GLOBAL INNOVATION INDEX 2019

CANADA

17th Canada ranks 17th among the 129 economies featured in the GII 2019.

The Global Innovation Index (GII) is a ranking of world economies based on 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 the GII model influence year-on-year comparisons of the GII ranks. The confidence interval for Canada's ranking in the GII 2019 is between 15 and 19.

Canada's Rankings, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
2019	17	9	22
2018	18	10	26
2017	18	10	23

- Canada performs better in Innovation Inputs than Outputs.
- This year Canada ranks 9th in Innovation Inputs, better than last year and compared to 2017.
- As for Innovation Outputs, Canada ranks 22nd. This position is better than last year and compared to 2017.

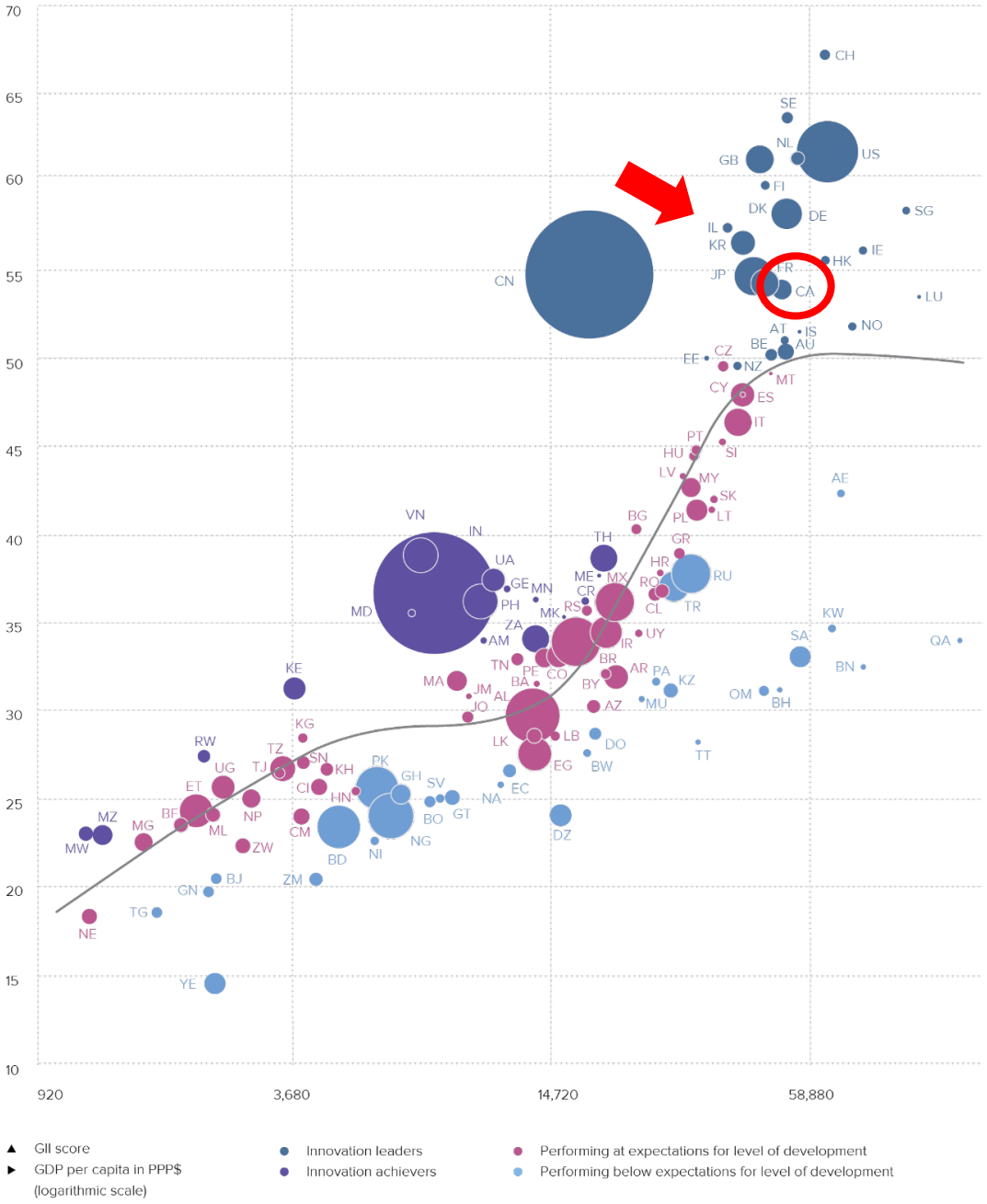
16th Canada ranks 16th among the 50 high-income economies.

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 considered Innovation under-performers relative to GDP.

Relative to GDP, Canada performs above its expected level of development.

GII scores and GDP per capita in PPP US$
(bubbles sized by population)

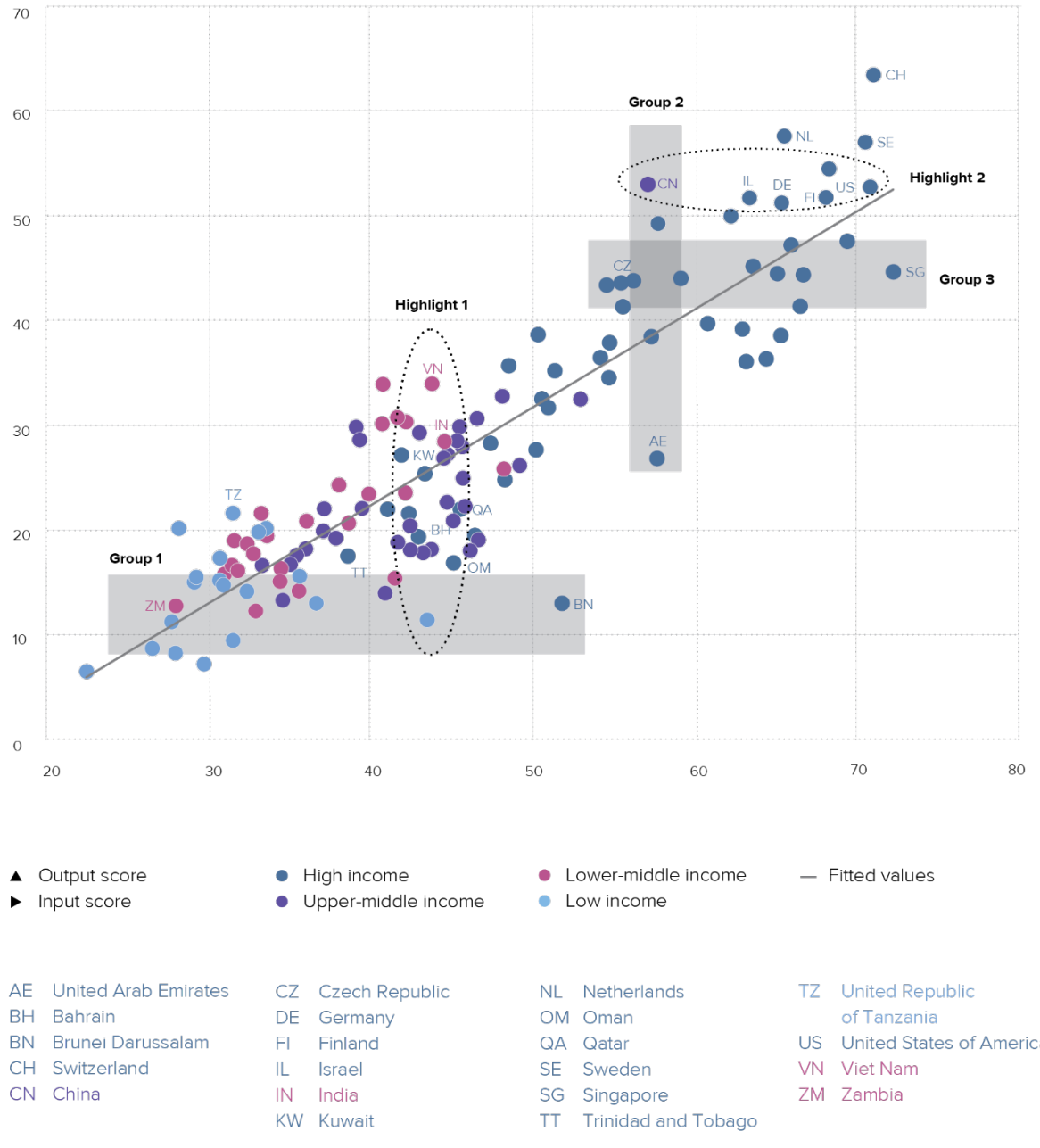


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs, indicating which economies best translate innovation inputs into innovation outputs. Economies appearing above the line are effectively translating their costly innovation investments into more and higher-quality outputs. In contrast, those below the line are not effectively translating innovation inputs into outputs.

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

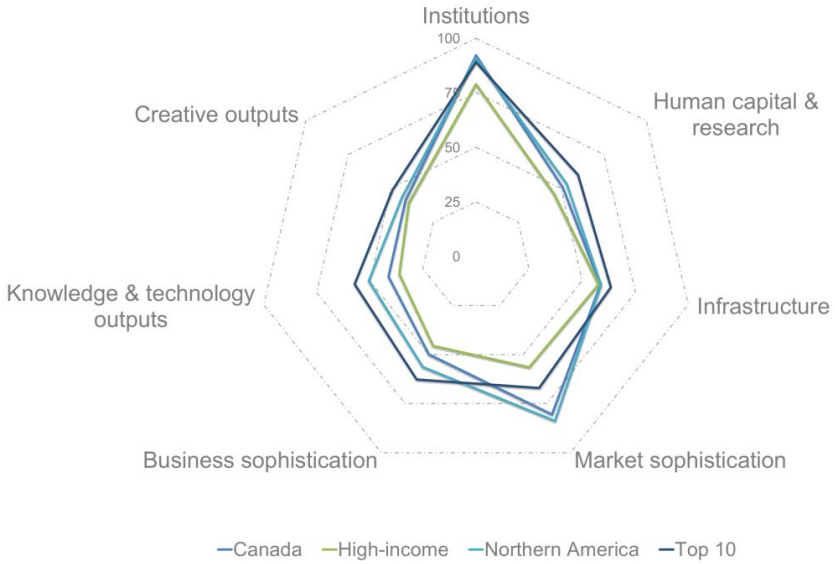
Innovation input/output performance by income group, 2019



AE	United Arab Emirates	CZ	Czech Republic	NL	Netherlands	TZ	United Republic of Tanzania
BH	Bahrain	DE	Germany	OM	Oman	US	United States of America
BN	Brunei Darussalam	FI	Finland	QA	Qatar	VN	Viet Nam
CH	Switzerland	IL	Israel	SE	Sweden	ZM	Zambia
CN	China	IN	India	SG	Singapore		
		KW	Kuwait	TT	Trinidad and Tobago		

BENCHMARKING CANADA TO OTHER HIGH-INCOME ECONOMIES AND THE NORTHERN AMERICA REGION

Canada's scores in the seven GII pillars



High-income economies

Canada has high scores in all the 7 GII pillars, which are above the average of the high-income group.

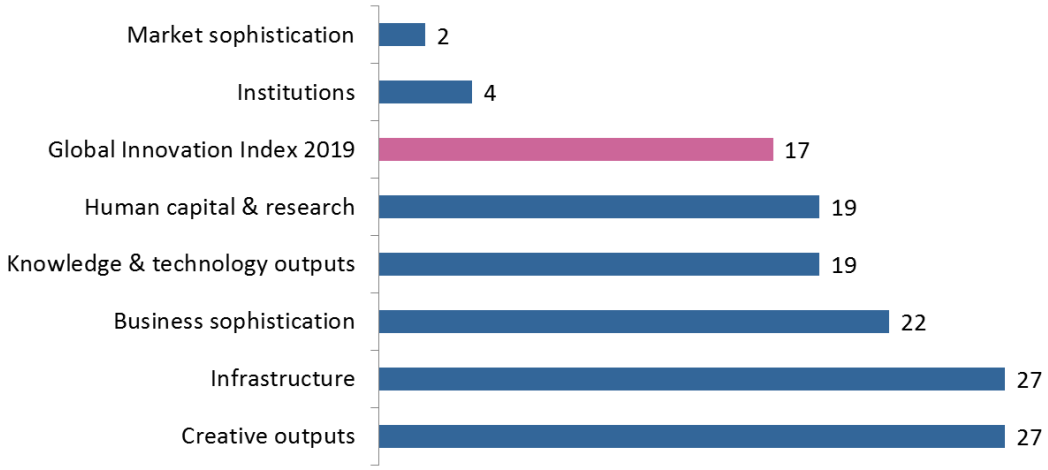
Northern America Region

Canada performs better than the United States of America – the only other economy in the Northern America region – in the pillar Institutions.

Top ranks are found in all the sub-pillars within the area Institutions – Political environment, Regulatory environment, and Business environment – as well as in General infrastructure, Credit, and Investment, where the economy ranks in the top 10 worldwide.

OVERVIEW OF CANADA'S RANKINGS IN THE 7 GII AREAS

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



*The highest possible ranking in each pillar is 1.

CANADA'S INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of Canada's strengths and weaknesses in the GII 2019.

Strengths

Code	Indicator name	Rank
1	Institutions	4
1.1	Political environment	6
1.1.2	Government effectiveness*	6
1.2.1	Regulatory quality*	6
1.3	Business environment	4
1.3.1	Ease of starting a business*	3
2.3.4	QS university ranking, average score top 3*	6
3.2.1	Electricity output, kWh/mn pop	4
4	Market sophistication	2
4.2	Investment	4
4.2.3	Venture capital deals/bn PPP$ GDP	1
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	5
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6

Weaknesses

Code	Indicator name	Rank
2.1.2	Government funding/pupil, secondary, % GDP/cap	58
2.2.2	Graduates in science & engineering, %	55
3.3	Ecological sustainability	79
3.3.1	GDP/unit of energy use	103
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	76
5.3.3	ICT services imports, % total trade	77
6.2.1	Growth rate of PPP$ GDP/worker, %, 3-year average	68
6.2.2	New businesses/th pop. 15–64	104
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	73
6.3.3	ICT services exports, % total trade	68
7.1.2	Industrial designs by origin/bn PPP$ GDP	86

STRENGTHS

- Canada's strengths are found in all seven GII pillars, and mostly on the innovation input side of the GII.
- Pillar Institutions (4) is a strength for Canada, as well as sub-pillars Political environment (6) and Business environment (4). Indicators Government effectiveness (6), Regulatory quality (6), and Ease of starting a business (3) are also strengths.
- In Market sophistication (2), a strength for Canada, sub-pillar Investment (4) and indicator Venture capital deals are also strengths.
- Other strengths in the innovation input side are indicators:
  - Quality of universities (6) in Human capital & research (19);
  - Electricity output (4) in Infrastructure (27); and
  - JV–strategic alliance deals in Business sophistication (22), where Canada ranks 1st worldwide.
- On the innovation output side, strengths for Canada are indicators:
  - Quality of scientific publications (4) and Computer software spending (5), both in Knowledge & technology outputs (19); and
  - Generic top-level domains (6), in Creative outputs (27).

WEAKNESSES

- Canada's weaknesses are in five of the seven GII pillars.
- In Human capital & research (19), indicators Government funding per pupil (58) and Graduates in science & engineering (55) are both weaknesses.
- In Infrastructure (27), sub-pillar Ecological sustainability (79) and indicators GDP per unit of energy use (103) and ISO 14001 environmental certificates (76) are weaknesses for Canada.
- Four relative weaknesses are found in Knowledge & technology outputs (19). These are indicators Labor productivity growth (68), New businesses (104), ISO 9001 quality certificates (73), and ICT services exports (68).
- Other weaknesses for Canada are indicators ICT services imports (77) in Business sophistication (22) and Industrial designs by origin (86) in Creative outputs (27).

CANADA

GII 2019 rank

17

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
22	**9**	**High**	**NAC**	**37.0**	**1,852.5**	**49,651.2**	**18**

		Score/Value	Rank	
INSTITUTIONS		**92.3**	**4**	●
1.1	**Political environment**	**92.0**	**6**	●
1.1.1	Political and operational stability*	93.0	7	
1.1.2	Government effectiveness*	91.5	6	●
1.2	**Regulatory environment**	**95.1**	**8**	
1.2.1	Regulatory quality*	92.6	6	●
1.2.2	Rule of law*	94.0	10	
1.2.3	Cost of redundancy dismissal, salary weeks	10.0	29	
1.3	**Business environment**	**89.8**	**4**	●
1.3.1	Ease of starting a business*	98.2	3	● ◆
1.3.2	Ease of resolving insolvency*	81.5	12	
HUMAN CAPITAL & RESEARCH		**50.9**	**19**	
2.1	**Education**	**51.9**	**51**	◇
2.1.1	Expenditure on education, % GDP 🕘	5.3	33	
2.1.2	Government funding/pupil, secondary, % GDP/cap. 🕘	18.3	58	○ ◇
2.1.3	School life expectancy, years	16.1	33	
2.1.4	PISA scales in reading, maths, & science	523.3	5	
2.1.5	Pupil-teacher ratio, secondary	n/a	n/a	
2.2	**Tertiary education**	**41.2**	**32**	
2.2.1	Tertiary enrolment, % gross 🕘	67.0	33	
2.2.2	Graduates in science & engineering, %	21.3	55	○
2.2.3	Tertiary inbound mobility, %	11.9	14	
2.3	**Research & development (R&D)**	**59.5**	**15**	
2.3.1	Researchers, FTE/mn pop. 🕘	4,274.7	22	
2.3.2	Gross expenditure on R&D, % GDP 🕘	1.7	21	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	69.6	19	
2.3.4	QS university ranking, average score top 3*	80.2	6	●
INFRASTRUCTURE		**58.5**	**27**	◇
3.1	**Information & communication technologies(ICTs)**	**85.0**	**21**	
3.1.1	ICT access*	80.0	29	
3.1.2	ICT use*	76.1	25	
3.1.3	Government's online service*	93.1	17	
3.1.4	E-participation*	91.0	27	
3.2	**General infrastructure**	**55.4**	**8**	
3.2.1	Electricity output, kWh/mn pop.	18,368.9	4	● ◆
3.2.2	Logistics performance*	77.8	20	
3.2.3	Gross capital formation, % GDP	23.8	56	
3.3	**Ecological sustainability**	**35.1**	**79**	○ ◇
3.3.1	GDP/unit of energy use	5.5	103	○ ◇
3.3.2	Environmental performance*	72.2	24	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.7	76	○ ◇
MARKET SOPHISTICATION		**80.4**	**2**	● ◆
4.1	**Credit**	**85.0**	**[4]**	
4.1.1	Ease of getting credit*	85.0	11	◆
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**	**77.7**	**4**	● ◆
4.2.1	Ease of protecting minority investors*	78.3	10	◆
4.2.2	Market capitalization, % GDP	125.1	7	
4.2.3	Venture capital deals/bn PPP$ GDP	0.5	1	● ◆
4.3	**Trade, competition, & market scale**	**78.6**	**13**	
4.3.1	Applied tariff rate, weighted avg., %	1.5	16	
4.3.2	Intensity of local competition†	74.5	31	
4.3.3	Domestic market scale, bn PPP$	1,852.5	17	

		Score/Value	Rank	
BUSINESS SOPHISTICATION		**49.9**	**22**	
5.1	**Knowledge workers**	**56.4**	**28**	◇
5.1.1	Knowledge-intensive employment, % 🕘	43.7	19	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.8	24	
5.1.4	GERD financed by business, %	40.9	43	◇
5.1.5	Females employed w/advanced degrees, %	17.6	31	
5.2	**Innovation linkages**	**48.4**	**15**	
5.2.1	University/industry research collaboration†	63.0	20	
5.2.2	State of cluster development†	62.0	22	
5.2.3	GERD financed by abroad, %	10.9	36	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.3	1	● ◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	2.1	20	
5.3	**Knowledge absorption**	**44.9**	**28**	
5.3.1	Intellectual property payments, % total trade	2.2	11	
5.3.2	High-tech imports, % total trade	10.0	30	
5.3.3	ICT services imports, % total trade	0.9	77	○ ◇
5.3.4	FDI net inflows, % GDP	2.6	64	
5.3.5	Research talent, % in business enterprise 🕘	56.7	18	
KNOWLEDGE & TECHNOLOGY OUTPUTS		**41.3**	**19**	
6.1	**Knowledge creation**	**50.5**	**13**	
6.1.1	Patents by origin/bn PPP$ GDP	2.3	38	◇
6.1.2	PCT patents by origin/bn PPP$ GDP	1.3	27	◇
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	20.6	22	
6.1.5	Citable documents H-index	80.0	4	● ◆
6.2	**Knowledge impact**	**41.5**	**43**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.7	68	○
6.2.2	New businesses/th pop. 15-64	0.1	104	○ ◇
6.2.3	Computer software spending, % GDP	0.7	5	●
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	3.4	73	○ ◇
6.2.5	High- & medium-high-tech manufactures, %	0.4	24	
6.3	**Knowledge diffusion**	**32.0**	**27**	
6.3.1	Intellectual property receipts, % total trade	0.8	21	
6.3.2	High-tech net exports, % total trade	4.9	31	
6.3.3	ICT services exports, % total trade	1.5	68	○
6.3.4	FDI net outflows, % GDP	5.0	12	
CREATIVE OUTPUTS		**41.4**	**27**	
7.1	**Intangible assets**	**50.7**	**31**	
7.1.1	Trademarks by origin/bn PPP$ GDP	58.5	37	
7.1.2	Industrial designs by origin/bn PPP$ GDP	0.5	86	○ ◇
7.1.3	ICTs & business model creation†	75.7	16	
7.1.4	ICTs & organizational model creation†	77.0	11	
7.2	**Creative goods & services**	**24.7**	**45**	
7.2.1	Cultural & creative services exports, % total trade	0.8	34	
7.2.2	National feature films/mn pop. 15-69	3.5	53	
7.2.3	Entertainment & Media market/th pop. 15-69	59.4	10	
7.2.4	Printing & other media, % manufacturing	1.5	34	
7.2.5	Creative goods exports, % total trade	1.0	43	
7.3	**Online creativity**	**39.4**	**17**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	76.5	6	● ◆
7.3.2	Country-code TLDs/th pop. 15-69	29.4	19	
7.3.3	Wikipedia edits/mn pop. 15-69	49.0	25	
7.3.4	Mobile app creation/bn PPP$ GDP	18.8	24	

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 missing or are outdated for Canada.

Missing data

Code	Indicator name	Country year	Model year	Source
2.1.5	Pupil-teacher ratio, secondary	n/a	2017	UNESCO Institute for Statistics
4.1.2	Domestic credit to private sector, % GDP	n/a	2017	International Monetary Fund
4.1.3	Microfinance gross loans, % GDP	n/a	2017	Microfinance Information Exchange
5.1.2	Firms offering formal training, % firms	n/a	2013	World Bank
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2017	World Intellectual Property Organization

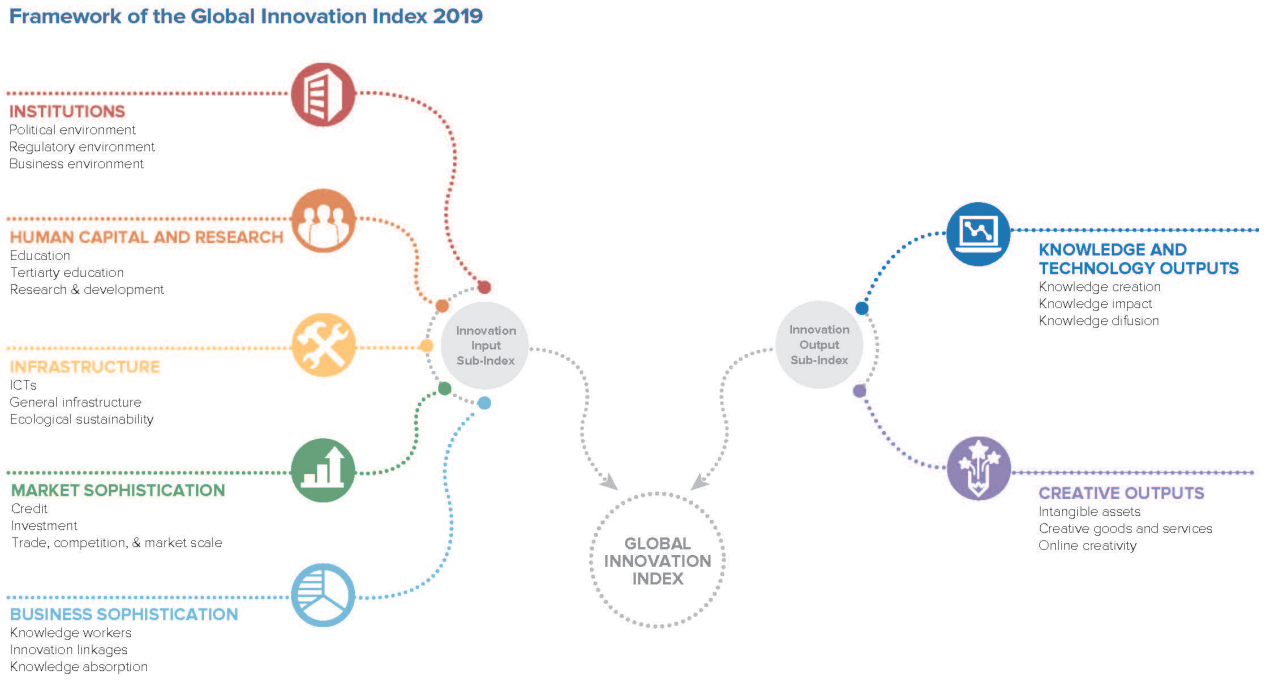
Outdated data

Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	2011	2015	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	2011	2015	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2016	2017	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
2.3.2	Gross expenditure on R&D, % GDP	2016	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.1	Knowledge-intensive employment, %	2014	2017	Source: International Labour Organization
5.3.5	Research talent, % in business enterprise	2016	2017	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 2019, the GII presents its 12th edition devoted to the theme **Creating Healthy Lives—The Future of Medical Innovation**.

Recognizing that innovation is a key driver of economic development, the GII aims to provide a rich innovation ranking and 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 countries that incorporate the GII into their innovation agendas.



The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that includes 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 containing three sub-pillars.