



CANADA

15th

Canada ranks 15th among the 132 economies featured in the GII 2022.

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 2022 is between ranks 14 and 19.

Rankings for Canada (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	17	9	22
2021	16	8	23
2022	15	9	23

- Canada performs better in innovation inputs than innovation outputs in 2022.
- This year Canada ranks 9th in innovation inputs, lower than last year but the same as 2020.
- As for innovation outputs, Canada ranks 23rd. This position is the same as last year but lower than 2020.

14th

Canada ranks 14th among the 48 high-income group economies.

2nd

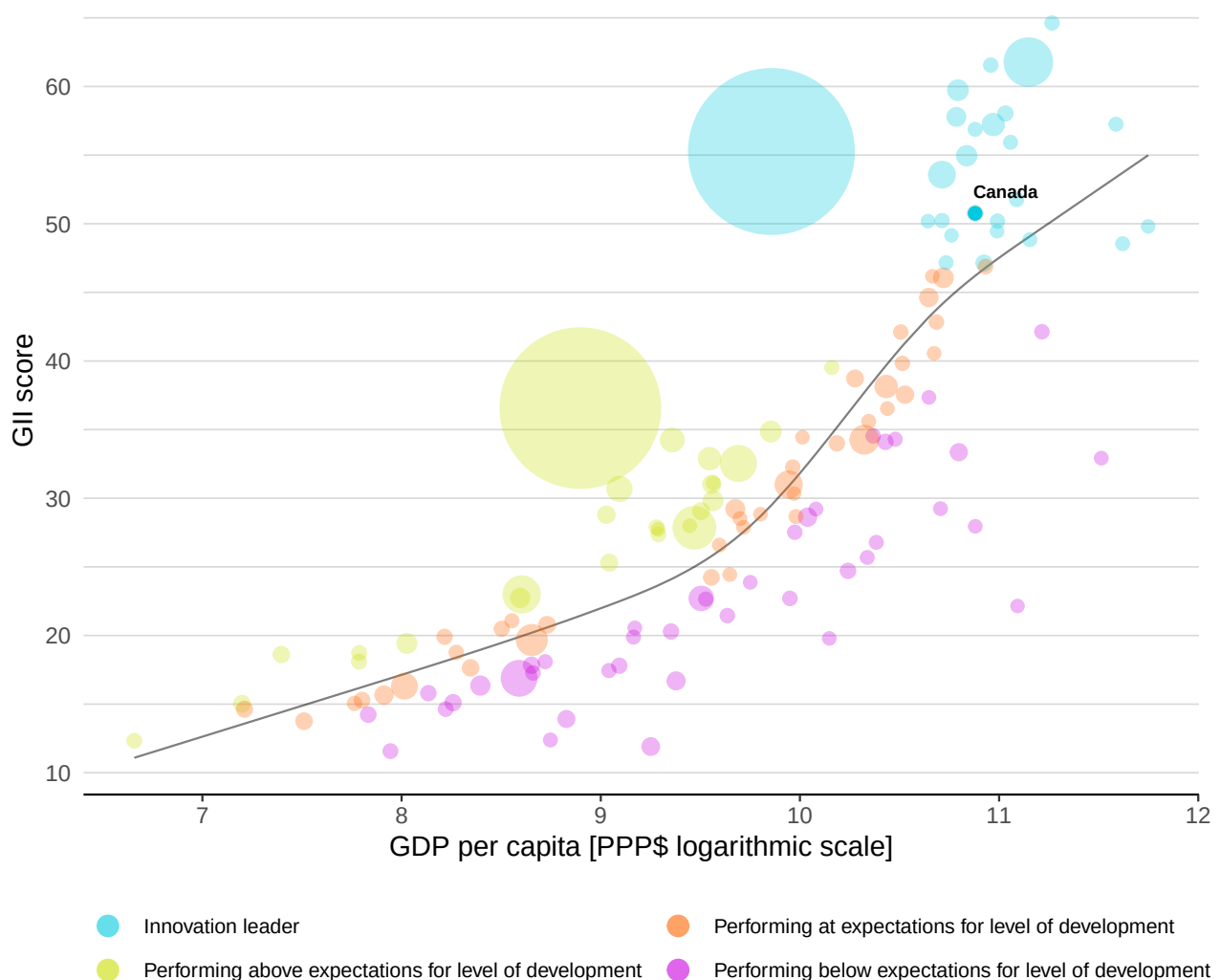
Canada ranks 2nd among the 2 economies in Northern America.

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's performance is above expectations for its level of development.

The positive relationship between innovation and development

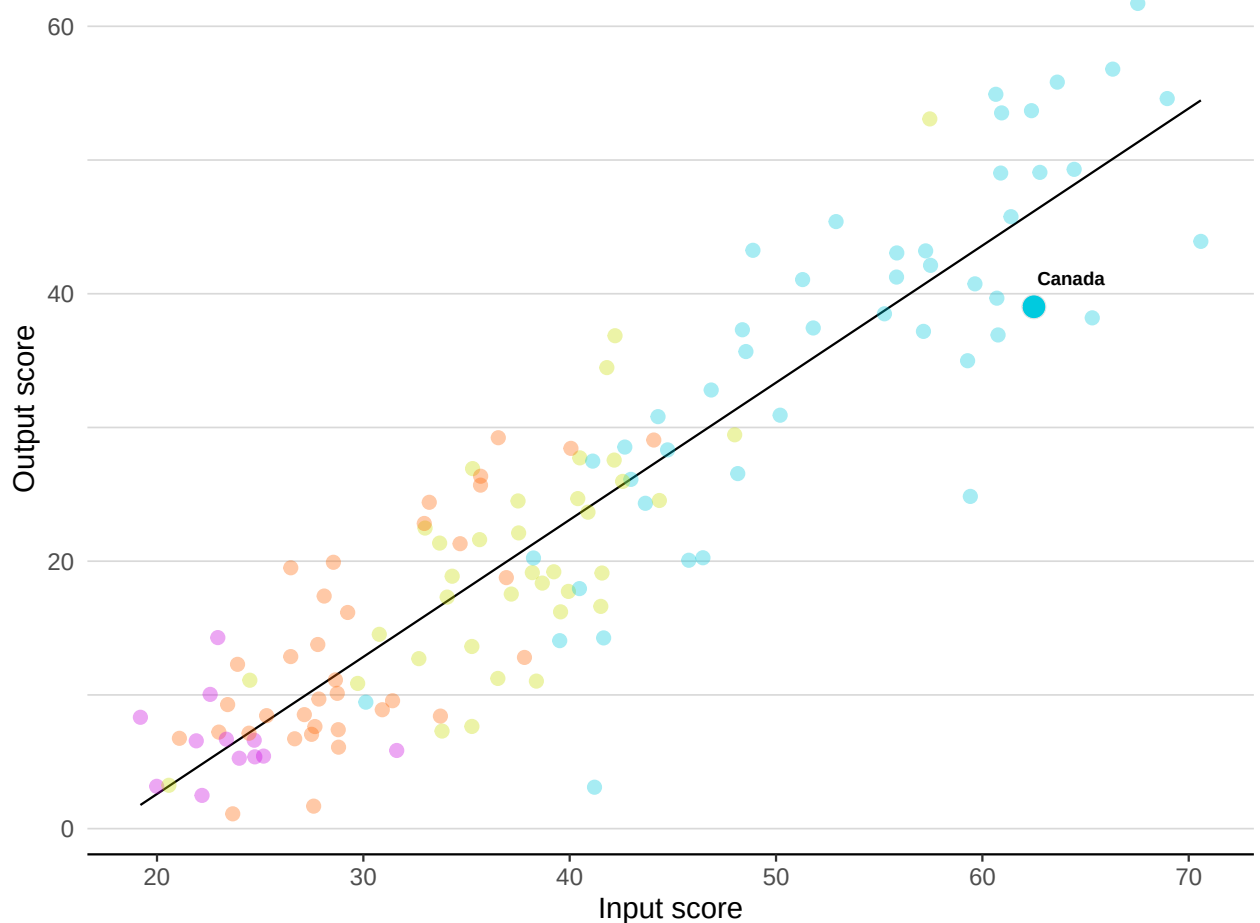


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

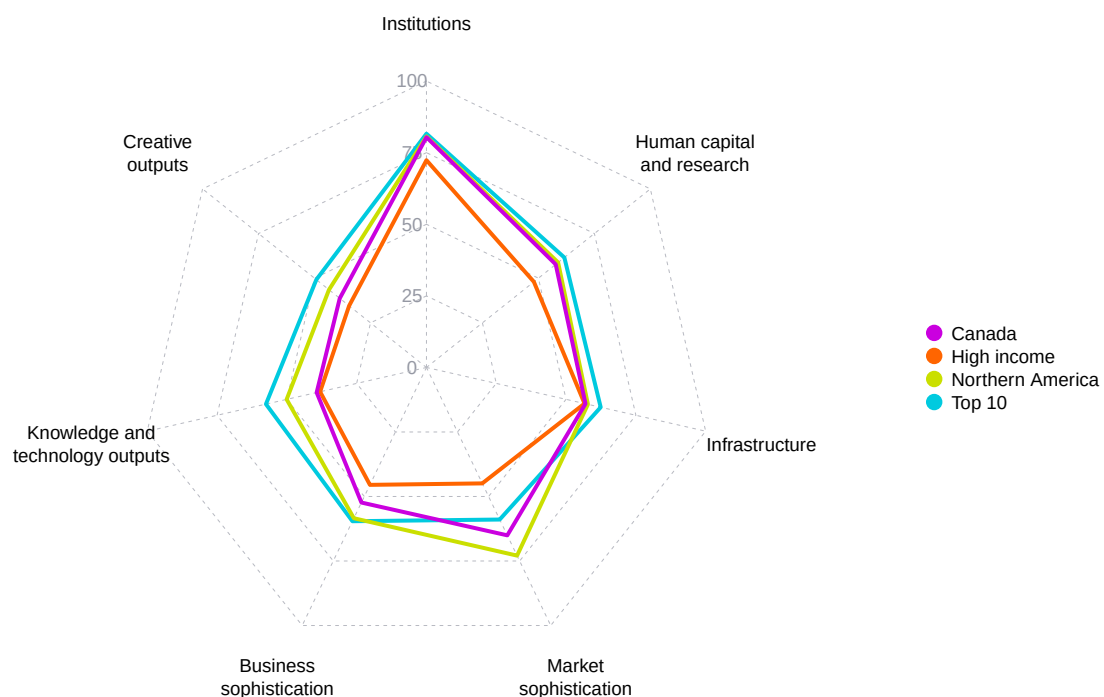
Innovation input to output performance



Income High income Upper middle Lower middle Low income — Fitted line

BENCHMARKING AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND NORTHERN AMERICA

The seven GII pillar scores for Canada



High-income group economies

Canada performs above the high-income group average in all GII pillars.

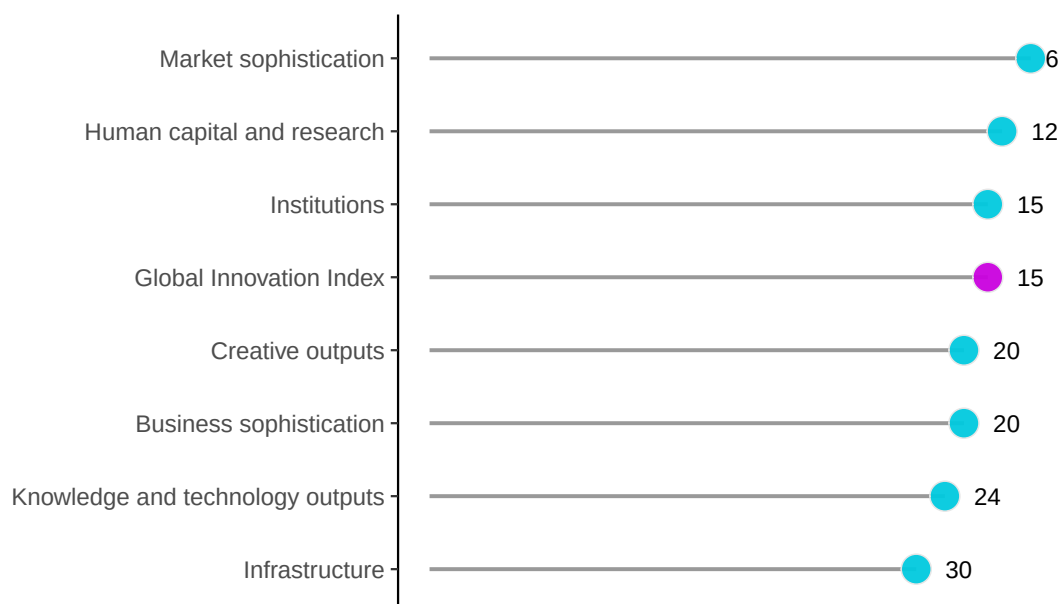
Northern America

Canada performs below the regional average in all GII pillars.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

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

The seven GII pillar ranks for Canada



Note: The highest possible ranking in each pillar is 1.

The full WIPO Intellectual Property Statistics profile for Canada can be found at:

https://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=CA.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the indicator strengths and weaknesses of Canada in the GII 2022.

Strengths and weaknesses for Canada

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
1.1.2	Government effectiveness	11	2.1.2	Government funding/pupil, secondary, % GDP/cap	62
1.2.1	Regulatory quality	11	3.1.1	ICT access	69
2.3.4	QS university ranking, top 3	6	3.3.1	GDP/unit of energy use	115
3.2.1	Electricity output, GWh/mn pop.	6	3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	85
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	1	5.3.3	ICT services imports, % total trade	72
5.2.1	University-industry R&D collaboration	9	6.2.1	Labor productivity growth, %	76
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	1	6.2.2	New businesses/th pop. 15–64	110
6.1.5	Citable documents H-index	4	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	79
6.2.3	Software spending, % GDP	3	7.1.2	Trademarks by origin/bn PPP\$ GDP	68
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	4	7.1.4	Industrial designs by origin/bn PPP\$ GDP	89

Canada

15

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
23	9	High	NAC	38.1	2,027.4	53,089
		Score/Value	Rank			
 Institutions		80.4	15	 Business sophistication		52.3 20
1.1	Political environment	84.4	14	5.1	Knowledge workers	50.3 28 ◇
1.1.1	Political and operational stability*	83.6	16	5.1.1	Knowledge-intensive employment, %	⊙ 43.7 24
1.1.2	Government effectiveness*	85.1	11 ●	5.1.2	Firms offering formal training, %	n/a n/a
1.2	Regulatory environment	91.5	8 ●	5.1.3	GERD performed by business, % GDP	0.9 28
1.2.1	Regulatory quality*	84.8	11 ●	5.1.4	GERD financed by business, %	41.9 40 ◇
1.2.2	Rule of law*	89.0	12	5.1.5	Females employed w/advanced degrees, %	19.5 35 ◇
1.2.3	Cost of redundancy dismissal	10.0	28	5.2	Innovation linkages	59.8 6 ●
1.3	Business environment	65.4	24	5.2.1	University-industry R&D collaboration†	67.9 9 ●
1.3.1	Policies for doing business†	66.5	24	5.2.2	State of cluster development and depth†	63.0 19
1.3.2	Entrepreneurship policies and culture*	64.3	18	5.2.3	GERD financed by abroad, % GDP	0.2 27
 Human capital and research		57.7	12	5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	0.3 1 ● ◆
2.1	Education	62.0	23	5.2.5	Patent families/bn PPP\$ GDP	2.1 16
2.1.1	Expenditure on education, % GDP	⊙ 5.3 34		5.3	Knowledge absorption	46.9 20
2.1.2	Government funding/pupil, secondary, % GDP/cap	⊙ 18.3 62 ○ ◇		5.3.1	Intellectual property payments, % total trade	2.3 11
2.1.3	School life expectancy, years	16.4	27	5.3.2	High-tech imports, % total trade	11.0 25
2.1.4	PISA scales in reading, maths and science	516.7	7	5.3.3	ICT services imports, % total trade	1.4 72 ○
2.1.5	Pupil-teacher ratio, secondary	9.8	29	5.3.4	FDI net inflows, % GDP	2.3 67
2.2	Tertiary education	48.5	14	5.3.5	Research talent, % in businesses	⊙ 58.4 16
2.2.1	Tertiary enrolment, % gross	75.7	26	 Knowledge and technology outputs		39.3 24
2.2.2	Graduates in science and engineering, %	⊙ 25.1 40		6.1	Knowledge creation	45.7 16
2.2.3	Tertiary inbound mobility, %	16.2	11	6.1.1	Patents by origin/bn PPP\$ GDP	2.4 31 ◇
2.3	Research and development (R&D)	62.6	14	6.1.2	PCT patents by origin/bn PPP\$ GDP	1.3 25 ◇
2.3.1	Researchers, FTE/mn pop.	⊙ 4,516.3 22		6.1.3	Utility models by origin/bn PPP\$ GDP	n/a n/a
2.3.2	Gross expenditure on R&D, % GDP	1.7	23	6.1.4	Scientific and technical articles/bn PPP\$ GDP	41.0 21
2.3.3	Global corporate R&D investors, top 3, mn USD	64.4	20	6.1.5	Citable documents H-index	80.3 4 ● ◆
2.3.4	QS university ranking, top 3*	82.1	6 ●	6.2	Knowledge impact	33.5 44 ◇
 Infrastructure		57.0	30	6.2.1	Labor productivity growth, %	0.4 76 ○
3.1	Information and communication technologies (ICTs)	84.7	29	6.2.2	New businesses/th pop. 15–64	⊙ 0.2 110 ○ ◇
3.1.1	ICT access*	85.5	69 ○ ◇	6.2.3	Software spending, % GDP	0.7 3 ● ◆
3.1.2	ICT use*	75.3	40 ◇	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	2.5 79 ○ ◇
3.1.3	Government's online service*	84.1	31	6.2.5	High-tech manufacturing, %	36.8 34
3.1.4	E-participation*	94.0	16	6.3	Knowledge diffusion	38.8 30
3.2	General infrastructure	64.6	5 ● ◆	6.3.1	Intellectual property receipts, % total trade	1.1 20
3.2.1	Electricity output, GWh/mn pop.	16,857.7	6 ● ◆	6.3.2	Production and export complexity	57.9 36
3.2.2	Logistics performance*	78.1	20	6.3.3	High-tech exports, % total trade	6.2 32
3.2.3	Gross capital formation, % GDP	24.1	61	6.3.4	ICT services exports, % total trade	2.0 64
3.3	Ecological sustainability	21.6	84 ○ ◇	 Creative outputs		38.7 20
3.3.1	GDP/unit of energy use	5.7	115 ○ ◇	7.1	Intangible assets	39.9 36
3.3.2	Environmental performance*	50.0	42	7.1.1	Intangible asset intensity, top 15, %	71.0 19
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	0.5	85 ○ ◇	7.1.2	Trademarks by origin/bn PPP\$ GDP	33.8 68 ○
 Market sophistication		65.1	6 ●	7.1.3	Global brand value, top 5,000, % GDP	131.1 13
4.1	Credit	49.4 [20]		7.1.4	Industrial designs by origin/bn PPP\$ GDP	0.4 89 ○ ◇
4.1.1	Finance for startups and scaleups*	49.4	15	7.2	Creative goods and services	31.1 25
4.1.2	Domestic credit to private sector, % GDP	n/a	n/a	7.2.1	Cultural and creative services exports, % total trade	1.7 17
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	7.2.2	National feature films/mn pop. 15–69	4.3 27
4.2	Investment	68.0	6 ●	7.2.3	Entertainment and media market/th pop. 15–69	57.1 9
4.2.1	Market capitalization, % GDP	137.0	8	7.2.4	Printing and other media, % manufacturing	1.3 30
4.2.2	Venture capital investors, deals/bn PPP\$ GDP	0.5	11	7.2.5	Creative goods exports, % total trade	0.8 49
4.2.3	Venture capital recipients, deals/bn PPP\$ GDP	0.4	1 ● ◆	7.3	Online creativity	44.0 13
4.2.4	Venture capital received, value, % GDP	0.0	10	7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	86.6 4 ● ◆
4.3	Trade, diversification, and market scale	77.8	13	7.3.2	Country-code TLDs/th pop. 15–69	34.0 21
4.3.1	Applied tariff rate, weighted avg., %	1.5	47	7.3.3	GitHub commit pushes received/mn pop. 15–69	44.0 12
4.3.2	Domestic industry diversification	97.6	15	7.3.4	Mobile app creation/bn PPP\$ GDP	11.2 36
4.3.3	Domestic market scale, bn PPP\$	2,027.4	15			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question. ⊙ indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at https://www.wipo.int/global_innovation_index/en/2022. 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 indicators that are either missing or outdated for Canada.

Missing data for Canada

Code	Indicator name	Economy year	Model year	Source
4.1.2	Domestic credit to private sector, % GDP	n/a	2020	International Monetary Fund
4.1.3	Loans from microfinance institutions, % GDP	n/a	2020	International Monetary Fund, Financial Access Survey (FAS)
5.1.2	Firms offering formal training, %	n/a	2019	World Bank Enterprise Surveys
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2020	World Intellectual Property Organization

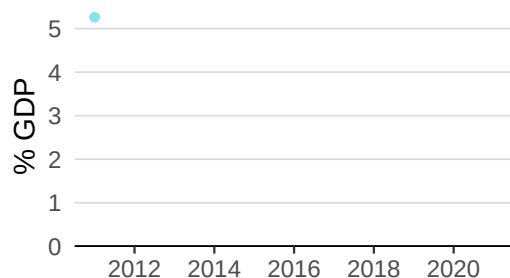
Outdated data for Canada

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2011	2020	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	2011	2018	UNESCO Institute for Statistics
2.2.2	Graduates in science and engineering, %	2019	2020	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2018	2020	UNESCO Institute for Statistics
5.1.1	Knowledge-intensive employment, %	2014	2021	International Labour Organization
5.3.5	Research talent, % in businesses	2018	2020	UNESCO Institute for Statistics
6.2.2	New businesses/th pop. 15–64	2018	2020	World Bank, Entrepreneurship Database

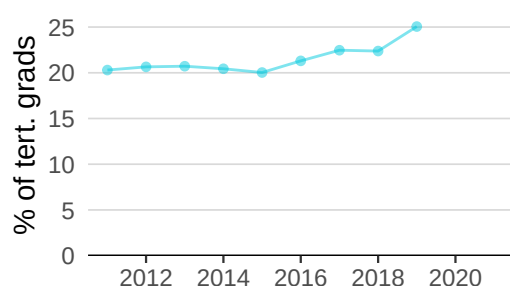
CANADA'S INNOVATION SYSTEM

As far as practicable, the plots below present unscaled indicator data.

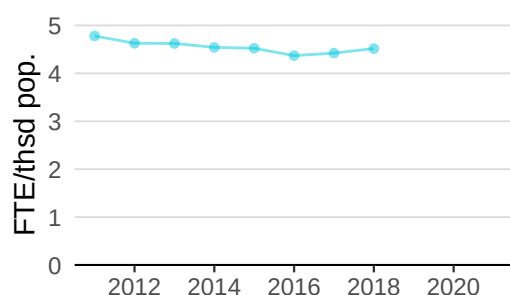
Innovation inputs



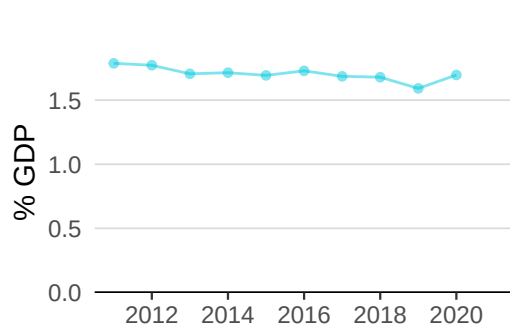
2.1.1 Expenditure on education was equal to 5.3% GDP in 2011 and equivalent to an indicator rank of 34.



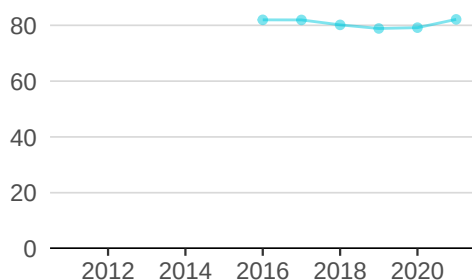
2.2.2 Graduates in science and engineering was equal to 25.1% of tert. grads in 2019—up by 12 percentage points from the year prior—and equivalent to an indicator rank of 40.



2.3.1 Researchers was equal to 4.5 FTE/thsd pop. in 2018—up by 2 percentage points from the year prior—and equivalent to an indicator rank of 22.



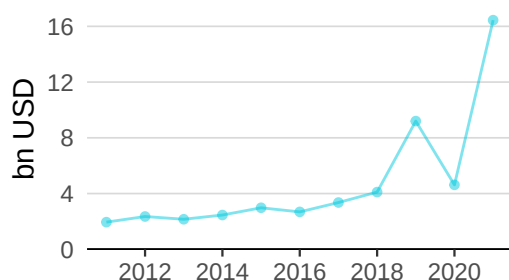
2.3.2 Gross expenditure on R&D was equal to 1.7% GDP in 2020—up by 7 percentage points from the year prior—and equivalent to an indicator rank of 23.



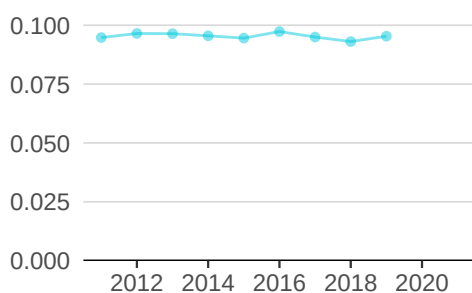
2.3.4 QS university ranking was equal to 82.1 in 2021—up by 4 percentage points from the year prior—and equivalent to an indicator rank of 6.



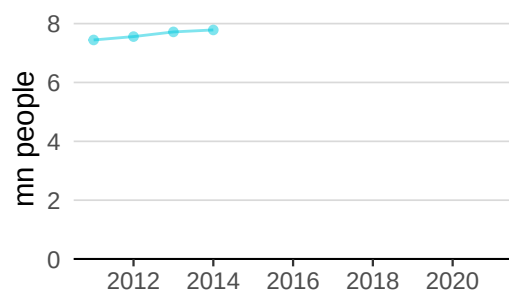
3.1.1 ICT access was equal to 8.5 in 2020 and equivalent to an indicator rank of 69.



4.2.4 Venture capital received was equal to 16.4 bn USD in 2021—up by 256 percentage points from the year prior—and equivalent to an indicator rank of 10.

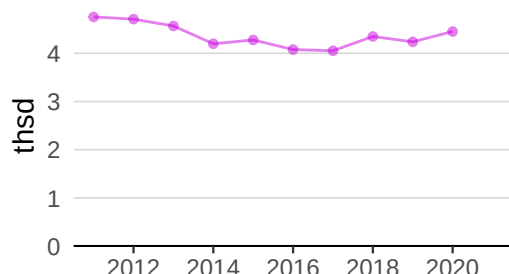


4.3.2 Domestic industry diversification was equal to 0.1 in 2019—up by 2 percentage points from the year prior—and equivalent to an indicator rank of 15.

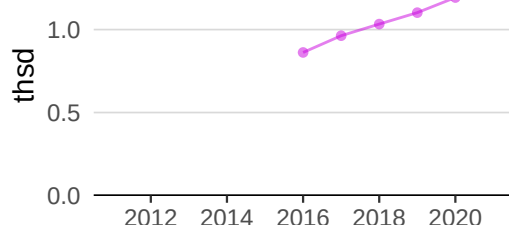


5.1.1 Knowledge-intensive employment was equal to 7.8 mn people in 2014—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 24.

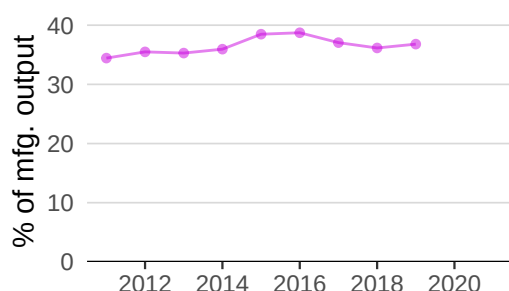
Innovation outputs



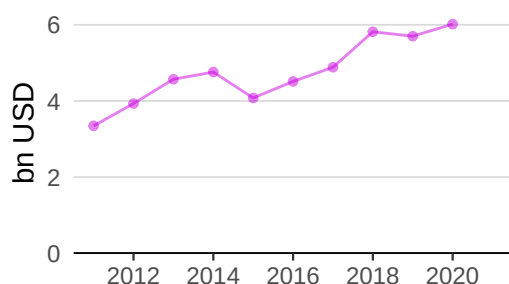
6.1.1 Patents by origin was equal to 4.5 thsd in 2020—up by 5 percentage points from the year prior—and equivalent to an indicator rank of 31.



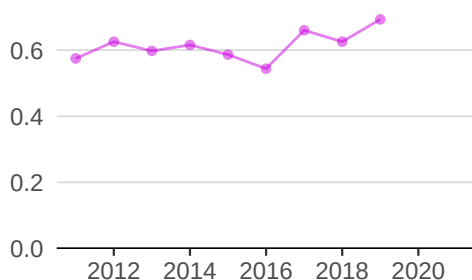
6.1.5 Citable documents H-index was equal to 1.4 thsd in 2021—up by 16 percentage points from the year prior—and equivalent to an indicator rank of 4.



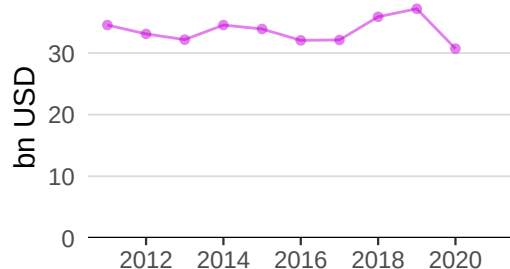
6.2.5 High-tech manufacturing was equal to 36.8% of mfg. output in 2019—up by 2 percentage points from the year prior—and equivalent to an indicator rank of 34.



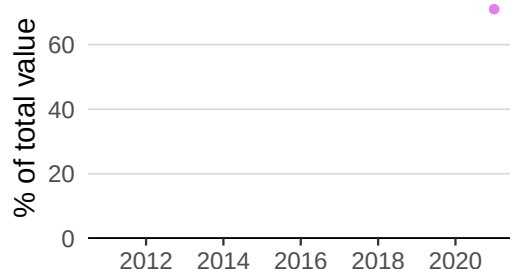
6.3.1 Intellectual property receipts was equal to 6.0 bn USD in 2020—up by 6 percentage points from the year prior—and equivalent to an indicator rank of 20.



6.3.2 Production and export complexity was equal to 0.7 in 2019—up by 11 percentage points from the year prior—and equivalent to an indicator rank of 36.



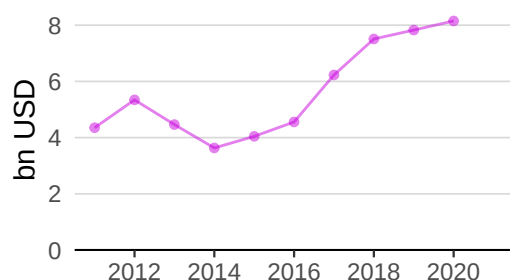
6.3.3 High-tech exports was equal to 30.7 bn USD in 2020—down by 17 percentage points from the year prior—and equivalent to an indicator rank of 32.



7.1.1 Intangible asset intensity was equal to 71.0% of total value in 2021 and equivalent to an indicator rank of 19.



7.1.3 Global brand value was equal to 264.2 bn USD in 2021—up by 19 percentage points from the year prior—and equivalent to an indicator rank of 13.



7.2.1 Cultural and creative services exports was equal to 8.2 bn USD in 2020—up by 4 percentage points from the year prior—and equivalent to an indicator rank of 17.

CANADA'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank
		[mn EUR]	[%]	[%]	
MAGNA	Automobiles & Parts	676	29.7	2.5	246
CONSTELLATION SOFTWARE	Software & Computer Services	469	13.9	14.5	317
SHOPIFY	Software & Computer Services	434	52.4	18.2	337

Source: European Commission's Joint Research Centre (<https://iri.jrc.ec.europa.eu/scoreboard/2021-eu-industrial-rd-investment-scoreboard>).
Note: European Commission's Joint Research Centre ranks the top 2,500 firms by R&D investment annually.

2.3.4 QS university ranking

University	Score	Rank
UNIVERSITY OF TORONTO	85.3	26
MCGILL UNIVERSITY	84.0	27=
UNIVERSITY OF BRITISH COLUMBIA	77.1	46

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2022>).
Note: QS Quacquarelli Symonds Ltd annually assesses over 1,200 universities across the globe and scores them between [0,100].
Ranks can represent a single value "x", a tie "x=" or a range "x-y".

7.1.1 Intangible asset intensity, top 15

Firm	Rank
SHOPIFY	1
ROYAL BANK OF CANADA	2
BROOKFIELD ASSET MANAGEMENT	3

Source: Brand Finance (<https://brandirectory.com/reports/gift-2021>).
Note: Brand Finance only provides within economy ranks.

7.1.3 Global brand value, top 5,000

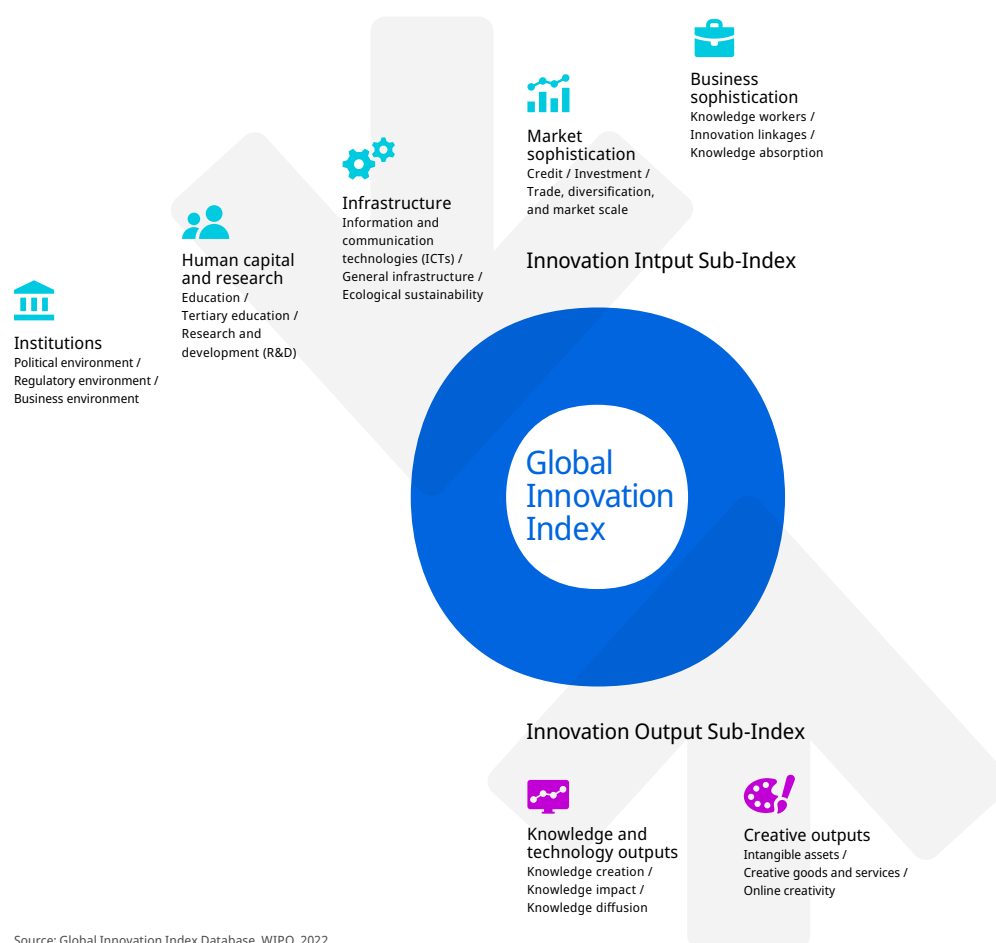
Brand	Industry	Rank
RBC	Banking	1
TD	Banking	2
SCOTIABANK	Banking	3

Source: Brand Finance (<https://brandirectory.com>).
Note: Rank corresponds to within economy ranks.

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.

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.



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.