GLOBAL INNOVATION INDEX 2020

CANADA

17th

Canada ranks 17th among the 131 economies featured in the GII 2020.

The Global Innovation Index (GII) ranks world economies according to their innovation capabilities. Consisting of roughly 80 indicators, grouped into innovation inputs and outputs, the GII aims to capture the multi-dimensional facets of innovation.

The following table shows the rankings of Canada over the past three years, noting that data availability and changes to the GII model framework influence year-on-year comparisons of the GII rankings. The statistical confidence interval for the ranking of Canada in the GII 2020 is between ranks 16 and 19.

Rankings of Canada (2018–2020)

	GII	Innovation inputs	Innovation outputs
2020	17	9	22
2019	17	9	22
2018	18	10	26

- Canada performs better in innovation inputs than innovation outputs in 2020.
- This year Canada ranks 9th in innovation inputs, the same as last year and higher compared to 2018.
- As for innovation outputs, Canada ranks 22nd. This position is the same as last year and higher compared to 2018.

16th

Canada ranks 16th among the 49 high-income group economies.

2nd

Canada ranks 2nd among the 2 economies in Northern America.

EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected and those below are performing below expectations.

Relative to GDP, Canada is performing above expectations for its level of development.

The positive relationship between innovation and development

Legend:

▲ GII score
▶ GDP per capita in PPP$ logarithmic scale
● Bubbles sized by population

● Innovation leaders
● Performing above expectations for level of development

● Performing at expectations for level of development
● Performing below expectations for level of development
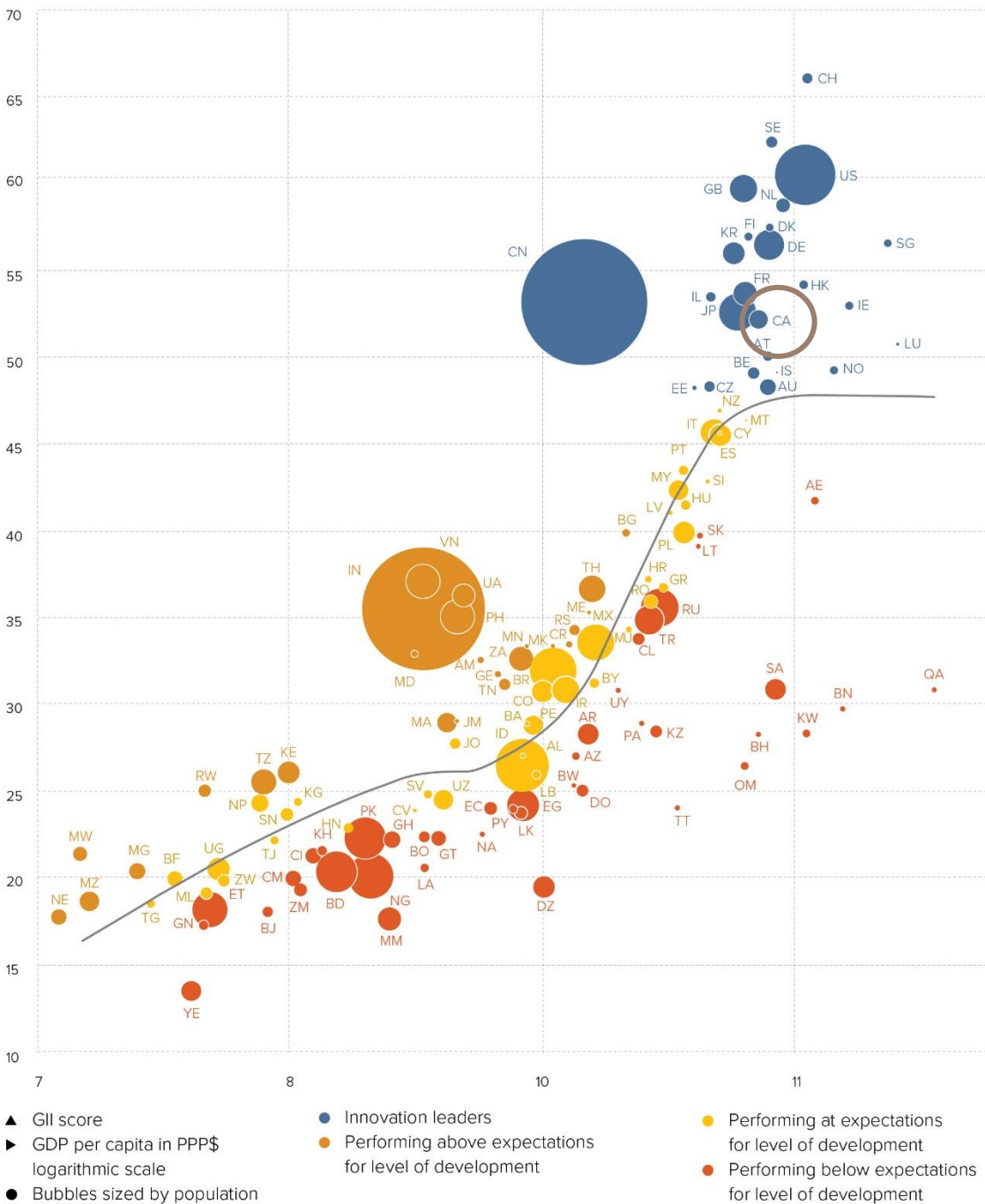
EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

Canada produces less innovation outputs relative to its level of innovation investments.

Innovation input to output performance, 2020
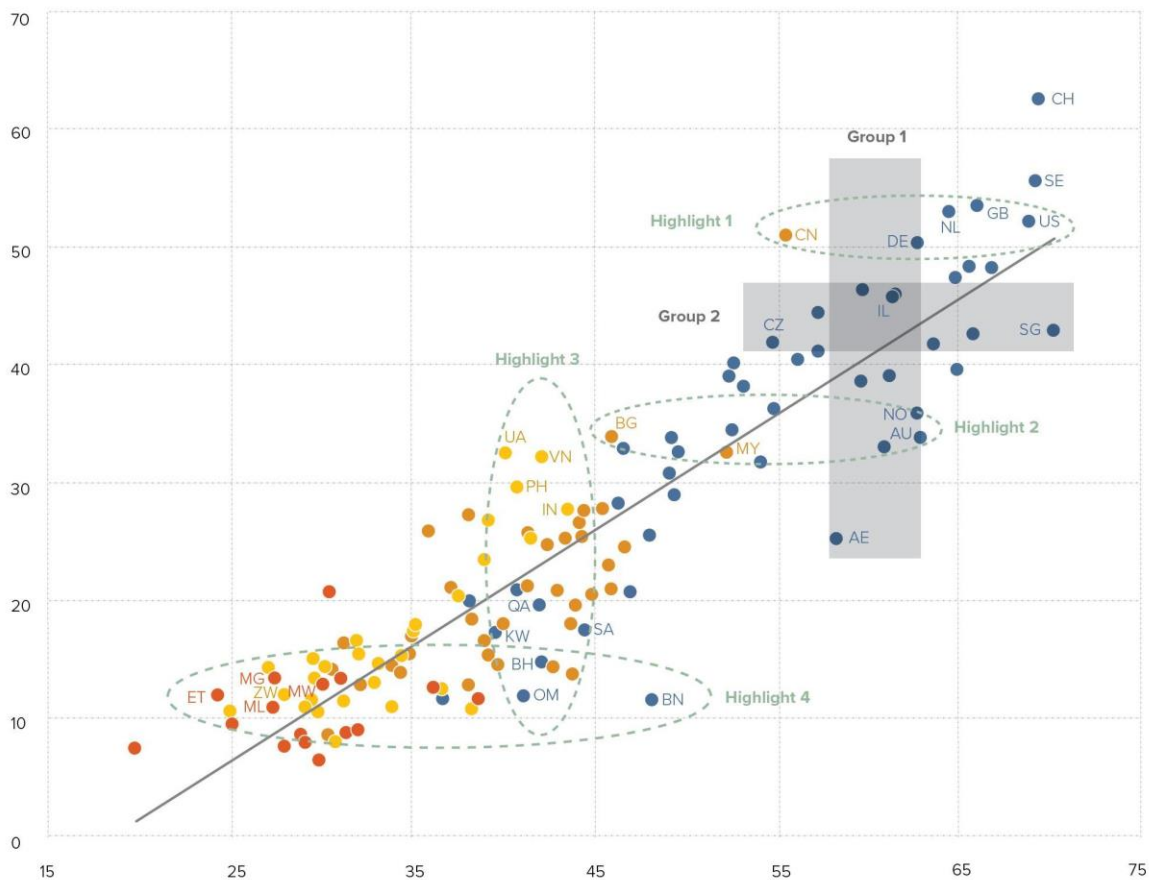
| ▲ | Output score | ● | High income group | ● | Lower middle-income group | — | Fitted values |
| ▶ | Input score | ● | Upper middle-income group | ● | Low income group | | |

AU	Australia	IN	India	NL	Netherlands	CH	Switzerland
BH	Bahrain	IL	Israel	NO	Norway	UA	Ukraine
BN	Brunei Darussalam	KW	Kuwait	OM	Oman	AE	United Arab Emirates
BG	Bulgaria	MG	Madagascar	PH	Philippines	GB	United Kingdom
CN	China	MW	Malawi	QA	Qatar	US	United States of America
CZ	Czech Republic	ML	Mali	SA	Saudi Arabia	VN	Viet Nam
ET	Ethiopia	MY	Malaysia	SG	Singapore	ZW	Zimbabwe
DE	Germany			SE	Sweden		

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BENCHMARKING CANADA AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND NORTHERN AMERICA

Canada's scores in the seven GII pillars
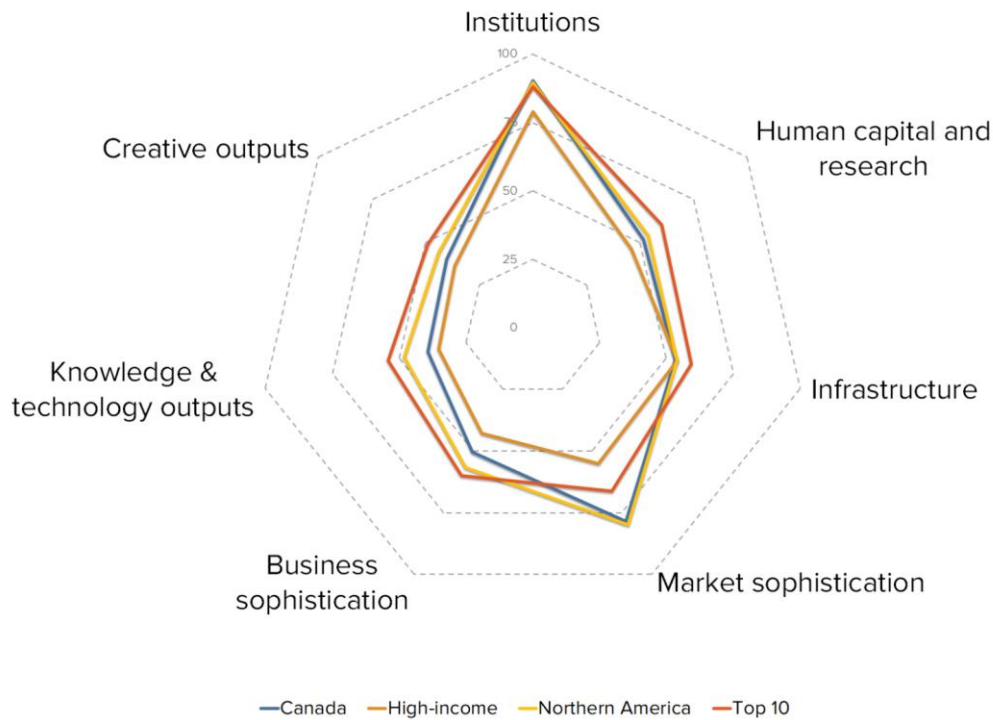
High-income group economies

Canada has high scores in six out of the seven GII pillars: Institutions, Human capital & research, Market sophistication, Business sophistication, Knowledge & technology outputs and Creative outputs, which are above average for the high-income group.

Conversely, Canada scores below average for its income group in one pillar: Infrastructure.
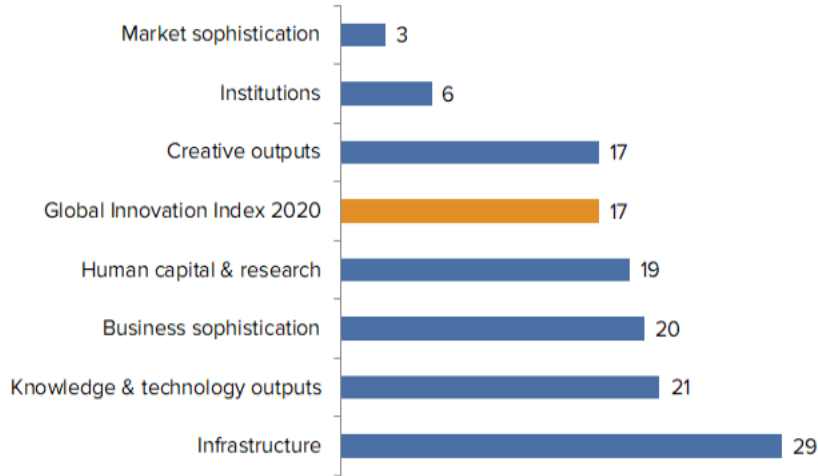
Northern America

Compared to other economies in Northern America, Canada performs:

- above average in one of the seven GII pillars: Institutions; and

- below average in six out of the seven GII pillars: Human capital & research, Infrastructure, Market sophistication, Business sophistication, Knowledge & technology outputs and Creative outputs.

[1484,2146,1496,2163]4

OVERVIEW OF CANADA RANKINGS IN THE SEVEN GII AREAS

Canada performs best in Market sophistication and its weakest performance is in Infrastructure.

	Rank
Market sophistication	3
Institutions	6
Creative outputs	17
Global Innovation Index 2020	17
Human capital & research	19
Business sophistication	20
Knowledge & technology outputs	21
Infrastructure	29

*The highest possible ranking in each pillar is 1.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Canada in the GII 2020.

	Strengths				Weaknesses	
Code	Indicator name	Rank		Code	Indicator name	Rank
1	Institutions	6		2.1.2	Government funding/pupil, secondary, % GDP/cap	59
1.1.2	Government effectiveness*	10		3.2.3	Gross capital formation, % GDP	71
1.2	Regulatory environment	9		3.3.1	GDP/unit of energy use	105
1.3	Business environment	4		3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	83
1.3.1	Ease of starting a business*	3		5.3.3	ICT services imports, % total trade	83
2.3.4	QS university ranking, average score top 3*	7		5.3.4	FDI net inflows, % GDP	75
3.2	General infrastructure	8		6.2.1	Growth rate of PPP$ GDP/worker, %	78
3.2.1	Electricity output, GWh/mn pop	5		6.2.2	New businesses/th pop. 15–64	113
4	Market sophistication	3		6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	78
4.2	Investment	6		7.1.3	Industrial designs by origin/bn PPP$ GDP	86
4.2.2	Market capitalization, % GDP	6				
4.2.3	Venture capital deals/bn PPP$ GDP	6				
5.2	Innovation linkages	10				
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	1				
6.1.5	Citable documents H-index	4				
6.2.3	Computer software spending, % GDP	6				
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6				

STRENGTHS

GII strengths for Canada are found in all seven of the GII pillars.

- Institutions (6): exhibits strengths in the sub-pillars Regulatory environment (9) and Business environment (4) and in the indicators Government effectiveness (10) and Ease of starting a business (3).

- Human capital & research (19): the indicator QS university ranking (7) is a strength.

- Infrastructure (29): shows strengths in the sub-pillar General infrastructure (8) and in the indicator Electricity output (5).

- Market sophistication (3): exhibits strengths in the sub-pillar Investment (6) and in the indicators Market capitalization (6) and Venture capital deals (6).

- Business sophistication (20): displays strengths in the sub-pillar Innovation linkages (10) and in the indicator JV–strategic alliance deals (1).

- Knowledge & technology outputs (21): reveals strengths in the indicators Citable documents H-index (4) and Computer software spending (6).

- Creative outputs (17): the indicator Generic top-level domains (6) is a strength.

WEAKNESSES

GII weaknesses for Canada are found in five of the seven GII pillars.

- Human capital & research (19): the indicator Government funding/pupil (59) is a weakness.

- Infrastructure (29): displays weaknesses in the indicators Gross capital formation (71), GDP/unit of energy use (105) and ISO 14001 environmental certificates (83).

- Business sophistication (20): exhibits weaknesses in the indicators ICT services imports (83) and FDI net inflows (75).

- Knowledge & technology outputs (21): displays weaknesses in the indicators Growth rate of PPP (78), New businesses (113) and ISO 9001 quality certificates (78).

- Creative outputs (17): the indicator Industrial designs by origin (86) is a weakness.

CANADA

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2019 rank
22	9	High	NAC	37.4	1,899.9	44,284.8	17

		Score/Value	Rank	
🏛	**INSTITUTIONS**........................	**90.2**	**6** ●	
1.1	**Political environment**..................	**88.2**	**12**	
1.1.1	Political and operational stability*....................	87.5	11	
1.1.2	Government effectiveness*........................	88.5	10 ●	
1.2	**Regulatory environment**.............................	**92.7**	**9** ●	
1.2.1	Regulatory quality*............................	85.7	14	
1.2.2	Rule of law*..................................	92.8	12	
1.2.3	Cost of redundancy dismissal, salary weeks............	10.0	29	
1.3	**Business environment**....................................	**89.6**	**4** ●	
1.3.1	Ease of starting a business*........................	98.2	3 ● ◆	
1.3.2	Ease of resolving insolvency*........................	81.0	12	

		Score/Value	Rank	
👥	**HUMAN CAPITAL & RESEARCH**.................	**51.8**	**19**	
2.1	**Education**..	**54.1**	**40**	
2.1.1	Expenditure on education, % GDP.⊙.................	5.3	32	
2.1.2	Government funding/pupil, secondary, % GDP/cap.⊙...	18.3	59 ○ ◇	
2.1.3	School life expectancy, years.........................	16.2	31	
2.1.4	PISA scales in reading, maths, & science................	516.7	7	
2.1.5	Pupil-teacher ratio, secondary.⊙....................	9.7	28	
2.2	**Tertiary education**................................	**44.1**	**31**	
2.2.1	Tertiary enrolment, % gross........................	68.9	30	
2.2.2	Graduates in science & engineering, %.⊙.............	21.3	60	
2.2.3	Tertiary inbound mobility, %....................	12.9	13	
2.3	**Research & development (R&D)**.............................	**57.2**	**18**	
2.3.1	Researchers, FTE/mn pop.⊙........................4,263.8		24	
2.3.2	Gross expenditure on R&D, % GDP...........................	1.5	23	
2.3.3	Global R&D companies, avg. exp. top 3, mn $US...........	67.7	17	
2.3.4	QS university ranking, average score top 3*............	78.9	7 ●	

		Score/Value	Rank	
🛠	**INFRASTRUCTURE**..............................	**53.3**	**29** ◇	
3.1	**Information & communication technologies (ICTs)**....	**85.3**	**22**	
3.1.1	ICT access*....................................	79.6	30	
3.1.2	ICT use*..	77.4	25	
3.1.3	Government's online service*.....................	93.1	17	
3.1.4	E-participation*.................................	91.0	27	
3.2	**General infrastructure**........................	**45.9**	**8** ● ◆	
3.2.1	Electricity output, kWh/mn pop................17,559.0		5 ● ◆	
3.2.2	Logistics performance*........................	77.7	20	
3.2.3	Gross capital formation, % GDP....................	22.6	71 ○	
3.3	**Ecological sustainability**.....................	**28.7**	**66** ◇	
3.3.1	GDP/unit of energy use........................	5.4	105 ○ ◇	
3.3.2	Environmental performance*.....................	71.0	20	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP.......	0.5	83 ○ ◇	

		Score/Value	Rank	
📊	**MARKET SOPHISTICATION**............................	**78.5**	**3** ● ◆	
4.1	**Credit**..	**85.0**	**[4]**	
4.1.1	Ease of getting credit*........................	85.0	14 ◆	
4.1.2	Domestic credit to private sector, % GDP....................	n/a	n/a	
4.1.3	Microfinance gross loans, % GDP....................	n/a	n/a	
4.2	**Investment**....................................	**73.0**	**6** ● ◆	
4.2.1	Ease of protecting minority investors*.................	84.0	7 ◆	
4.2.2	Market capitalization, % GDP....................	129.1	6 ●	
4.2.3	Venture capital deals/bn PPP$ GDP...........................	0.4	6 ● ◆	
4.3	**Trade, competition, and market scale**.................	**77.4**	**13**	
4.3.1	Applied tariff rate, weighted avg., %...........................	1.5	17	
4.3.2	Intensity of local competition+......................................	74.5	31	
4.3.3	Domestic market scale, bn PPP$.................................1,899.9		16	

		Score/Value	Rank	
🍩	**BUSINESS SOPHISTICATION**......................	**50.5**	**20**	
5.1	**Knowledge workers**....................................	**48.3**	**28** ◇	
5.1.1	Knowledge-intensive employment, %.⊙...................	43.7	20	
5.1.2	Firms offering formal training, %........................	n/a	n/a	
5.1.3	GERD performed by business, % GDP.....................	0.8	29 ◇	
5.1.4	GERD financed by business, %........................	41.1	44 ◇	
5.1.5	Females employed w/advanced degrees, %..........	18.2	34	
5.2	**Innovation linkages**....................................	**55.4**	**10** ●	
5.2.1	University/industry research collaboration+............	65.9	17	
5.2.2	State of cluster development+................................	63.8	21	
5.2.3	GERD financed by abroad, % GDP.....................	0.1	29	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP.................	0.3	1 ● ◆	
5.2.5	Patent families 2+ offices/bn PPP$ GDP...............	1.9	20	
5.3	**Knowledge absorption**....................................	**47.7**	**21**	
5.3.1	Intellectual property payments, % total trade..........	2.2	10	
5.3.2	High-tech imports, % total trade........................	10.5	25	
5.3.3	ICT services imports, % total trade....................	0.9	83 ○ ◇	
5.3.4	FDI net inflows, % GDP..................................	2.2	75 ○	
5.3.5	Research talent, % in business enterprise.⊙.........	56.7	16	

		Score/Value	Rank	
📉	**KNOWLEDGE & TECHNOLOGY OUTPUTS**....	**39.1**	**21**	
6.1	**Knowledge creation**....................................	**49.3**	**14**	
6.1.1	Patents by origin/bn PPP$ GDP........................	2.4	35 ◇	
6.1.2	PCT patents by origin/bn PPP$ GDP....................	1.4	22 ◇	
6.1.3	Utility models by origin/bn PPP$ GDP................	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP.............	22.1	24	
6.1.5	Citable documents H-index........................	79.9	4 ● ◆	
6.2	**Knowledge impact**....................................	**33.2**	**33**	
6.2.1	Growth rate of PPP$ GDP/worker, %........................	0.5	78 ○	
6.2.2	New businesses/th pop. 15-64................................	0.2	113 ○ ◇	
6.2.3	Computer software spending, % GDP....................	0.0	6 ●	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP...............	2.7	78 ○ ◇	
6.2.5	High- and medium-high-tech manufacturing, %.......	38.4	27	
6.3	**Knowledge diffusion**....................................	**34.9**	**33**	
6.3.1	Intellectual property receipts, % total trade............	0.8	20	
6.3.2	High-tech net exports, % total trade....................	5.4	30	
6.3.3	ICT services exports, % total trade....................	1.6	64	
6.3.4	FDI net outflows, % GDP..................................	4.1	14	

		Score/Value	Rank	
♛	**CREATIVE OUTPUTS**..	**40.2**	**17**	
7.1	**Intangible assets**....................................	**43.2**	**22**	
7.1.1	Trademarks by origin/bn PPP$ GDP....................	57.8	37	
7.1.2	Global brand value, top 5,000, % GDP....................	133.2	12	
7.1.3	Industrial designs by origin/bn PPP$ GDP...............	0.4	86 ○	
7.1.4	ICTs & organizational model creation+.......................	77.0	11	
7.2	**Creative goods and services**....................................	**24.0**	**39** ◇	
7.2.1	Cultural & creative services exports, % total trade.......	0.8	34	
7.2.2	National feature films/mn pop. 15-69....................	3.4	54	
7.2.3	Entertainment & Media market/th pop. 15-69.........	60.1	10	
7.2.4	Printing and other media, % manufacturing...........	1.4	31	
7.2.5	Creative goods exports, % total trade.....................	0.9	47	
7.3	**Online creativity**....................................	**50.6**	**17**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69.........	76.7	6 ●	
7.3.2	Country-code TLDs/th pop. 15-69....................	32.2	20	
7.3.3	Wikipedia edits/mn pop. 15-69....................	79.3	27	
7.3.4	Mobile app creation/bn PPP$ GDP....................	15.5	31	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * an index; + a survey question. ⊙ indicates that the economy's data are older than the base year; see Appendix II for details, including the year of the data, at http://globalinnovationindex.org. Square brackets [ ] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

DATA AVAILABILITY

The following tables list data that are either missing or outdated for Canada.

Missing data

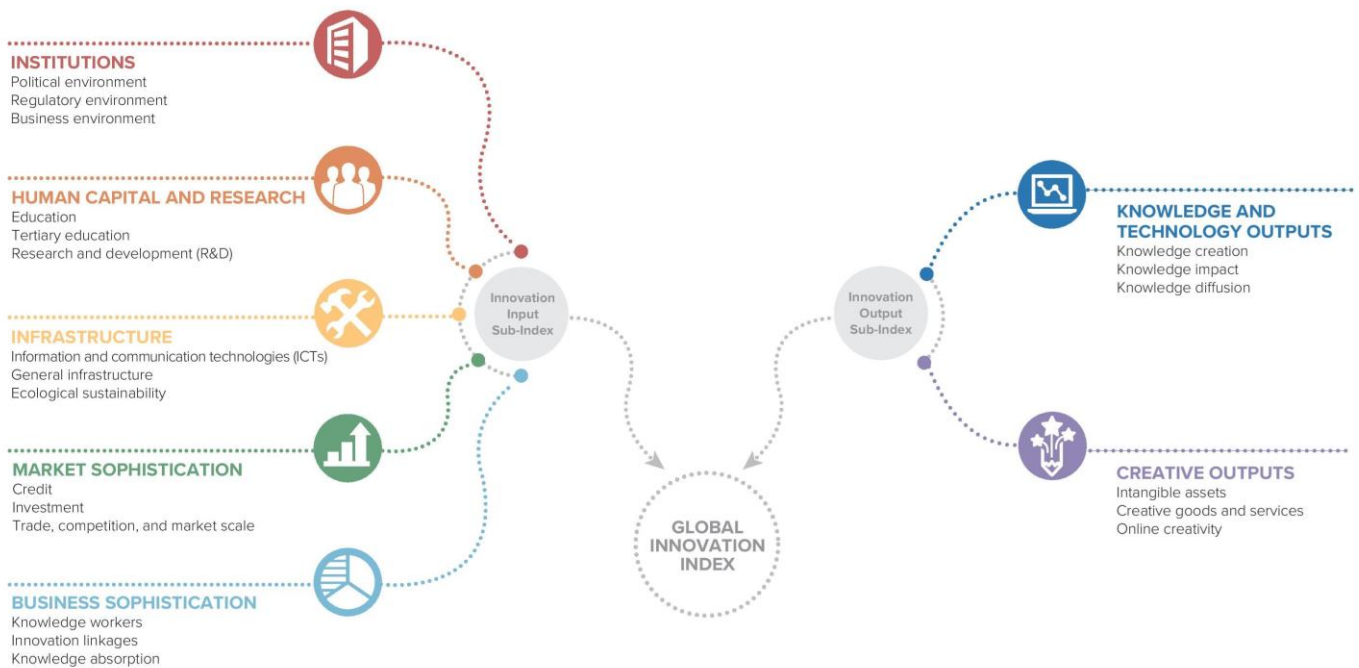| Code	Indicator name	Country year	Model year	Source
4.1.2	Domestic credit to private sector, % GDP	n/a	2018	International Monetary Fund
4.1.3	Microfinance gross loans, % GDP	n/a	2018	Microfinance Information Exchange
5.1.2	Firms offering formal training, %	n/a	2018	World Bank
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2018	World Intellectual Property Organization

Outdated data

Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	2011	2018	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	2011	2016	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2017	2018	UNESCO Institute for Statistics
2.2.2	Graduates in science & engineering, %	2016	2017	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2016	2018	UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators
5.1.1	Knowledge-intensive employment, %	2014	2018	International Labour Organization
5.3.5	Research talent, % in business enterprise	2016	2018	UNESCO Institute for Statistics; Eurostat; OECD – Main Science and Technology Indicators

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2020, the GII presents its 13th edition devoted to the theme *Who Will Finance Innovation?*

Recognizing that innovation is a key driver of economic development, the GII aims to provide an innovation ranking and rich analysis referencing around 130 economies. Over the last decade, the GII has established itself as both a leading reference on innovation and a "tool for action" for economies that incorporate the GII into their innovation agendas.

Framework of the Global Innovation Index 2020

INSTITUTIONS
Political environment
Regulatory environment
Business environment

HUMAN CAPITAL AND RESEARCH
Education
Tertiary education
Research and development (R&D)

INFRASTRUCTURE
Information and communication technologies (ICTs)
General infrastructure
Ecological sustainability

MARKET SOPHISTICATION
Credit
Investment
Trade, competition, and market scale

BUSINESS SOPHISTICATION
Knowledge workers
Innovation linkages
Knowledge absorption

Innovation Input Sub-Index

Innovation Output Sub-Index

GLOBAL INNOVATION INDEX

KNOWLEDGE AND TECHNOLOGY OUTPUTS
Knowledge creation
Knowledge impact
Knowledge diffusion

CREATIVE OUTPUTS
Intangible assets
Creative goods and services
Online creativity

The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that include institutions, human capital and research, infrastructure, credit, investment, linkages; the creation, absorption and diffusion of knowledge; and creative outputs.

The GII has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, and seven pillars, each consisting of three sub-pillars.