E45078_g12 \$ <input type="text"/> ,000
m. Nunavut	E45077_g13 \$ <input type="text"/> ,000	E45078_g13 \$ <input type="text"/> ,000
2021 - Total current and capital in-house R&D expenditures	E45100 \$ <input type="text"/> ,000	E45110 \$ <input type="text"/> ,000

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▲
Should equal total current in-house R&D expenditures from question 5

▲
Should equal total capital in-house R&D expenditures from question 5

Sources of funds for in-house R&D expenditures in 2021

10. In 2021, what were the **sources of funds** for this organization's total expenditures for **R&D performed in-house**?

Include Canadian and foreign sources.

Exclude: • payments for outsourced (contracted out or granted) **R&D**, which should be reported in question 7
• capital depreciation.

Please report all amounts in **thousands** of Canadian dollars.

Report '0' for no R&D expenditures.

- a. Funds from this organization
Include interest payments and other income
- b. Funds from member companies or affiliates
Include annual fees and sustaining grants
- c. Federal government grants or funding
Include R&D grants or funding or R&D portion only of other grants or funding
- d. Federal government contracts
Include R&D contracts or R&D portion only of other contracts

	From within Canada	From outside Canada
	CAN\$ '000	CAN\$ '000
E64047	\$ [] ,000	\$ [] ,000
E63037		
E65337	\$ [] ,000	\$ [] ,000
E63044		
E64048	\$ [] ,000	
E65049	\$ [] ,000	

R&D contract work for companies

Organization 1

e. **GST** number (9-digit business number (BN) or charitable registration number)

B71014_nc1

Legal name

B71014_nc2

	From within Canada	From outside Canada
	CAN\$ '000	CAN\$ '000
E65048_nc1	\$ [] ,000	\$ [] ,000
E63038_nc1		

Organization 2

f. **GST** number (9-digit business number (BN) or charitable registration number)

B71014_nc3

Legal name

B71014_nc4

E65048_nc2	\$ [] ,000	\$ [] ,000
E63038_nc2		

Organization 3

g. **GST** number (9-digit business number (BN) or charitable registration number)

B71014_nc5

Legal name

B71014_nc6

E65048_nc3	\$ [] ,000	\$ [] ,000
E63038_nc3		

Organization 4

h. **GST** number (9-digit business number (BN) or charitable registration number)

B71014_nc7

Legal name

B71014_nc8

E65048_nc4	\$ [] ,000	\$ [] ,000
E63038_nc4		

i. Other contracts not listed above

E65048_nc5	\$ [] ,000	\$ [] ,000
E63038_nc5		

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Geographic distribution of provincial or territorial government grants or funding and provincial or territorial government contracts

Include R&D grants/contracts or R&D portion only of other grants/contracts.

Provincial or territorial government grants or funding

Provincial or territorial government contracts

CAN\$ '000

CAN\$ '000

j. Newfoundland and Labrador	E64049_g1	\$ [] ,000	E65051_g1	\$ [] ,000
k. Prince Edward Island	E64049_g2	\$ [] ,000	E65051_g2	\$ [] ,000
l. Nova Scotia	E64049_g3	\$ [] ,000	E65051_g3	\$ [] ,000
m. New Brunswick	E64049_g4	\$ [] ,000	E65051_g4	\$ [] ,000
n. Quebec	E64049_g5	\$ [] ,000	E65051_g5	\$ [] ,000
o. Ontario	E64049_g6	\$ [] ,000	E65051_g6	\$ [] ,000
p. Manitoba	E64049_g7	\$ [] ,000	E65051_g7	\$ [] ,000
q. Saskatchewan	E64049_g8	\$ [] ,000	E65051_g8	\$ [] ,000
r. Alberta	E64049_g9	\$ [] ,000	E65051_g9	\$ [] ,000
s. British Columbia	E64049_g10	\$ [] ,000	E65051_g10	\$ [] ,000
t. Yukon	E64049_g11	\$ [] ,000	E65051_g11	\$ [] ,000
u. Northwest Territories	E64049_g12	\$ [] ,000	E65051_g12	\$ [] ,000
v. Nunavut	E64049_g13	\$ [] ,000	E65051_g13	\$ [] ,000

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R&D contract work for private non-profit organizations

From within Canada

From outside Canada

CAN\$ '000

CAN\$ '000

Organization 1

w. **GST** number (9-digit business number (BN) or charitable registration number)

B71013_nc1

E65052_nc1

\$,000

E63039_nc1

\$,000

Organization name

B71013_nc2

Organization 2

x. **GST** number (9-digit business number (BN) or charitable registration number)

B71013_nc3

E65052_nc2

\$,000

E63039_nc2

\$,000

Organization name

B71013_nc4

Organization 3

y. **GST** number (9-digit business number (BN) or charitable registration number)

B71013_nc5

E65052_nc3

\$,000

E63039_nc3

\$,000

Organization name

B71013_nc6

z. Other sources
e.g., universities, foreign governments, individuals

E64051

\$,000

E63041

\$,000

2021 - Total in-house R&D expenditures by sources of funds by origin (sum of questions a. to z.)

E60310

\$,000

E60320

\$,000

2021 - Total in-house R&D expenditures (Canadian and foreign sources) (should equal total in-house R&D expenditures from question 5)

E60330

\$,000

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Fields of R&D for in-house R&D expenditures within Canada in 2021

11. In 2021, how were this organization's **total expenditures** for R&D performed in-house within Canada distributed by field(s) of research and development?

Exclude: • payments for outsourced (contracted out or granted) R&D which should be reported in question 7
• capital depreciation.

Please report all amounts in **thousands** of Canadian dollars.

Report '0' for no R&D expenditures.

Natural and formal sciences

Exclude computer sciences, information technology and bioinformatics (to be reported at lines s. and t.)

	CAN\$ '000
a. Mathematics	E45092_y1 \$ <input type="text"/> ,000
b. Physical sciences	E45092_y2 \$ <input type="text"/> ,000
c. Chemical sciences	E45092_y3 \$ <input type="text"/> ,000
d. Earth and related environmental sciences	E45092_y4 \$ <input type="text"/> ,000
e. Biological sciences	E45092_y5 \$ <input type="text"/> ,000
f. Other natural sciences	E45092_y6 \$ <input type="text"/> ,000
Total natural and formal sciences	E45085 \$ <input type="text"/> ,000

Engineering and technology

Exclude software engineering and technology (to be reported at line r.)

	CAN\$ '000
g. Civil engineering	E45093_y1 \$ <input type="text"/> ,000
h. Electrical engineering, electronics engineering and communications technology	E45093_y2 \$ <input type="text"/> ,000
i. Mechanical engineering	E45093_y3 \$ <input type="text"/> ,000
j. Chemical engineering	E45093_y4 \$ <input type="text"/> ,000
k. Materials engineering	E45093_y5 \$ <input type="text"/> ,000
l. Medical engineering	E45093_y6 \$ <input type="text"/> ,000
m. Environmental engineering	E45093_y7 \$ <input type="text"/> ,000
n. Environmental biotechnology	E45093_y8 \$ <input type="text"/> ,000
o. Industrial biotechnology	E45093_y9 \$ <input type="text"/> ,000
p. Nanotechnology	E45093_y10 \$ <input type="text"/> ,000
q. Other engineering and technologies	E45093_y11 \$ <input type="text"/> ,000
Total engineering and technology	E45086 \$ <input type="text"/> ,000

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Software-related sciences and technology

CAN\$ '000

r. Software engineering and technology	\$	<input type="text"/>	,000
		E45094_y1	
s. Computer sciences	\$	<input type="text"/>	,000
		E45094_y2	
t. Information technology and bioinformatics	\$	<input type="text"/>	,000
		E45094_y3	
Total software-related sciences and technology	\$	<input type="text"/>	,000
		E45087	

Medical and health sciences

u. Basic medicine	\$	<input type="text"/>	,000
		E45084_y1	
v. Clinical medicine	\$	<input type="text"/>	,000
		E45084_y2	
w. Health sciences	\$	<input type="text"/>	,000
		E45084_y3	
x. Medical biotechnology	\$	<input type="text"/>	,000
		E45084_y4	
y. Other medical sciences	\$	<input type="text"/>	,000
		E45084_y5	
Total medical and health sciences	\$	<input type="text"/>	,000
		E45120	

Agricultural sciences

z. Agriculture, forestry and fisheries sciences	\$	<input type="text"/>	,000
		E45095_y1	
aa. Animal and dairy sciences	\$	<input type="text"/>	,000
		E45095_y2	
ab. Veterinary sciences	\$	<input type="text"/>	,000
		E45095_y3	
ac. Agricultural biotechnology	\$	<input type="text"/>	,000
		E45095_y4	
ad. Other agricultural sciences	\$	<input type="text"/>	,000
		E45095_y5	
Total agricultural sciences	\$	<input type="text"/>	,000
		E45088	

Social sciences and humanities

ae. Psychology	\$	<input type="text"/>	,000
		E45096_y1	
af. Educational sciences	\$	<input type="text"/>	,000
		E45096_y2	
ag. Economics and business	\$	<input type="text"/>	,000
		E45096_y3	
ah. Other social sciences	\$	<input type="text"/>	,000
		E45096_y4	
ai. Humanities	\$	<input type="text"/>	,000
		E45096_y5	
2021 - Total social sciences and humanities	\$	<input type="text"/>	,000
		E45089	

2021 - Total in-house R&D expenditures within Canada by field of research and development (should equal total in-house R&D expenditures from question 5) (sum of questions a. to ai.)

\$	<input type="text"/>	,000
	E45130	

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Nature of R&D for in-house expenditures within Canada in 2021

12. In 2021, how were this organization's **total expenditures** for R&D performed in-house within Canada distributed by nature of R&D?

Basic research is experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundation of phenomena and observable facts, without any particular application or use in view.

Applied research is original investigation undertaken in order to acquire new knowledge. It is, however, directed primarily towards a specific, practical aim or objective.

Experimental development is systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

(OECD. Frascati Manual: Proposed Standard for Surveys on Research and Experimental Development, 2015)

Percentage of total in-house R&D expenditures

a. Basic research	E45091_y1	<input type="text"/>	<input type="text"/>	<input type="text"/>	%
b. Applied research	E45091_y2	<input type="text"/>	<input type="text"/>	<input type="text"/>	%
c. Experimental development	E45091_y3	<input type="text"/>	<input type="text"/>	<input type="text"/>	%
Total percentage	E45140	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	%

Results of R&D expenditures from 2019 to 2021

13. During the three (3) years 2019, 2020 and 2021, did this organization's **total expenditures** for R&D performed in-house and outsourced (contracted out or granted) within Canada or outside Canada lead to new or significant improvements to the following?

		Yes	No
a. Goods Include goods developed through new knowledge from research discoveries.	B10033 1	<input type="radio"/>	2 <input type="radio"/>
b. Services Include on-going knowledge transfer to physicians, first responders, patients and the general public.	B10034 1	<input type="radio"/>	2 <input type="radio"/>
c. Methods of manufacturing or producing goods and services	B10035 1	<input type="radio"/>	2 <input type="radio"/>
d. Logistics, delivery or distribution methods for this organization's inputs, goods or services ...	B10036 1	<input type="radio"/>	2 <input type="radio"/>
e. Supporting activities for this organization's processes, such as maintenance systems or operations for purchasing, accounting or computing.	B10037 1	<input type="radio"/>	2 <input type="radio"/>

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In-house R&D personnel in 2021

14. In 2021, how many **in-house R&D personnel** within Canada did this organization have in the following **R&D** occupations?

Please report in **full-time equivalents (FTE)**.

Include on-site consultants and contractors in line e.

If this organization is unable to provide a gender breakdown of **FTEs**, please leave the associated fields empty and report only the totals.

Full-time equivalent (FTE)

R&D may be carried out by persons who work solely on **R&D** projects or by persons who devote only part of their time to **R&D**, and the balance to other activities such as testing, quality control and production engineering. To arrive at the total effort devoted to **R&D** in terms of personnel, it is necessary to estimate the full-time equivalent of these persons working only part-time in **R&D**.

Full-time equivalent (FTE) = Number of persons who work solely on **R&D** projects + the time of persons working only part of their time on **R&D**.

Example calculation: If out of four scientists engaged in **R&D** work, one works solely on **R&D** projects and the remaining three devote only one quarter of their working time to **R&D**, then: **FTE** = 1 + 1/4 + 1/4 + 1/4 = 1.75 scientists.

Researchers and research managers

	Male (FTEs)	Female (FTEs)	Another gender (FTEs)	Total (FTEs)
a. Scientists, social scientists, engineers and researchers Include software developers and programmers	B20045_o1_y1	B20045_o2_y1	B20045_o3_y1	B20045_y1
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	B20045_o1_y2	B20045_o2_y2	B20045_o3_y2	B20045_y2
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
b. Senior research managers	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	B20045_o1_y3	B20045_o2_y3	B20045_o3_y3	B20045_y3
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total researchers and research managers	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

R&D technical, administrative and support staff

c. Technicians, technologists and research assistants Include software technicians	B20045_o1_y4	B20045_o2_y4	B20045_o3_y4	B20045_y4
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	B20045_o1_y5	B20045_o2_y5	B20045_o3_y5	B20045_y5
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
d. Other R&D technical, administrative and support staff	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	B20045_o1_y6	B20045_o2_y6	B20045_o3_y6	B20045_y6
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total R&D technical, administrative and support staff	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Other R&D occupations

e. On-site R&D consultants and contractors	B20045_o1_y7	B20045_o2_y7	B20045_o3_y7	B20045_y7
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Total in-house R&D personnel within Canada (sum of questions a. to e.)	B20040_o1	B20040_o2	B20040_o3	B20040
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Percentage of software-related activities

B20046

15. Of this organization's **total in-house R&D personnel** reported above, what percentage performed software-related activities?

%

16. In 2021, how were the total in-house R&D personnel distributed by province or territory?

Please report in full-time equivalents (FTE).

	Number of researchers and research managers	Number of R&D technical, administrative and support staff	Number of on-site R&D consultants and contractors
a. Newfoundland and Labrador	B20047_g1	B20048_g1	B20049_g1
b. Prince Edward Island	B20047_g2	B20048_g2	B20049_g2
c. Nova Scotia	B20047_g3	B20048_g3	B20049_g3
d. New Brunswick	B20047_g4	B20048_g4	B20049_g4
e. Quebec	B20047_g5	B20048_g5	B20049_g5
f. Ontario	B20047_g6	B20048_g6	B20049_g6
g. Manitoba	B20047_g7	B20048_g7	B20049_g7
h. Saskatchewan	B20047_g8	B20048_g8	B20049_g8
i. Alberta	B20047_g9	B20048_g9	B20049_g9
j. British Columbia	B20047_g10	B20048_g10	B20049_g10
k. Yukon	B20047_g11	B20048_g11	B20049_g11
l. Northwest Territories	B20047_g12	B20048_g12	B20049_g12
m. Nunavut	B20047_g13	B20048_g13	B20049_g13
Total in-house R&D personnel within Canada	B20050	B20060	B20070
	Should equal total researchers and research managers from question 14	Should equal total R&D technical, administrative and support staff from question 14	Should equal total on-site consultants and contractors from question 14

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Technology and technical assistance payments in 2021

17. In 2021, how much did this organization pay to other organizations for technology and technical assistance?

Please report all amounts in **thousands** of Canadian dollars.
Report '1' for payments made between \$1 and \$999.

Payments made to members, affiliated companies or organizations

- a. Patents
- b. Copyrights
- c. Trademarks
- d. Industrial designs
- e. Integrated circuit topography
- f. Original software
- g. Packaged or off-the-shelf software
- h. Databases
Useful life exceeding one year.
- i. Other technology and technical assistance
Include technical assistance, industrial processes
and know-how

Payments made within Canada

CAN\$ '000

E46099_pc1 \$,000

E46099_pc2 \$,000

E46099_pc3 \$,000

E46099_pc4 \$,000

E46099_pc5 \$,000

E46099_pc6 \$,000

E46099_pc7 \$,000

E46099_pc8 \$,000

E46099_pc9 \$,000

Payments made outside Canada

CAN\$ '000

E43043_pc1 \$,000

E43043_pc2 \$,000

E43043_pc3 \$,000

E43043_pc4 \$,000

E43043_pc5 \$,000

E43043_pc6 \$,000

E43043_pc7 \$,000

E43043_pc8 \$,000

E43043_pc9 \$,000

Total payments made to members, affiliated companies or organizations (sum of questions a. to i.)

E46220 \$,000

E43040 \$,000

Payments made to other organizations, companies or individuals

- j. Patents
- k. Copyrights
- l. Trademarks
- m. Industrial designs
- n. Integrated circuit topography
- o. Original software
- p. Packaged or off-the-shelf software
- q. Databases
Useful life exceeding one year.
- r. Other technology and technical assistance
Include technical assistance, industrial processes
and know-how

E46101_pc1 \$,000

E46101_pc2 \$,000

E46101_pc3 \$,000

E46101_pc4 \$,000

E46101_pc5 \$,000

E46101_pc6 \$,000

E46101_pc7 \$,000

E46101_pc8 \$,000

E46101_pc9 \$,000

E43044_pc1 \$,000

E43044_pc2 \$,000

E43044_pc3 \$,000

E43044_pc4 \$,000

E43044_pc5 \$,000

E43044_pc6 \$,000

E43044_pc7 \$,000

E43044_pc8 \$,000

E43044_pc9 \$,000

Total payments made to other organizations, companies or individuals (sum of questions j. to r.)

E46230 \$,000

E43050 \$,000

Total payments made to other organizations for technology and technical assistance (sum of questions a. to r.)

E46260 \$,000

E43060 \$,000

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18. In 2021, how much did this organization receive from other organizations for technology and technical assistance?

Please report all amounts in thousands of Canadian dollars.
Report '1' for payments received between \$1 and \$999.

Payments received from members, affiliated companies or organizations

- a. Patents
- b. Copyrights
- c. Trademarks
- d. Industrial designs
- e. Integrated circuit topography
- f. Original software
- g. Packaged or off-the-shelf software
- h. Databases
Useful life exceeding one year.
- i. Other technology and technical assistance
Include technical assistance, industrial processes
and know-how.

Payments received from within Canada

CAN\$ '000

E46102_pc1 \$ [] ,000

E46102_pc2 \$ [] ,000

E46102_pc3 \$ [] ,000

E46102_pc4 \$ [] ,000

E46102_pc5 \$ [] ,000

E46102_pc6 \$ [] ,000

E46102_pc7 \$ [] ,000

E46102_pc8 \$ [] ,000

E46102_pc9 \$ [] ,000

Payments received from outside Canada

CAN\$ '000

E63042_pc1 \$ [] ,000

E63042_pc2 \$ [] ,000

E63042_pc3 \$ [] ,000

E63042_pc4 \$ [] ,000

E63042_pc5 \$ [] ,000

E63042_pc6 \$ [] ,000

E63042_pc7 \$ [] ,000

E63042_pc8 \$ [] ,000

E63042_pc9 \$ [] ,000

Total payments received from members, affiliated companies or organizations (sum of questions a. to i.)

E46240 \$ [] ,000

E63030 \$ [] ,000

Payments received from other organizations, companies or individuals

- j. Patents
- k. Copyrights
- l. Trademarks
- m. Industrial designs
- n. Integrated circuit topography
- o. Original software
- p. Packaged or off-the-shelf software
- q. Databases
Useful life exceeding one year.
- r. Other technology and technical assistance
Include technical assistance, industrial processes
and know-how.

E46103_pc1 \$ [] ,000

E46103_pc2 \$ [] ,000

E46103_pc3 \$ [] ,000

E46103_pc4 \$ [] ,000

E46103_pc5 \$ [] ,000

E46103_pc6 \$ [] ,000

E46103_pc7 \$ [] ,000

E46103_pc8 \$ [] ,000

E46103_pc9 \$ [] ,000

E63043_pc1 \$ [] ,000

E63043_pc2 \$ [] ,000

E63043_pc3 \$ [] ,000

E63043_pc4 \$ [] ,000

E63043_pc5 \$ [] ,000

E63043_pc6 \$ [] ,000

E63043_pc7 \$ [] ,000

E63043_pc8 \$ [] ,000

E63043_pc9 \$ [] ,000

Total payments received from other organizations, companies or individuals (sum of questions j. to r.)

E46250 \$ [] ,000

E63040 \$ [] ,000

Total payments received from other organizations for technology and technical assistance (sum of questions a. to r.)

E46270 \$ [] ,000

E63050 \$ [] ,000

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ENERGY-RELATED R&D BY AREA OF TECHNOLOGY

19. In 2021, did this organization's **total in-house and outsourced** (contracted out or granted) **R&D expenditures include energy-related R&D** in the following categories?

- | | |
|-------------------------------|--------------------------------------|
| 1. Fossil fuels | 5. Hydrogen and fuel cells |
| 2. Renewable energy resources | 6. Energy efficiency |
| 3. Nuclear fission and fusion | 7. Other energy-related technologies |
| 4. Electric power | |

Yes → Please provide details below

No → Go to question 20

2021 in-house energy-related R&D expenditures

Energy-related **R&D** by area of technology
(consult the reporting guide at www.statcan.gc.ca/guides-e for further information and definitions)

A
Funds from this
organization

B
Funds from federal,
provincial or territorial
government(s)

C
All other Canadian
sources of funds

CAN\$ '000

1. Fossil fuels

	E64052_e1_y1	E64053_e1_y1	E64054_e1_y1
a) Crude oils and natural gas exploration	\$,000	\$,000	\$,000
b) Crude oils and natural gas production and storage Include enhanced recovery natural gas production.	\$,000	\$,000	\$,000
c) Oil sands and heavy crude oil surface and sub-surface production and separation of bitumen, tailings management	\$,000	\$,000	\$,000
d) Refining, processing and upgrading of fossil fuels	\$,000	\$,000	\$,000
e) Coal production, separation and processing	\$,000	\$,000	\$,000
f) Transportation of fossil fuels	\$,000	\$,000	\$,000

2. Renewable energy resources

	E64052_e2_y1	E64053_e2_y1	E64054_e2_y1
a) Solar photovoltaics (PV)	\$,000	\$,000	\$,000
b) Solar thermal-power and high-temperature applications	\$,000	\$,000	\$,000
c) Solar heating and cooling	\$,000	\$,000	\$,000
d) Wind energy	\$,000	\$,000	\$,000
e) Bio-energy – biomass production and transportation	\$,000	\$,000	\$,000
f) Bio-energy – biomass conversion to transportation fuel	\$,000	\$,000	\$,000
g) Bio-energy – biomass conversion to heat and electricity	\$,000	\$,000	\$,000
h) Other bio-energy	\$,000	\$,000	\$,000
i) Small hydro (less than 10 MW)	\$,000	\$,000	\$,000
j) Large hydro (greater than or equal to 10 MW)	\$,000	\$,000	\$,000
k) Other renewable energy Include ocean and geothermal.	\$,000	\$,000	\$,000

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2021 in-house energy-related R&D expenditures		2021 outsourced (contracted out or granted) energy-related R&D expenditures		
D All foreign sources of funds	Total in-house R&D (= A+B+C+D)	E Outsourced (contracted out or granted) within Canada	F Outsourced (contracted out or granted) outside Canada	Total outsourced R&D (= E+F)
CAN\$ '000		CAN\$ '000		
1. Fossil fuels				
E63045_e1_y1	E45097_e1_y1	E46104_e1_y1	E43045_e1_y1	E40430_e1_y1
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e1_y2	E45097_e1_y2	E46104_e1_y2	E43045_e1_y2	E40430_e1_y2
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e1_y3	E45097_e1_y3	E46104_e1_y3	E43045_e1_y3	E40430_e1_y3
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e1_y4	E45097_e1_y4	E46104_e1_y4	E43045_e1_y4	E40430_e1_y4
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e1_y5	E45097_e1_y5	E46104_e1_y5	E43045_e1_y5	E40430_e1_y5
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e1_y6	E45097_e1_y6	E46104_e1_y6	E43045_e1_y6	E40430_e1_y6
\$,000	\$,000	\$,000	\$,000	\$,000
2. Renewable energy resource				
E63045_e2_y1	E45097_e2_y1	E46104_e2_y1	E43045_e2_y1	E40430_e2_y1
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e2_y2	E45097_e2_y2	E46104_e2_y2	E43045_e2_y2	E40430_e2_y2
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e2_y3	E45097_e2_y3	E46104_e2_y3	E43045_e2_y3	E40430_e2_y3
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e2_y4	E45097_e2_y4	E46104_e2_y4	E43045_e2_y4	E40430_e2_y4
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e2_y5	E45097_e2_y5	E46104_e2_y5	E43045_e2_y5	E40430_e2_y5
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e2_y6	E45097_e2_y6	E46104_e2_y6	E43045_e2_y6	E40430_e2_y6
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e2_y7	E45097_e2_y7	E46104_e2_y7	E43045_e2_y7	E40430_e2_y7
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e2_y8	E45097_e2_y8	E46104_e2_y8	E43045_e2_y8	E40430_e2_y8
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e2_y9	E45097_e2_y9	E46104_e2_y9	E43045_e2_y9	E40430_e2_y9
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e2_y10	E45097_e2_y10	E46104_e2_y10	E43045_e2_y10	E40430_e2_y10
\$,000	\$,000	\$,000	\$,000	\$,000
E63045_e2_y11	E45097_e2_y11	E46104_e2_y11	E43045_e2_y11	E40430_e2_y11
\$,000	\$,000	\$,000	\$,000	\$,000

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2021 in-house energy-related R&D expenditures

Energy-related **R&D** by area of technology
(consult the reporting guide at www.statcan.gc.ca/guides-e for further information and definitions)

A
Funds from
this organization

B
Funds from federal,
provincial or territorial
government(s)

C
All other Canadian
sources of funds

CAN\$ '000

3. Nuclear fission and fusion

a) Nuclear materials exploration, mining and preparation, tailings management	E64052_e3_y1 \$,000	E64053_e3_y1 \$,000	E64054_e3_y1 \$,000
b) Nuclear reactors	E64052_e3_y2 \$,000	E64053_e3_y2 \$,000	E64054_e3_y2 \$,000
c) Other fission	E64052_e3_y3 \$,000	E64053_e3_y3 \$,000	E64054_e3_y3 \$,000
d) Fusion	E64052_e3_y4 \$,000	E64053_e3_y4 \$,000	E64054_e3_y4 \$,000

4. Electric power

a) Electric power generation in utility sector	E64052_e4_y1 \$,000	E64053_e4_y1 \$,000	E64054_e4_y1 \$,000
b) Electric power - combined heat and power in industry, buildings	E64052_e4_y2 \$,000	E64053_e4_y2 \$,000	E64054_e4_y2 \$,000
c) Electricity transmission, distribution and storage	E64052_e4_y3 \$,000	E64053_e4_y3 \$,000	E64054_e4_y3 \$,000

5. Hydrogen and fuel cells

a) Hydrogen production for process applications	E64052_e5_y1 \$,000	E64053_e5_y1 \$,000	E64054_e5_y1 \$,000
b) Hydrogen production for transportation applications	E64052_e5_y2 \$,000	E64053_e5_y2 \$,000	E64054_e5_y2 \$,000
c) Hydrogen transport and storage	E64052_e5_y3 \$,000	E64053_e5_y3 \$,000	E64054_e5_y3 \$,000
d) Other hydrogen	E64052_e5_y4 \$,000	E64053_e5_y4 \$,000	E64054_e5_y4 \$,000
e) Stationary fuel cells	E64052_e5_y5 \$,000	E64053_e5_y5 \$,000	E64054_e5_y5 \$,000
f) Mobile fuel cells	E64052_e5_y6 \$,000	E64053_e5_y6 \$,000	E64054_e5_y6 \$,000

6. Energy efficiency

a) Energy efficiency applications for industry	E64052_e6_y1 \$,000	E64053_e6_y1 \$,000	E64054_e6_y1 \$,000
b) Energy efficiency for residential, institutional and commercial sectors	E64052_e6_y2 \$,000	E64053_e6_y2 \$,000	E64054_e6_y2 \$,000
c) Energy efficiency for transportation	E64052_e6_y3 \$,000	E64053_e6_y3 \$,000	E64054_e6_y3 \$,000
d) Other energy efficiency	E64052_e6_y4 \$,000	E64053_e6_y4 \$,000	E64054_e6_y4 \$,000

7. Other energy-related technologies

a) Carbon capture, transport and storage related to fossil fuel production and processing	E64052_e7_y1 \$,000	E64053_e7_y1 \$,000	E64054_e7_y1 \$,000
b) Carbon capture, transport and storage related to electric power production	E64052_e7_y2 \$,000	E64053_e7_y2 \$,000	E64054_e7_y2 \$,000
c) Carbon capture, transport and storage related to industry in end-use sector	E64052_e7_y3 \$,000	E64053_e7_y3 \$,000	E64054_e7_y3 \$,000
d) Energy system analysis	E64052_e7_y4 \$,000	E64053_e7_y4 \$,000	E64054_e7_y4 \$,000
e) All other energy-related technologies	E64052_e7_y5 \$,000	E64053_e7_y5 \$,000	E64054_e7_y5 \$,000

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2021 in-house energy-related R&D expenditures		2021 outsourced (contracted out or granted) energy-related R&D expenditures		
D All foreign sources of funds	Total in-house R&D (= A+B+C+D)	E Outsourced (contracted out or granted) within Canada	F Outsourced (contracted out or granted) outside Canada	Total outsourced R&D (= E+F)
CAN\$ '000		CAN\$ '000		
3. Nuclear fission and fusion				
E63045_e3_y1 \$,000	E45097_e3_y1 \$,000	E46104_e3_y1 \$,000	E43045_e3_y1 \$,000	E40430_e3_y1 \$,000
E63045_e3_y2 \$,000	E45097_e3_y2 \$,000	E46104_e3_y2 \$,000	E43045_e3_y2 \$,000	E40430_e3_y2 \$,000
E63045_e3_y3 \$,000	E45097_e3_y3 \$,000	E46104_e3_y3 \$,000	E43045_e3_y3 \$,000	E40430_e3_y3 \$,000
E63045_e3_y4 \$,000	E45097_e3_y4 \$,000	E46104_e3_y4 \$,000	E43045_e3_y4 \$,000	E40430_e3_y4 \$,000
4. Electric power				
E63045_e4_y1 \$,000	E45097_e4_y1 \$,000	E46104_e4_y1 \$,000	E43045_e4_y1 \$,000	E40430_e4_y1 \$,000
E63045_e4_y2 \$,000	E45097_e4_y2 \$,000	E46104_e4_y2 \$,000	E43045_e4_y2 \$,000	E40430_e4_y2 \$,000
E63045_e4_y3 \$,000	E45097_e4_y3 \$,000	E46104_e4_y3 \$,000	E43045_e4_y3 \$,000	E40430_e4_y3 \$,000
5. Hydrogen and fuel cells				
E63045_e5_y1 \$,000	E45097_e5_y1 \$,000	E46104_e5_y1 \$,000	E43045_e5_y1 \$,000	E40430_e5_y1 \$,000
E63045_e5_y2 \$,000	E45097_e5_y2 \$,000	E46104_e5_y2 \$,000	E43045_e5_y2 \$,000	E40430_e5_y2 \$,000
E63045_e5_y3 \$,000	E45097_e5_y3 \$,000	E46104_e5_y3 \$,000	E43045_e5_y3 \$,000	E40430_e5_y3 \$,000
E63045_e5_y4 \$,000	E45097_e5_y4 \$,000	E46104_e5_y4 \$,000	E43045_e5_y4 \$,000	E40430_e5_y4 \$,000
E63045_e5_y5 \$,000	E45097_e5_y5 \$,000	E46104_e5_y5 \$,000	E43045_e5_y5 \$,000	E40430_e5_y5 \$,000
E63045_e5_y6 \$,000	E45097_e5_y6 \$,000	E46104_e5_y6 \$,000	E43045_e5_y6 \$,000	E40430_e5_y6 \$,000
6. Energy efficiency				
E63045_e6_y1 \$,000	E45097_e6_y1 \$,000	E46104_e6_y1 \$,000	E43045_e6_y1 \$,000	E40430_e6_y1 \$,000
E63045_e6_y2 \$,000	E45097_e6_y2 \$,000	E46104_e6_y2 \$,000	E43045_e6_y2 \$,000	E40430_e6_y2 \$,000
E63045_e6_y3 \$,000	E45097_e6_y3 \$,000	E46104_e6_y3 \$,000	E43045_e6_y3 \$,000	E40430_e6_y3 \$,000
E63045_e6_y4 \$,000	E45097_e6_y4 \$,000	E46104_e6_y4 \$,000	E43045_e6_y4 \$,000	E40430_e6_y4 \$,000
7. Other energy-related technologies				
E63045_e7_y1 \$,000	E45097_e7_y1 \$,000	E46104_e7_y1 \$,000	E43045_e7_y1 \$,000	E40430_e7_y1 \$,000
E63045_e7_y2 \$,000	E45097_e7_y2 \$,000	E46104_e7_y2 \$,000	E43045_e7_y2 \$,000	E40430_e7_y2 \$,000
E63045_e7_y3 \$,000	E45097_e7_y3 \$,000	E46104_e7_y3 \$,000	E43045_e7_y3 \$,000	E40430_e7_y3 \$,000
E63045_e7_y4 \$,000	E45097_e7_y4 \$,000	E46104_e7_y4 \$,000	E43045_e7_y4 \$,000	E40430_e7_y4 \$,000
E63045_e7_y5 \$,000	E45097_e7_y5 \$,000	E46104_e7_y5 \$,000	E43045_e7_y5 \$,000	E40430_e7_y5 \$,000

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Technology and technical assistance payments in 2021

20. In 2021, how much did this organization receive from other organizations for technology and technical assistance?

Please report all amounts in thousands of Canadian dollars.

Report '1' for payments received between \$1 and \$999.

Payments received from members, affiliated companies or organizations

- a. Patents
- b. Copyrights
- c. Trademarks
- d. Industrial designs
- e. Integrated circuit topography
- f. Original software
- g. Packaged or off-the-shelf software
- h. Databases
Useful life exceeding one year.
- i. Other technology and technical assistance
Include technical assistance, industrial processes and know-how.

Payments received from within Canada

CAN\$ '000

E46102_pc1 \$,000

E46102_pc2 \$,000

E46102_pc3 \$,000

E46102_pc4 \$,000

E46102_pc5 \$,000

E46102_pc6 \$,000

E46102_pc7 \$,000

E46102_pc8 \$,000

E46102_pc9 \$,000

Payments received from outside Canada

CAN\$ '000

E63042_pc1 \$,000

E63042_pc2 \$,000

E63042_pc3 \$,000

E63042_pc4 \$,000

E63042_pc5 \$,000

E63042_pc6 \$,000

E63042_pc7 \$,000

E63042_pc8 \$,000

E63042_pc9 \$,000

Total payments received from members, affiliated companies or organizations

E63240 \$,000

E63030 \$,000

Payments received from other organizations, companies or individuals

- j. Patents
- k. Copyrights
- l. Trademarks
- m. Industrial designs
- n. Integrated circuit topography
- o. Original software
- p. Packaged or off-the-shelf software
- q. Databases
Useful life exceeding one year.
- r. Other technology and technical assistance
Include technical assistance, industrial processes and know-how.

E46103_pc1 \$,000

E46103_pc2 \$,000

E46103_pc3 \$,000

E46101_pc4 \$,000

E46103_pc5 \$,000

E46103_pc6 \$,000

E46103_pc7 \$,000

E46103_pc8 \$,000

E46103_pc9 \$,000

E63043_pc1 \$,000

E63043_pc2 \$,000

E63043_pc3 \$,000

E63043_pc4 \$,000

E63043_pc5 \$,000

E63043_pc6 \$,000

E63043_pc7 \$,000

E63043_pc8 \$,000

E63043_pc9 \$,000

Total payments received from other organizations, companies or individuals

E46250 \$,000

E63040 \$,000

Total payments received from other organizations for technology and technical assistance

E46270 \$,000

E63050 \$,000

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Environmental and clean technology R&D expenditures in 2021

21. In 2021, what percentage of this organization's total expenditures for R&D performed in-house within Canada was related to research and development of environmental and clean technologies?

Environmental and clean technology product is defined as any process, product, or service that reduces environmental impacts: through environmental protection activities that prevent, reduce or eliminate pollution or any other degradation of the environment, resource management activities that result in the more efficient use of natural resources, thus safeguarding against their depletion; or the use of goods that have been adapted to be significantly less energy or resource intensive than the industry standard.

Report '0' for no environmental and clean technology R&D expenditures.

If precise figures are not available, please provide your best estimate.

Percentage of
environmental and
clean technology R&D

E45238

%

22. In 2021, in which of the following categories of environmental and clean technology did this organization perform R&D activities?

Select all that apply.

1 B05203_y11

Air pollution management

e.g., greenhouse gas control technologies or management services, physical or chemical treatment technologies, air pollution modeling and mapping services

2 B05203_y9

Solid waste management

e.g., collection of waste, recycling and organics, compaction-related technologies, landfill leachate collection and containment technologies

3 B05203_y10

Wastewater management

e.g., physical or chemical treatments of industrial wastewater, mine tailing handling and treatment, biological treatments of sewage

4 B05203_y12

Protection and remediation of soil, groundwater and surface water

e.g., in situ and ex situ, biological, physical, chemical, thermal treatments, containment

5 B05203_y13

Protection of biodiversity and habitat

6 B05203_y14

Noise and vibration abatement

Exclude R&D related to workers' health and safety.

7 B05203_y15

Protection against radiation

Exclude R&D related to workers' health and safety.

8 B05203_y16

Heat and energy savings and management

e.g., efficient equipment (advance insulation, high efficiency pumps or burners (Energy Star certified, etc.), energy storage technologies (flywheels, fuel cells, etc.), lighting upgrades, smart grid services and associated technologies

...continues on next page

...continues from previous page

9 B05203_y17

Fuel efficient vehicles and transportation goods or technologies

e.g., electric and hybrid vehicles, vehicles using alternative fuels, alternative fuel retrofits on existing vehicles, low-rolling resistance tires

10 B05203_y18

Production of energy from renewable sources

e.g., equipment, services, and technologies used to produce electricity or heat from renewable sources

11 B05203_y20

Production of nuclear energy

e.g., equipment, services, and technologies used to produce electricity or heat from nuclear energy

Exclude the **R&D** for feedstock used to produce energy (such as uranium).

12 B05203_y90

Other environmental protection or resource management activities

Specify the other environmental protection or resource management activities

↓

→

B05203_y91

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Changes or events

22. Indicate any changes or events that affected the reported values for this business or organization compared with the last reporting period.

Mark all that apply.

B00316_r1

Outsourcing of **R&D** project(s)

B00316_r2

Initiation of new **R&D** project(s)

B00316_r3

Completion of existing **R&D** project(s)

B00316_r4

Major change in funding of **R&D** project(s) (loss of funding)

B00316_r5

Major change in funding of **R&D** project(s) (increase in funding)

B00316_r6

Organizational change that affected **R&D** activities (expansion, reduction, restructuring)

B00316_r7

Economic change that affected **R&D** activities

B00316_r11

Lack of availability of qualified **R&D** personnel

B00302_t15

Other changes or events — specify:

B00302_t16

OR

B00316_t17

No changes or events

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Contact person

23. Statistics Canada may need to contact the person who completed this questionnaire for further information.

If the contact person is the same as on cover page, please check → **Go to "Feedback"**

Otherwise, who is the **best person to contact** about this questionnaire?

First name

Last name

Title

Email address (Example: user@example.gov.ca)

Telephone number (including area code)

Example: 123-123-1234

Extension number
(if applicable)

Fax number (including area code)

Example: 123-123-1234

Feedback

24. How long did it take to complete this questionnaire?

Include the time spent gathering the necessary information.

Hours

Minutes

25. We invite your comments about this questionnaire.

B00002

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General information

Confidentiality

Your answers are confidential.

By law, Statistics Canada is prohibited from releasing any information it collects that could identify any person, business, or organization, unless consent has been given by the respondent, or as permitted by the *Statistics Act*. Statistics Canada will use the information from this survey for statistical purposes only.

Data-sharing agreements

To reduce respondent burden, Statistics Canada has entered into data-sharing agreements with provincial and territorial statistical agencies and other government organizations, which have agreed to keep the data confidential and use them only for statistical purposes. Statistics Canada will only share data from this survey with those organizations that have demonstrated a requirement to use the data.

Provincial and territorial statistical agencies

Section 11 of the *Statistics Act* provides for the sharing of information with provincial and territorial statistical agencies that meet certain conditions. These agencies must have the legislative authority to collect the same information, on a mandatory basis, and the legislation must provide substantially the same provisions for confidentiality and penalties for disclosure of confidential information as the *Statistics Act*. Because these agencies have the legal authority to compel businesses to provide the same information, consent is not required and businesses may not object to the sharing of the data.

For this survey, there are **Section 11** agreements with the provincial and territorial statistical agencies of Newfoundland and Labrador, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, Saskatchewan, Alberta, British Columbia and the Yukon. The shared data will be limited to information on in-house research and development expenditures (Question 9) and in-house research and development personnel (Question 16) pertaining to business establishments located within the jurisdiction of the respective province or territory.

Section 12 of the *Statistics Act* provides for the sharing of information with federal, provincial or territorial government organizations. Under **Section 12**, you may refuse to share your information with any of these

organizations by writing a letter of objection to the Chief Statistician and returning it with the completed questionnaire. Please specify the organizations with which you do not want to share your data.

For this survey, there are **Section 12** agreements with the statistical agencies of Prince Edward Island, the Northwest Territories and Nunavut. The shared data will be limited to information on in-house research and development expenditures (Question 9) and in-house research and development personnel (Question 16) pertaining to business establishments located within the jurisdiction of the respective province or territory.

Innovation, Science and Economic Development Canada

For this survey, Statistics Canada will share survey data with Innovation, Science and Economic Development Canada. The shared data will be limited to information on research and development expenditures (Questions 4 to 13) and in-house research and development personnel (Questions 14 to 16).

Natural Resources Canada

For respondents with expenditures on energy-related research and development in technology (fossil fuels, renewable energy resources, nuclear fission and fusion, electric power, hydrogen and fuel cells, energy efficiency, other energy-related technologies), Statistics Canada will also share survey data with the Office of Energy Research and Development (OERD) of Natural Resources Canada. The shared data will be limited to information on Energy Research and Development Expenditures by Area of Technology (Question 19).

You may refuse to share your information with this organization by writing a letter of objection to the Chief Statistician and returning it with the completed questionnaire.

Record linkages

To enhance the data from this survey and to reduce the reporting burden, Statistics Canada may combine the acquired data with information from other surveys or from administrative sources.

Thank you for completing this questionnaire.

Please retain a copy for your records.

Visit our website, www.statcan.gc.ca