

GLOBAL INNOVATION INDEX 2019

ISRAEL

10th

Israel ranks 10th 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 Israel 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 Israel's ranking in the GII 2019 is between 8 and 10.

Israel's Rankings, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
2019	10	17	8
2018	11	19	11
2017	17	20	14

- Israel performs better in Innovation Outputs than Inputs.
- This year Israel ranks 17th in Innovation Inputs, gaining positions from last year and compared to 2017.
- As for Innovation Outputs, Israel ranks 8th. This position is better than last year and compared to 2017.

10th

Israel ranks 10th among the 50 high-income economies.

1st

Israel ranks 1st among the 19 economies in Northern Africa and Western Asia.

Israel breaks into the top 10 of the most innovative economies in the world for the first time, after several years of increased performance. Between 2018 and 2019, the rank increase for Israel is a mix of improved performance and better innovation data becoming available (page 9).

The economy remains number 1 in the Northern Africa and Western Asia region. It stands out for producing more innovation outputs relative to its level of innovation investments (page 4).

Israel keeps its position in the top 10 worldwide in the GII areas that measure the sophistication of the business sector and the quantity and quality of innovation outcomes.

In particular, Israel is world leader in the indicators related to research and development (R&D) – such as Researchers, Gross R&D expenditures, R&D performed by business, and Research talent- and in the indicators related to information and communication technologies (ICTs) and online creativity, including ICT services exports, Wikipedia edits, and Mobile app creation.

Other indicators where Israel ranks in the top 3 include Patent families in two or more offices - a notable performance increase relative to last year - University/industry research collaboration, R&D financed by abroad, and Venture capital deals (pages 6 and 7).

The cluster of Tel Aviv – Jerusalem makes it to the top 100 of the world's top science and technology clusters, ranking 23rd this year.

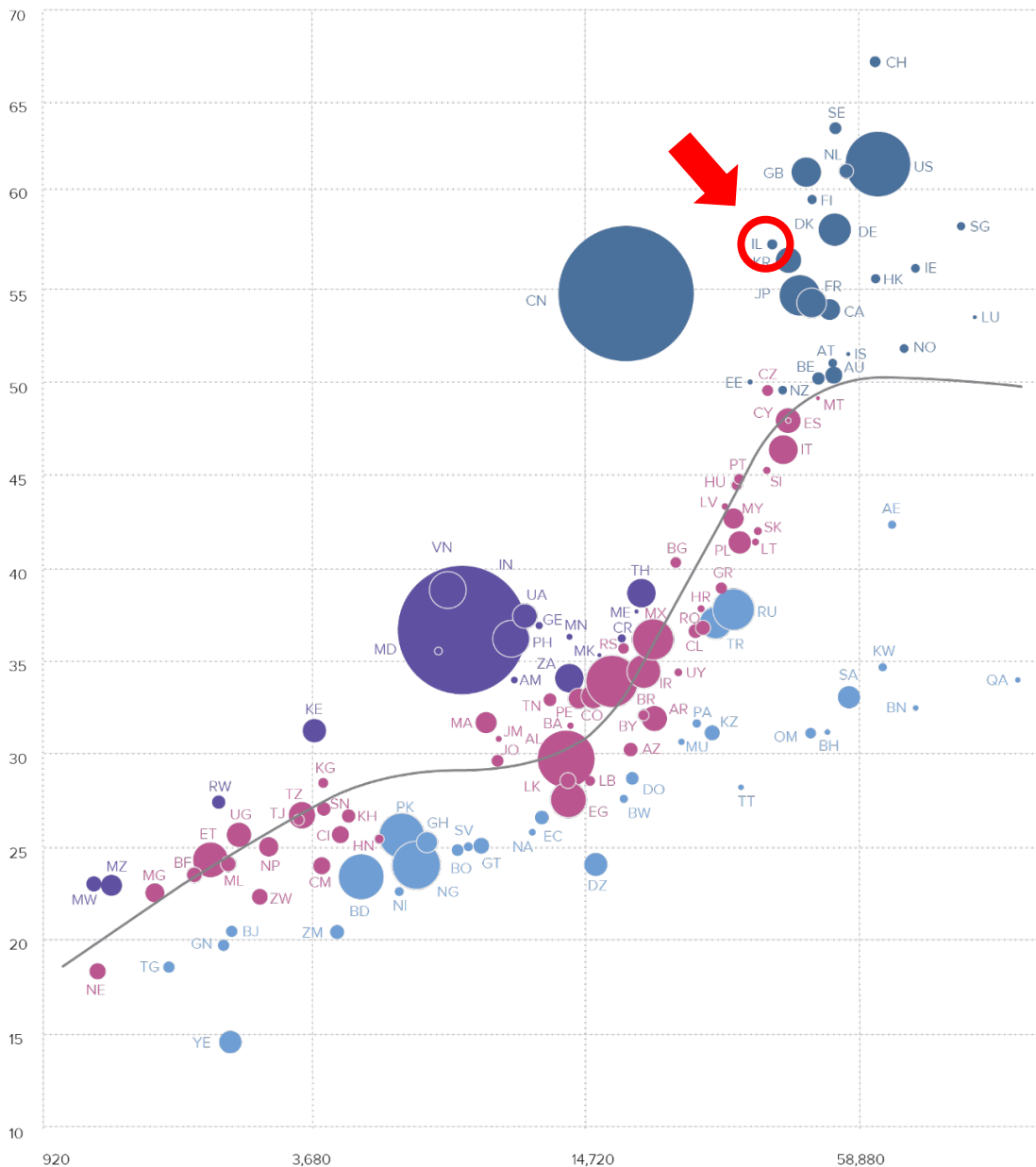
Despite entering the top 10 and achieving important results in innovation outcomes, Israel presents some areas of opportunity, such as indicators Tertiary inbound mobility, PISA results, Gross capital formation, R&D financed by business, and Trademarks by origin (pages 6 and 7).

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, Israel performs well above its expected level of development.

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



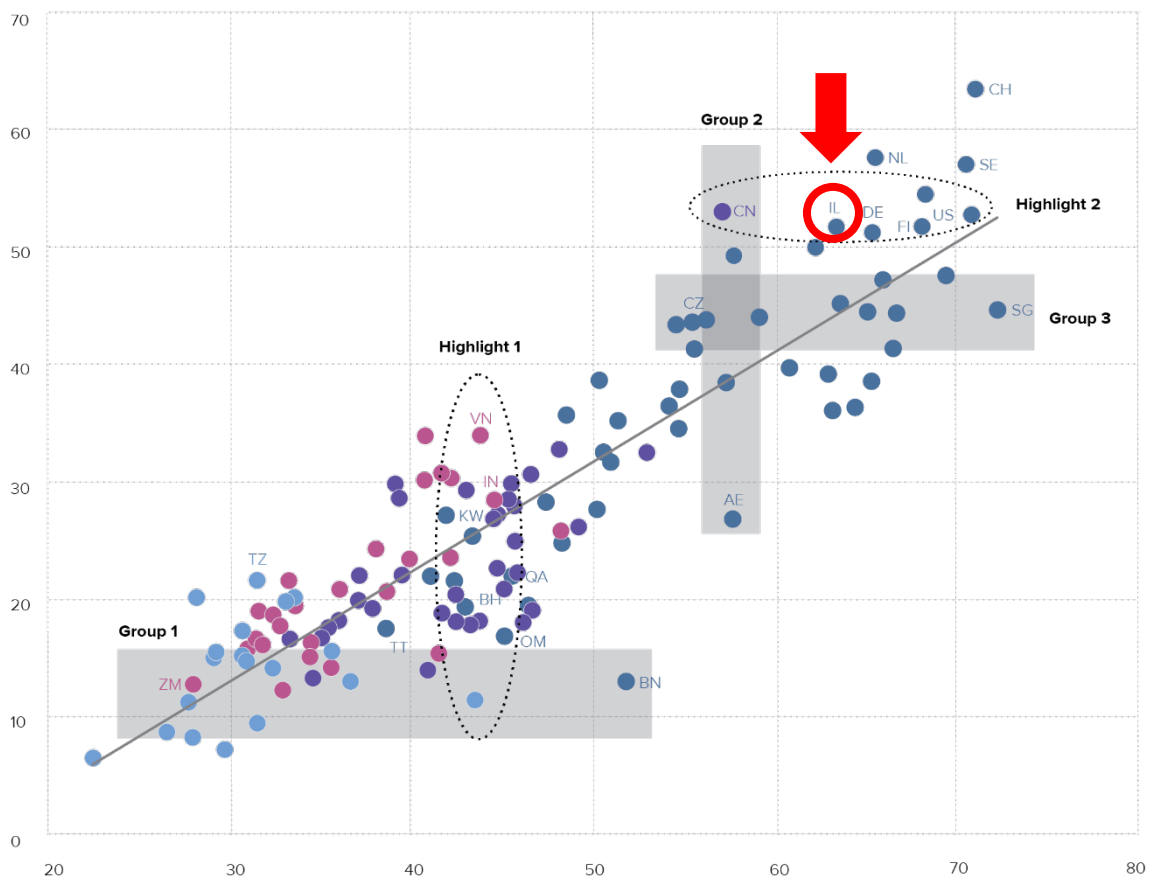
- ▲ GII score
- ▶ GDP per capita in PPP\$ (logarithmic scale)
- Innovation leaders
- Innovation achievers
- Performing at expectations for level of development
- Performing below expectations for level of development

EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs, 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.

Israel produces more innovation outputs relative to its level of innovation investments.

Innovation input/output performance by income group, 2019

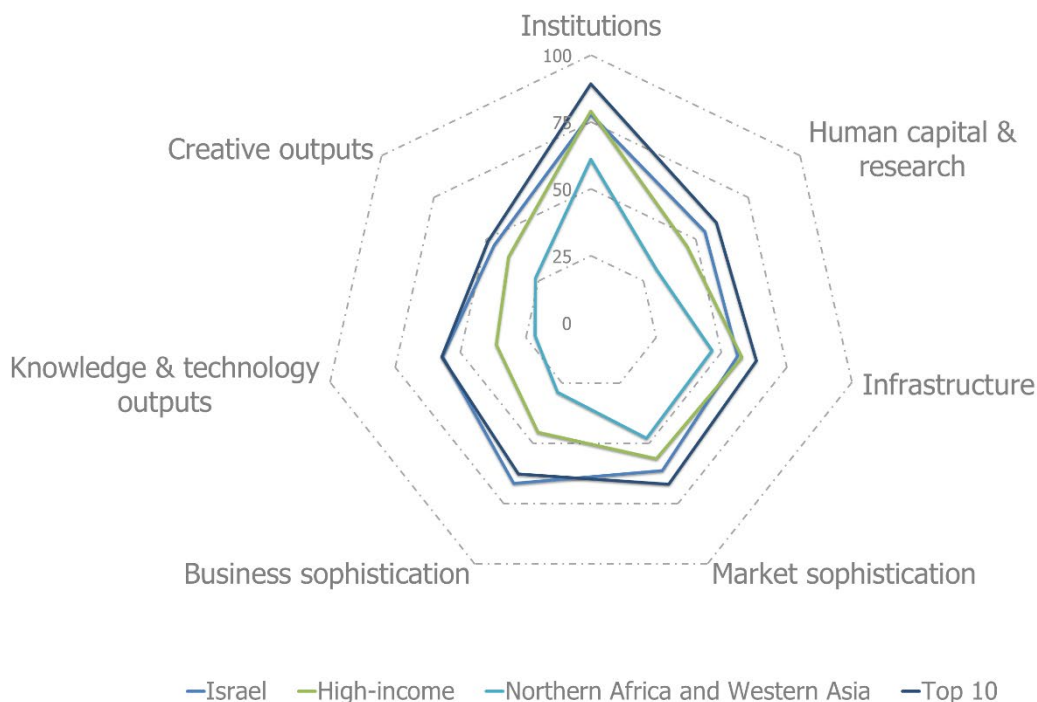


- ▲ Output score
- ▶ Input score
- High income
- Upper-middle income
- Lower-middle income
- Low income
- Fitted values

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 ISRAEL TO OTHER HIGH-INCOME ECONOMIES AND THE NORTHERN AFRICA AND WESTERN ASIA REGION

Israel's scores in the seven GII pillars



High-income economies

Israel has high scores in Human capital & research, Market sophistication, Business sophistication, Knowledge & technology outputs and Creative outputs which are above the average of the high-income group.

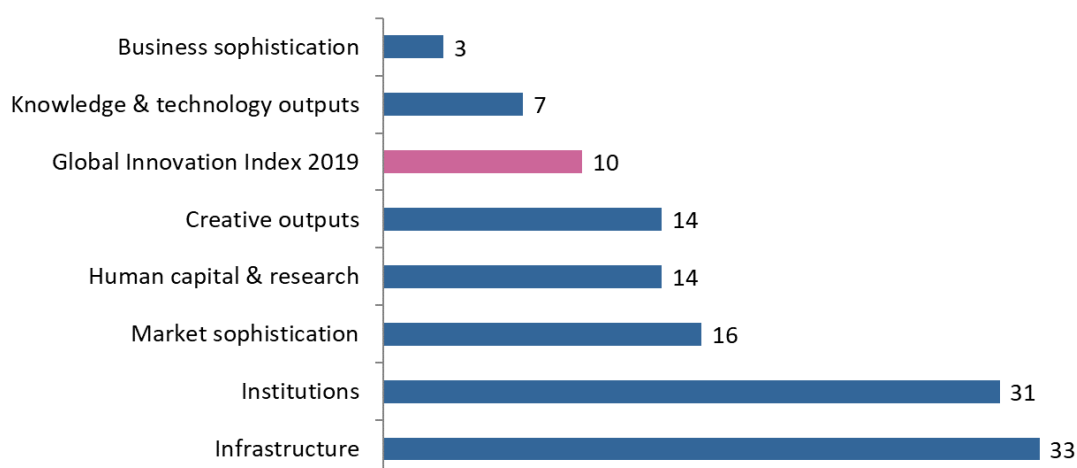
Northern Africa and Western Asia Region

Compared to other economies in the Northern Africa and Western Asia region, Israel performs above average in all GII pillars.

Israel ranks in the top 10 in sub-pillars Research & development (R&D), Innovation linkages, Knowledge creation, Knowledge diffusion, and Online creativity.

OVERVIEW OF ISRAEL'S RANKINGS IN THE 7 GII AREAS

Israel performs the best in Business sophistication and its weakest performance is in Infrastructure.



*The highest possible ranking in each pillar is 1.

ISRAEL'S INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
2.3	Research & development (R&D)	2	1.2.3	Cost of redundancy dismissal, salary weeks	111
2.3.1	Researchers, FTE/mn pop.	1	2.1.2	Government funding/pupil, secondary, % GDP/cap	56
2.3.2	Gross expenditure on R&D, % GDP	1	2.1.4	PISA scales in reading, maths & science	38
4.2.3	Venture capital deals/bn PPP\$ GDP	3	2.2	Tertiary education	72
5	Business sophistication	3	2.2.3	Tertiary inbound mobility, %	67
5.1.3	GERD performed by business, % GDP	1	3.2.3	Gross capital formation, % GDP	89
5.1.5	Females employed w/advanced degrees, %	3	5.1.2	Firms offering formal training, % firms	76
5.2	Innovation linkages	1	5.1.4	GERD financed by business, %	54
5.2.1	University/industry research collaboration [†]	2	5.3.1	Intellectual property payments, % total trade	65
5.2.3	GERD financed by abroad, %	3	7.1.1	Trademarks by origin/bn PPP\$ GDP	101
5.2.5	Patent families 2+ offices/bn PPP\$ GDP	2	7.2.4	Printing & other media, % manufacturing	57
5.3.5	Research talent, % in business enterprise	1			
6.3.3	ICT services exports, % total trade	1			
7.3.3	Wikipedia edits/mn pop. 15–69	1			
7.3.4	Mobile app creation/bn PPP\$ GDP	1			

STRENGTHS

- GII strengths for Israel are found in five of the seven GII pillars.
- Pillar Business sophistication (3) is a notable GII strength of Israel. Most of Israel's relative strengths are in this pillar.
- In Business sophistication (3), additional strengths are sub-pillar Innovation linkages (1) and three of its five indicators: University/industry research collaboration (2), R&D financed by abroad (3), and Patent families in 2 or more offices (2). Indicators Females employed w/advanced degrees (3), R&D performed by business, and Research talent are also GII strengths. In the latter two indicators, Israel ranks first in the world.
- In Human capital & research (14), Israel's strengths are sub-pillar Research & development (R&D) (2) and two of its indicators - Researchers and R&D expenditures. In both indicators, Israel is world leader.
- Two other strengths are found in Creative outputs (14), and in particular in indicators Wikipedia edits and Mobile app creation, both ranking first.
- The other relative strengths for Israel are indicators Venture capital deals (3) and ICT services exports, where the country takes the first spot.

WEAKNESSES

- Israel weaknesses in the GII are found in five of the seven GII pillars.
- The highest number of weaknesses is in Human capital & research (14), where Israel's weaknesses are sub-pillar Tertiary education (72) and indicators Government funding per pupil (56), PISA results (38), and Tertiary inbound mobility (67).
- In Institutions (31), Israel's weakness is indicator Cost of redundancy dismissal (111).
- In Infrastructure (33), indicator Gross capital formation (89) is a GII weakness for Israel.
- In Business sophistication (3), Israel presents weaknesses in indicators Firms offering formal training (76), R&D financed by business (54), and Intellectual property payments (65).
- In Creative outputs (14), the country's weaknesses are indicators Trademarks by origin (101) and Printing & other media (57).

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2018 rank	
8	17	High	NAWA	8.5	336.1	37,972.0	11	
INSTITUTIONS 77.9 31 ◊				BUSINESS SOPHISTICATION 66.5 3 ●◆				
1.1	Political environment	78.6	24		5.1	Knowledge workers	63.4	19
1.1.1	Political and operational stability*.....	75.4	46	◊	5.1.1	Knowledge-intensive employment, %.....	48.4	8
1.1.2	Government effectiveness*.....	80.1	20		5.1.2	Firms offering formal training, % firms.....	18.6	76 ○ ◊
					5.1.3	GERD performed by business, % GDP.....	3.9	1 ●◆
1.2	Regulatory environment	72.6	44	◊	5.1.4	GERD financed by business, %.....	34.7	54 ○ ◊
1.2.1	Regulatory quality*.....	76.1	23		5.1.5	Females employed w/advanced degrees, %.....	28.4	3 ●◆
1.2.2	Rule of law*.....	73.4	28	◊	5.2	Innovation linkages	82.5	1 ●◆
1.2.3	Cost of redundancy dismissal, salary weeks.....	27.4	111	○ ◊	5.2.1	University/industry research collaboration*.....	79.4	2 ●◆
1.3	Business environment	82.5	26		5.2.2	State of cluster development*.....	58.5	30
1.3.1	Ease of starting a business*.....	92.4	41		5.2.3	GERD financed by abroad, %.....	49.8	3 ●◆
1.3.2	Ease of resolving insolvency*.....	72.7	27		5.2.4	JV-strategic alliance deals/bn PPP\$ GDP.....	0.1	8
					5.2.5	Patent families 2+ offices/bn PPP\$ GDP.....	6.9	2 ●◆
HUMAN CAPITAL & RESEARCH 54.5 14				KNOWLEDGE & TECHNOLOGY OUTPUTS56.9 7				
2.1	Education	55.6	42		6.1	Knowledge creation	56.7	10
2.1.1	Expenditure on education, % GDP.....	5.9	22		6.1.1	Patents by origin/bn PPP\$ GDP.....	4.5	25
2.1.2	Government funding/pupil, secondary, % GDP/cap... ..	18.7	56	○	6.1.2	PCT patents by origin/bn PPP\$ GDP.....	5.7	7 ◆
2.1.3	School life expectancy, years.....	16.0	35		6.1.3	Utility models by origin/bn PPP\$ GDP.....	n/a	n/a
2.1.4	PISA scales in reading, maths, & science.....	471.7	38	○ ◊	6.1.4	Scientific & technical articles/bn PPP\$ GDP.....	24.2	14
2.1.5	Pupil-teacher ratio, secondary.....	9.8	26		6.1.5	Citable documents H-index.....	47.1	16
2.2	Tertiary education	29.7	72	○ ◊	6.2	Knowledge impact	48.0	21
2.2.1	Tertiary enrolment, % gross.....	62.7	42		6.2.1	Growth rate of PPP\$ GDP/worker, %.....	1.2	59
2.2.2	Graduates in science & engineering, %.....	n/a	n/a		6.2.2	New businesses/th pop. 15-64.....	3.4	36
2.2.3	Tertiary inbound mobility, %.....	2.8	67	○ ◊	6.2.3	Computer software spending, % GDP.....	0.3	57 ○
2.3	Research & development (R&D)	78.2	2	●◆	6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP.....	27.1	5 ◆
2.3.1	Researchers, FTE/mn pop.....	8,250.5	1	●◆	6.2.5	High- & medium-high-tech manufactures, %.....	0.4	19
2.3.2	Gross expenditure on R&D, % GDP.....	4.6	1	●◆	6.3	Knowledge diffusion	65.9	4 ◆
2.3.3	Global R&D companies, avg. exp. top 3, mn US\$.....	70.0	17		6.3.1	Intellectual property receipts, % total trade.....	1.7	14
2.3.4	QS university ranking, average score top 3*.....	42.6	27		6.3.2	High-tech net exports, % total trade.....	11.9	13
					6.3.3	ICT services exports, % total trade.....	12.2	1 ●◆
					6.3.4	FDI net outflows, % GDP.....	3.3	21
INFRASTRUCTURE 56.1 33 ◊				CREATIVE OUTPUTS46.3 14				
3.1	Information & communication technologies (ICTs)	80.6	31	◊	7.1	Intangible assets	49.1	39
3.1.1	ICT access*.....	80.3	27		7.1.1	Trademarks by origin/bn PPP\$ GDP.....	11.8	101 ○ ◊
3.1.2	ICT use*.....	76.2	24		7.1.2	Industrial designs by origin/bn PPP\$ GDP.....	3.4	38
3.1.3	Government's online service*.....	82.6	39	◊	7.1.3	ICTs & business model creation*.....	81.5	5
3.1.4	E-participation*.....	83.2	43	◊	7.1.4	ICTs & organizational model creation*.....	77.0	12
3.2	General infrastructure	37.9	51	◊	7.2	Creative goods & services	28.4	34
3.2.1	Electricity output, kWh/mn pop.....	7,791.4	24		7.2.1	Cultural & creative services exports, % total trade.....	2.5	4 ◆
3.2.2	Logistics performance*.....	58.2	36	◊	7.2.2	National feature films/mn pop. 15-69.....	5.7	38
3.2.3	Gross capital formation, % GDP.....	20.9	89	○	7.2.3	Entertainment & Media market/th pop. 15-69.....	35.8	21 ○
3.3	Ecological sustainability	50.0	30		7.2.4	Printing & other media, % manufacturing.....	1.1	57 ○
3.3.1	GDP/unit of energy use.....	12.0	29		7.2.5	Creative goods exports, % total trade.....	1.7	31
3.3.2	Environmental performance*.....	75.0	19		7.3	Online creativity	58.8	5
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP..	2.8	35		7.3.1	Generic top-level domains (TLDs)/th pop. 15-69.....	22.4	26
					7.3.2	Country-code TLDs/th pop. 15-69.....	12.7	35 ○
					7.3.3	Wikipedia edits/mn pop. 15-69.....	148.4	1 ●◆
					7.3.4	Mobile app creation/bn PPP\$ GDP.....	100.0	1 ●◆
4.1	Credit	47.7	37					
4.1.1	Ease of getting credit*.....	65.0	54					
4.1.2	Domestic credit to private sector, % GDP.....	66.0	48	◊				
4.1.3	Microfinance gross loans, % GDP.....	n/a	n/a					
4.2	Investment	66.5	14					
4.2.1	Ease of protecting minority investors*.....	73.3	21					
4.2.2	Market capitalization, % GDP.....	71.6	21					
4.2.3	Venture capital deals/bn PPP\$ GDP.....	0.4	3	●◆				
4.3	Trade, competition, & market scale	69.8	34					
4.3.1	Applied tariff rate, weighted avg., %.....	1.9	50					
4.3.2	Intensity of local competition*.....	75.4	24					
4.3.3	Domestic market scale, bn PPP\$.....	336.1	50					

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 AND GII MODEL

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

Missing data

Code	Indicator name	Country year	Model year	Source
2.2.2	Graduates in science & engineering, %	n/a	2016	UNESCO Institute for Statistics
4.1.3	Microfinance gross loans, % GDP	n/a	2017	Microfinance Information Exchange
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
2.1.5	Pupil-teacher ratio, secondary	2009	2017	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	2014	2016	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2012	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.5	Females employed w/advanced degrees, %	2013	2017	International Labour Organization
5.3.5	Research talent, % in business enterprise	2012	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
6.2.5	High- & medium-high-tech manufactures, %	2015	2016	United Nations Industrial Development Organization
7.2.2	National feature films/mn pop. 15–69	2016	2017	UNESCO Institute for Statistics
7.2.4	Printing & other media, % manufacturing	2015	2016	United Nations Industrial Development Organization

Model changes

The table below provides a summary of the adjustments to the GII 2019 framework.

Changes to the GII 2019 framework

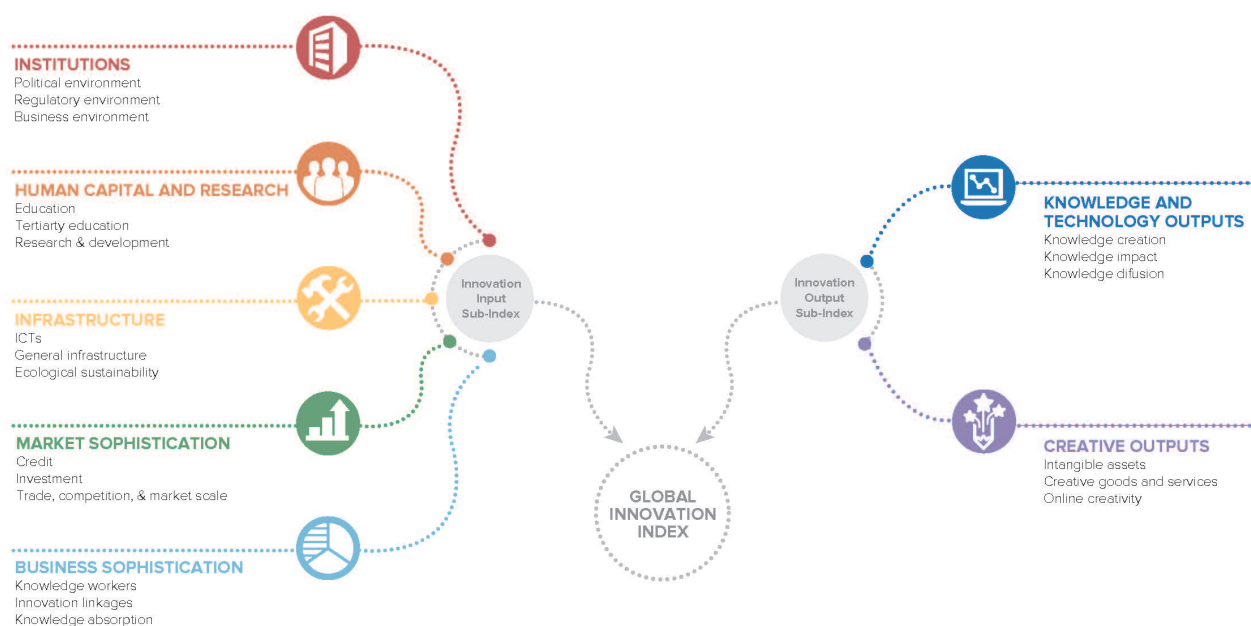
GII 2018		Adjustment	GII 2019	
1.1.1	Political stability & safety	Replaced	1.1.1	Political & operational stability
3.3.2	Environmental performance	Indicator changed at source	3.3.2	Environmental performance
5.3.1	Intellectual property payments, % total trade	Methodology change	5.3.1	Intellectual property payments, % total trade (3 year avg.)
5.3.2	High-tech imports, % total trade	Methodology change	5.3.2	High-tech imports, % total trade
6.2.1	Growth rate of PPP\$ GDP/worker, %	Methodology change	6.2.1	Growth rate of PPP\$ GDP/worker, % (3 year avg.)
6.3.1	Intellectual property receipts, % total trade	Methodology change	6.3.1	Intellectual property receipts, % total trade (3 year avg.)
7.3.4	Mobile app creation/bn PPP\$ GDP	Methodology change	7.3.4	Mobile app creation/bn PPP\$ GDP

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.

Framework of the Global Innovation Index 2019



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.

