GLOBAL INNOVATION INDEX 2019

THE ISLAMIC REPUBLIC OF IRAN

61st The Islamic Republic of Iran ranks 61st 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 the Islamic Republic of Iran 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 the Islamic Republic of Iran's ranking in the GII 2019 is between 58 and 66.

The Islamic Republic of Iran's Rankings, 2017 - 2019

	GII	Innovation Inputs	Innovation Outputs
2019	61	86	47
2018	65	93	46
2017	75	98	57

- The Islamic Republic of Iran performs better in Innovation Outputs than Inputs.
- This year the Islamic Republic of Iran ranks 86th in Innovation Inputs, better than last year and compared to 2017.
- As for Innovation Outputs, the Islamic Republic of Iran ranks 47th. This position is worse than last year but better compared to 2017.

13th The Islamic Republic of Iran ranks 13th among the 34 upper middle-income economies.

2nd The Islamic Republic of Iran ranks 2nd among the 9 economies in Central and Southern Asia.

The Islamic Republic of Iran stepped closer to the top 60. Its improvement this year is largely due to its relative performance and less so to new GII data or methods (page 9).

This year it improves in four of the seven innovation areas measured by the GII. Its most notable improvements are in the indicators that capture the quality of infrastructures, and in particular in indicators such as ICT use, Government's online service, E-participation, and Logistics performance. Other important gains are found in Expenditures on education, Government's funding per pupil, Patent families in two or more offices, PCT patent applications, High-technology imports, and Exports of information and communication technology (ICT) services.

The Islamic Republic of Iran holds top 10 positions in Graduates in science & engineering, Gross capital formation, and Trademarks by origin (pages 6 and 7).

It also ranks 9th among middle-income economies in the Quality of scientific publications and 12th in the quality of innovation. The cluster of Tehran places 46th in the ranking of the world's top 100 science and technology clusters.

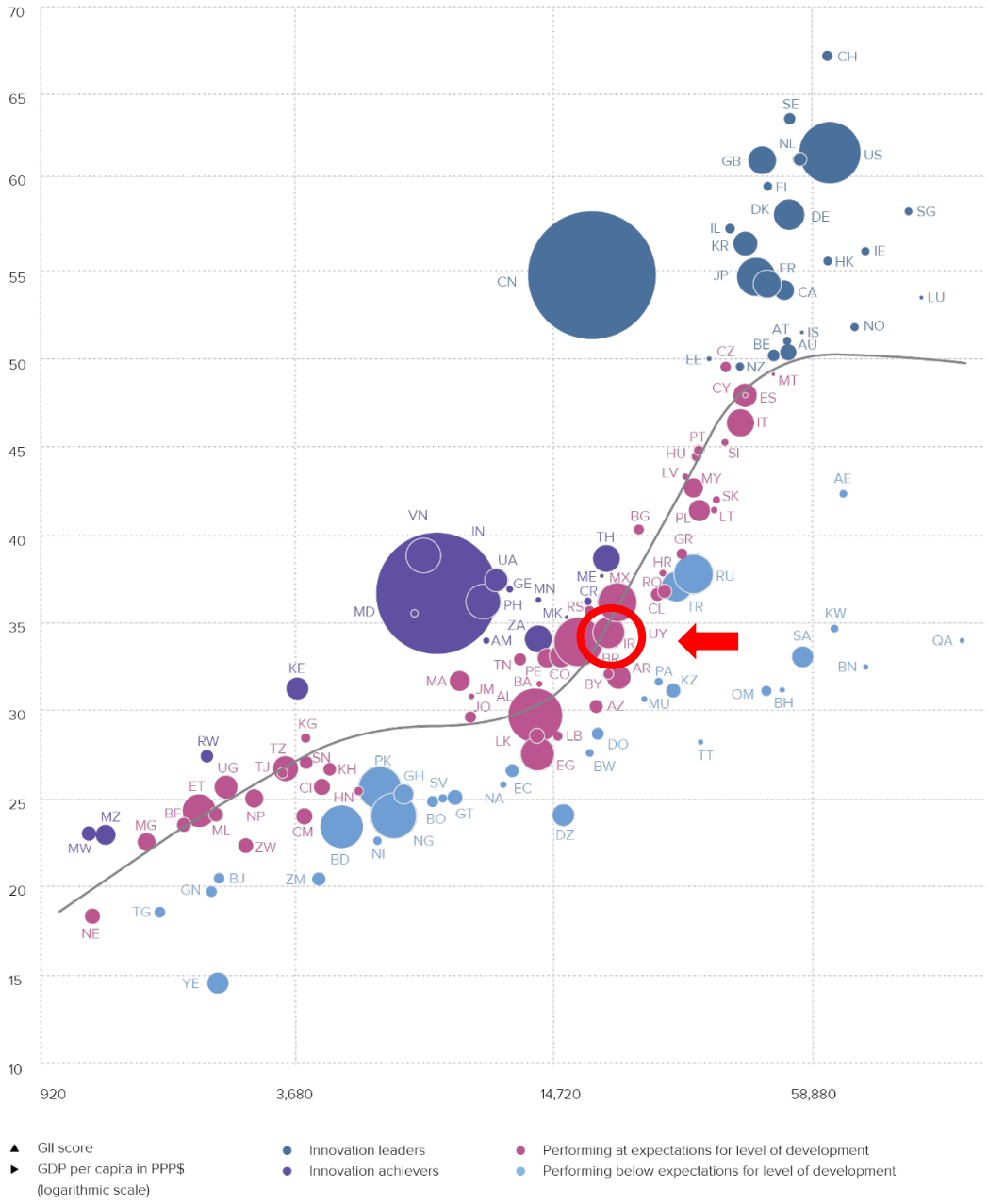
Despite progress, a number of areas for further improvement remain. These are concentrated in the GII areas that measure the quality of institutions – and in indicators such as Regulatory quality and Ease of starting a business – and in indicators measuring the sophistication of the local market, such as Ease of protecting minority investors and Intensity of local competition. Other notable GII weaknesses for this country include indicators Global R&D companies, JV–strategic alliance deals, and Mobile app creation (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, the Islamic Republic of Iran performs at its expected level of development.

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

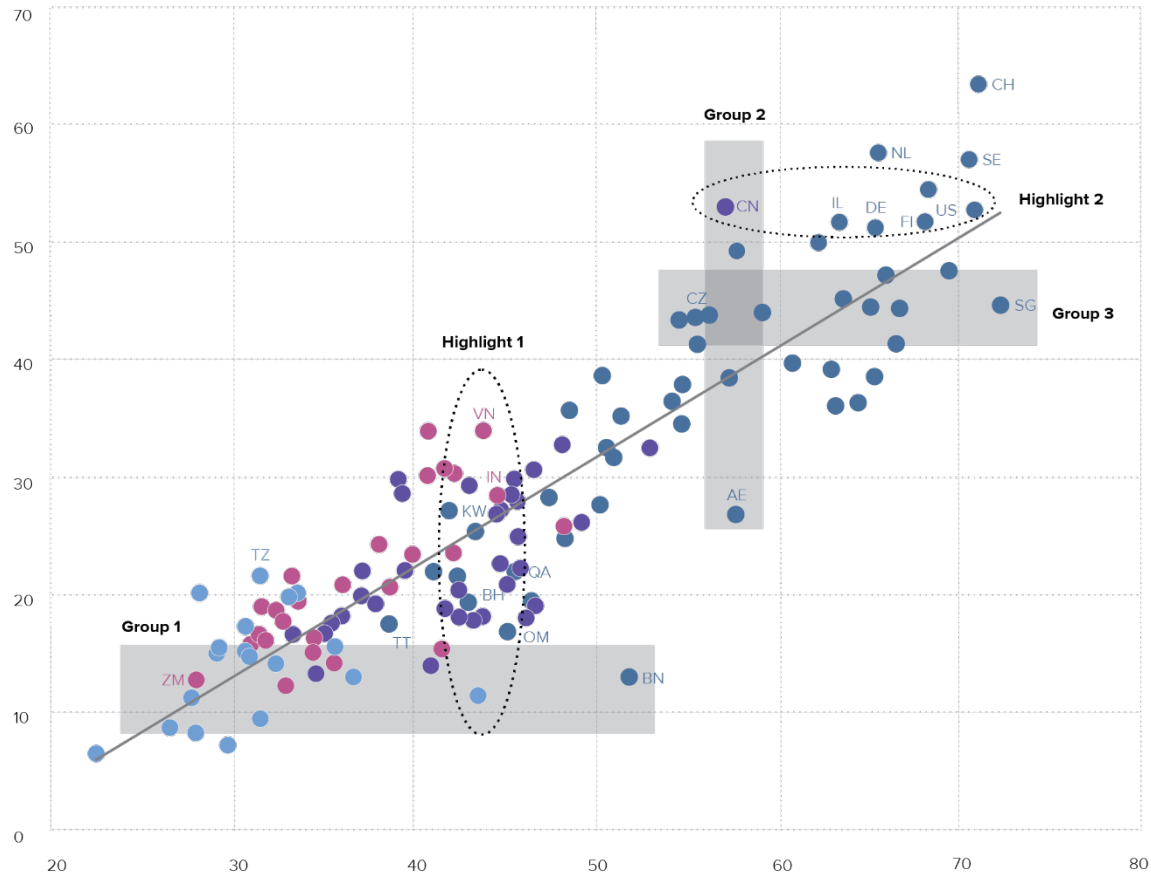


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

The Islamic Republic of Iran produces more innovation outputs relative to its level of innovation investments.

Innovation input/output performance by income group, 2019



▲ Output score
▶ Input score

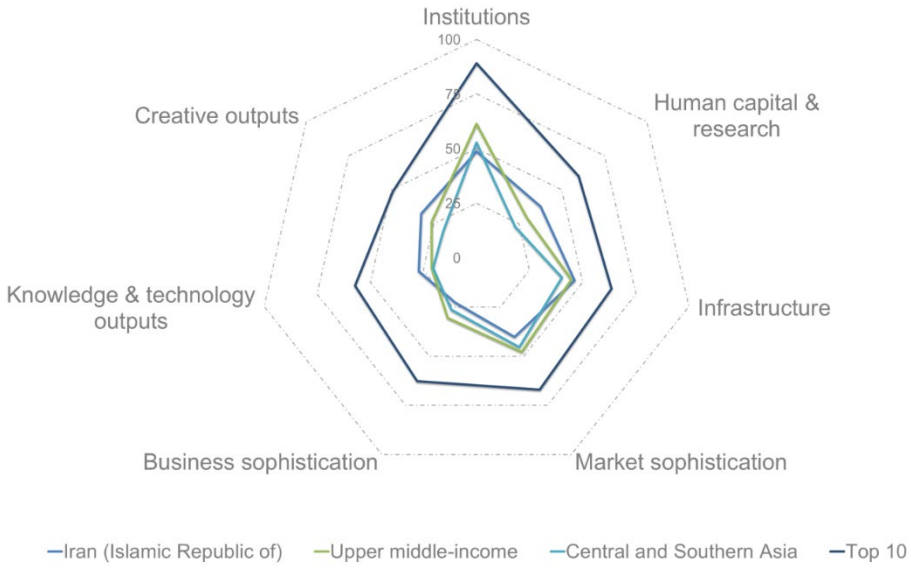
● High income
● Upper-middle income
● Lower-middle income
● Low income

— 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 THE ISLAMIC REPUBLIC OF IRAN TO OTHER UPPER MIDDLE-INCOME ECONOMIES AND THE CENTRAL AND SOUTHERN ASIA REGION

The Islamic Republic of Iran's scores in the seven GII pillars



Upper middle-income economies

The Islamic Republic of Iran has high scores in four out of the seven GII pillars: Human capital & research, Infrastructure, Knowledge & technology outputs, and Creative outputs, which are above the average of the upper middle-income group.

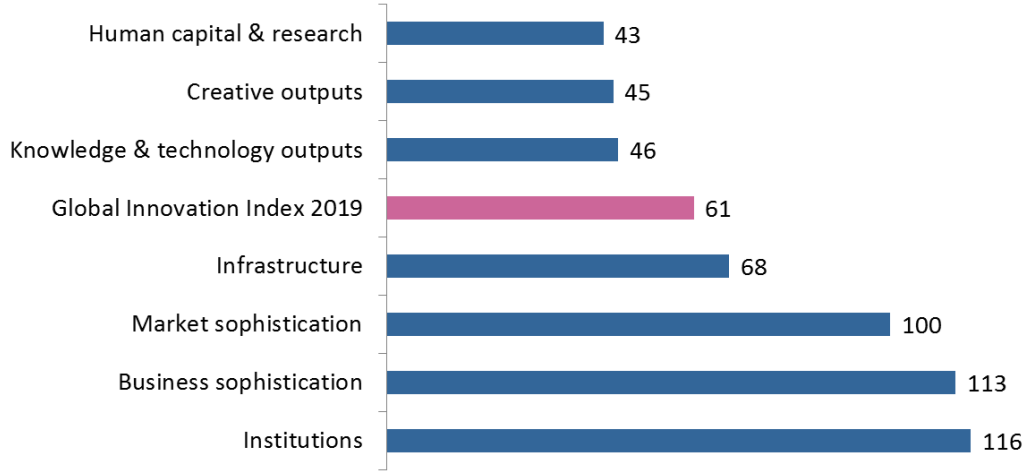
Central and Southern Asia Region

Compared to other economies in the Central and Southern Asia region, the Islamic Republic of Iran performs above average in the same four GII pillars: Human capital & research, Infrastructure, Knowledge & technology outputs, and Creative outputs.

Top ranks are found in areas such as Tertiary education, General infrastructure, Knowledge impact, and Intangible assets, where the country ranks in the top 25 worldwide.

OVERVIEW OF THE ISLAMIC REPUBLIC OF IRAN'S RANKINGS IN THE 7 GII AREAS

The Islamic Republic of Iran performs the best in Human capital & research and its weakest performance is in Institutions.



*The highest possible ranking in each pillar is 1.

THE ISLAMIC REPUBLIC OF IRAN'S INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths

Code	Indicator name	Rank
2.2	Tertiary education	2
2.2.1	Tertiary enrolment, % gross	30
2.2.2	Graduates in science & engineering, %	3
3.2	General infrastructure	23
3.2.3	Gross capital formation, % GDP	8
4.3.3	Domestic market scale, bn PPP$	18
6.1	Knowledge creation	32
6.1.1	Patents by origin/bn PPP$ GDP	14
6.1.4	Scientific & technical articles/bn PPP$ GDP	27
6.2	Knowledge impact	23
6.2.1	Growth rate of PPP$ GDP/worker, %, 3-year average	18
6.2.5	High- & medium-high-tech manufactures, %	30
7.1	Intangible assets	6
7.1.1	Trademarks by origin/bn PPP$ GDP	4
7.1.2	Industrial designs by origin/bn PPP$ GDP	13

Weaknesses

Code	Indicator name	Rank
1	Institutions	116
1.2	Regulatory environment	115
1.2.1	Regulatory quality*	127
1.3	Business environment	123
1.3.1	Ease of starting a business*	123
2.2.3	Tertiary inbound mobility, %	97
2.3.3	Global R&D companies, top 3, in mn US$	43
4.2	Investment	128
4.2.1	Ease of protecting minority investors*	125
4.3.1	Applied tariff rate, weighted mean, %	127
4.3.2	Intensity of local competition†	113
5	Business sophistication	113
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	110
5.3	Knowledge absorption	120
6.3	Knowledge diffusion	116
7.2	Creative goods & services	120
7.2.4	Printing & other media, % manufacturing	102
7.3.4	Mobile app creation/bn PPP$ GDP	96

STRENGTHS

- GII strengths for the Islamic Republic of Iran are found in five of the seven GII pillars.
- Most of these strengths are in Knowledge & technology outputs (46). These are are sub-pillars Knowledge creation (32) and Knowledge impact (23). At the indicator level, Patents by origin (14), Scientific & technical articles (27), Labor productivity growth (18), and High- & medium-high-tech manufactures (30) are relative strengths for the country.
- Several other strengths for the Islamic Republic of Iran are concentrated in Creative outputs (45). Here, GII strengths are sub-pillar Intangible assets (6) as well as two of its four indicators: Industrial designs by origin (13) and Trademarks by origin, where the country ranks 4th.
- In Human capital & research (43), the Islamic Republic of Iran's strengths are sub-pillar Tertiary education, where it is the second in the world, and indicators Tertiary enrolment (30) and Graduates in science & engineering, where it positions 3rd worldwide.
- In Infrastructure (68), GII strengths are found in sub-pillar General infrastructure (23) and in its indicator Gross capital formation (8).
- In Market sophistication (100), indicator Domestic market scale (18) is a strength for the economy.

WEAKNESSES

- The Islamic Republic of Iran's weaknesses in the GII are found in six of the seven GII pillars.
- Pillars Institutions (116) and Business sophistication (113) are GII weakness for this country.
- In Institutions (116), additional weaknesses are two sub-pillars - Regulatory environment (115) and Business environment (123) - and two indicators - Regulatory quality (127) and Ease of starting a business (123).
- In Business sophistication (113), the Islamic Republic of Iran has weaknesses also in sub-pillar Knowledge absorption (120) and in indicator JV–strategic alliance deals (110).
- In Human capital & research (43), relative weaknesses are indicators Tertiary inbound mobility (97) and Global R&D companies (43).
- In Market sophistication (100), four relative weaknesses are found: sub-pillar Investment (128) and indicators Ease of protecting minority investors (125), Applied tariff rate (127), and Intensity of local competition (113).
- In Knowledge & technology outputs (46), sub-pillar Knowledge diffusion (116) is a relative GII weakness for the Islamic Republic of Iran.
- In Creative outputs (45), GII weaknesses for this country are sub-pillar Creative goods & services (120) and indicators Printing & other media (102) and Mobile app creation (96).

IRAN (ISLAMIC REPUBLIC OF)

GII 2019 rank

61

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2018 rank
47	86	Upper middle	CSA	82.0	1,652.9	19,556.6	65

		Score/Value	Rank	
INSTITUTIONS		**48.8**	**116**	○ ◇
1.1	**Political environment**	**46.7**	**90**	
1.1.1	Political and operational stability*	56.1	105	◇
1.1.2	Government effectiveness*	41.9	85	
1.2	**Regulatory environment**	**48.0**	**115**	○ ◇
1.2.1	Regulatory quality*	9.8	127	○ ◇
1.2.2	Rule of law*	28.3	105	
1.2.3	Cost of redundancy dismissal, salary weeks	23.1	96	
1.3	**Business environment**	**51.7**	**123**	○ ◇
1.3.1	Ease of starting a business*	67.8	123	○ ◇
1.3.2	Ease of resolving insolvency*	35.6	109	◇
HUMAN CAPITAL & RESEARCH		**37.6**	**43**	
2.1	**Education**	**41.0**	**80**	
2.1.1	Expenditure on education, % GDP	3.8	87	
2.1.2	Government funding/pupil, secondary, % GDP/cap	17.7	63	
2.1.3	School life expectancy, years	14.9	55	
2.1.4	PISA scales in reading, maths, & science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary	19.0	84	
2.2	**Tertiary education**	**62.6**	**2**	● ◆
2.2.1	Tertiary enrolment, % gross	68.8	30	●
2.2.2	Graduates in science & engineering, %	43.9	3	● ◆
2.2.3	Tertiary inbound mobility, %	0.4	97	○
2.3	**Research & development (R&D)**	**9.1**	**59**	
2.3.1	Researchers, FTE/mn pop.	671.0	60	
2.3.2	Gross expenditure on R&D, % GDP	0.3	83	
2.3.3	Global R&D companies, avg. exp. top 3, mn US$	0.0	43	○ ◇
2.3.4	QS university ranking, average score top 3*	23.4	45	
INFRASTRUCTURE		**46.0**	**68**	
3.1	**Information & communication technologies(ICTs)**	**59.6**	**79**	
3.1.1	ICT access*	72.7	58	
3.1.2	ICT use*	49.8	71	
3.1.3	Government's online service*	63.2	87	
3.1.4	E-participation*	52.8	102	
3.2	**General infrastructure**	**48.6**	**23**	● ◆
3.2.1	Electricity output, kWh/mn pop	3,601.1	56	
3.2.2	Logistics performance*	36.9	63	
3.2.3	Gross capital formation, % GDP	39.1	8	● ◆
3.3	**Ecological sustainability**	**29.8**	**97**	◇
3.3.1	GDP/unit of energy use	5.9	101	◇
3.3.2	Environmental performance*	58.2	70	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.4	88	
MARKET SOPHISTICATION		**40.0**	**100**	◇
4.1	**Credit**	**40.2**	**54**	
4.1.1	Ease of getting credit*	50.0	87	
4.1.2	Domestic credit to private sector, % GDP	66.1	47	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**25.2**	**128**	○ ◇
4.2.1	Ease of protecting minority investors*	33.3	125	○ ◇
4.2.2	Market capitalization, % GDP	24.6	53	
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	n/a	
4.3	**Trade, competition, & market scale**	**54.7**	**90**	
4.3.1	Applied tariff rate, weighted avg., %	15.2	127	○ ◇
4.3.2	Intensity of local competition†	58.0	113	○ ◇
4.3.3	Domestic market scale, bn PPP$	1,652.9	18	● ◆

		Score/Value	Rank	
BUSINESS SOPHISTICATION		**22.6**	**113**	○ ◇
5.1	**Knowledge workers**	**26.3**	**[93]**	
5.1.1	Knowledge-intensive employment, %	18.7	76	
5.1.2	Firms offering formal training, % firms	n/a	n/a	
5.1.3	GERD performed by business, % GDP	0.1	65	
5.1.4	GERD financed by business, %	30.9	57	
5.1.5	Females employed w/advanced degrees, %	n/a	n/a	
5.2	**Innovation linkages**	**20.3**	**84**	
5.2.1	University/industry research collaboration†	33.6	97	
5.2.2	State of cluster development†	43.9	78	
5.2.3	GERD financed by abroad, %	n/a	n/a	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.0	110	○ ◇
5.2.5	Patent families 2+ offices/bn PPP$ GDP	0.0	78	
5.3	**Knowledge absorption**	**21.1**	**120**	○ ◇
5.3.1	Intellectual property payments, % total trade	0.2	92	
5.3.2	High-tech imports, % total trade	4.9	107	
5.3.3	ICT services imports, % total trade	0.5	104	
5.3.4	FDI net inflows, % GDP	0.8	108	◇
5.3.5	Research talent, % in business enterprise	15.0	60	
KNOWLEDGE & TECHNOLOGY OUTPUTS		**27.2**	**46**	
6.1	**Knowledge creation**	**27.9**	**32**	● ◆
6.1.1	Patents by origin/bn PPP$ GDP	9.3	14	● ◆
6.1.2	PCT patents by origin/bn PPP$ GDP	0.1	64	
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	17.6	27	● ◆
6.1.5	Citable documents H-index	17.6	41	
6.2	**Knowledge impact**	**46.3**	**23**	● ◆
6.2.1	Growth rate of PPP$ GDP/worker, %	3.4	18	●
6.2.2	New businesses/th pop. 15-64	n/a	n/a	
6.2.3	Computer software spending, % GDP	0.3	59	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.5	100	
6.2.5	High- & medium-high-tech manufactures, %	0.4	30	●
6.3	**Knowledge diffusion**	**7.5**	**116**	○ ◇
6.3.1	Intellectual property receipts, % total trade	0.0	86	
6.3.2	High-tech net exports, % total trade	0.3	91	
6.3.3	ICT services exports, % total trade	0.6	95	
6.3.4	FDI net outflows, % GDP	0.0	108	
CREATIVE OUTPUTS		**32.5**	**45**	
7.1	**Intangible assets**	**62.6**	**6**	● ◆
7.1.1	Trademarks by origin/bn PPP$ GDP	200.7	4	● ◆
7.1.2	Industrial designs by origin/bn PPP$ GDP	10.9	13	● ◆
7.1.3	ICTs & business model creation†	57.6	78	
7.1.4	ICTs & organizational model creation†	47.4	91	
7.2	**Creative goods & services**	**1.4**	**120**	○ ◇
7.2.1	Cultural & creative services exports, % total trade	n/a	n/a	
7.2.2	National feature films/mn pop. 15-69	1.7	71	
7.2.3	Entertainment & Media market/th pop. 15-69	1.7	54	◇
7.2.4	Printing & other media, % manufacturing	0.2	102	○ ◇
7.2.5	Creative goods exports, % total trade	0.1	111	
7.3	**Online creativity**	**3.2**	**77**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	1.8	79	
7.3.2	Country-code TLDs/th pop. 15-69	4.7	50	
7.3.3	Wikipedia edits/mn pop. 15-69	9.4	64	
7.3.4	Mobile app creation/bn PPP$ GDP	0.0	96	○

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 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 the Islamic Republic of Iran.

Missing data

Code	Indicator name	Country year	Model year	Source
2.1.4	PISA scales in reading, maths & science	n/a	2015	OECD Programme for International Student Assessment (PISA)
4.1.3	Microfinance gross loans, % GDP	n/a	2017	Microfinance Information Exchange
4.2.3	Venture capital deals/bn PPP$ GDP	n/a	2018	Thomson Reuters
5.1.2	Firms offering formal training, % firms	n/a	2013	World Bank
5.1.5	Females employed w/advanced degrees, %	n/a	2017	International Labour Organization
5.2.3	GERD financed by abroad, %	n/a	2016	UNESCO Institute for Statistics
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2017	World Intellectual Property Organization
6.2.2	New businesses/th pop. 15–64	n/a	2016	World Bank
7.2.1	Cultural & creative services exports, % total trade	n/a	2017	World Trade Organization

Outdated data

Code	Indicator name	Country year	Model year	Source
2.2.1	Tertiary enrolment, % gross	2016	2017	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2013	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
2.3.2	Gross expenditure on R&D, % GDP	2013	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
4.1.2	Domestic credit to private sector, % GDP	2016	2017	International Monetary Fund
4.3.1	Applied tariff rate, weighted mean, %	2011	2017	World Bank
5.1.3	GERD performed by business, % GDP	2008	2017	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.4	GERD financed by business, %	2008	2016	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.3.1	Intellectual property payments, % total trade	2015	2017	World Trade Organization
5.3.3	ICT services imports, % total trade	2015	2017	World Trade Organization
5.3.5	Research talent, % in business enterprise	2008	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
6.3.1	Intellectual property receipts, % total trade	2015	2017	World Trade Organization
6.3.3	ICT services exports, % total trade	2015	2017	World Trade Organization
6.3.4	FDI net outflows, % GDP, 3-year average	2016	2017	International Monetary Fund
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.

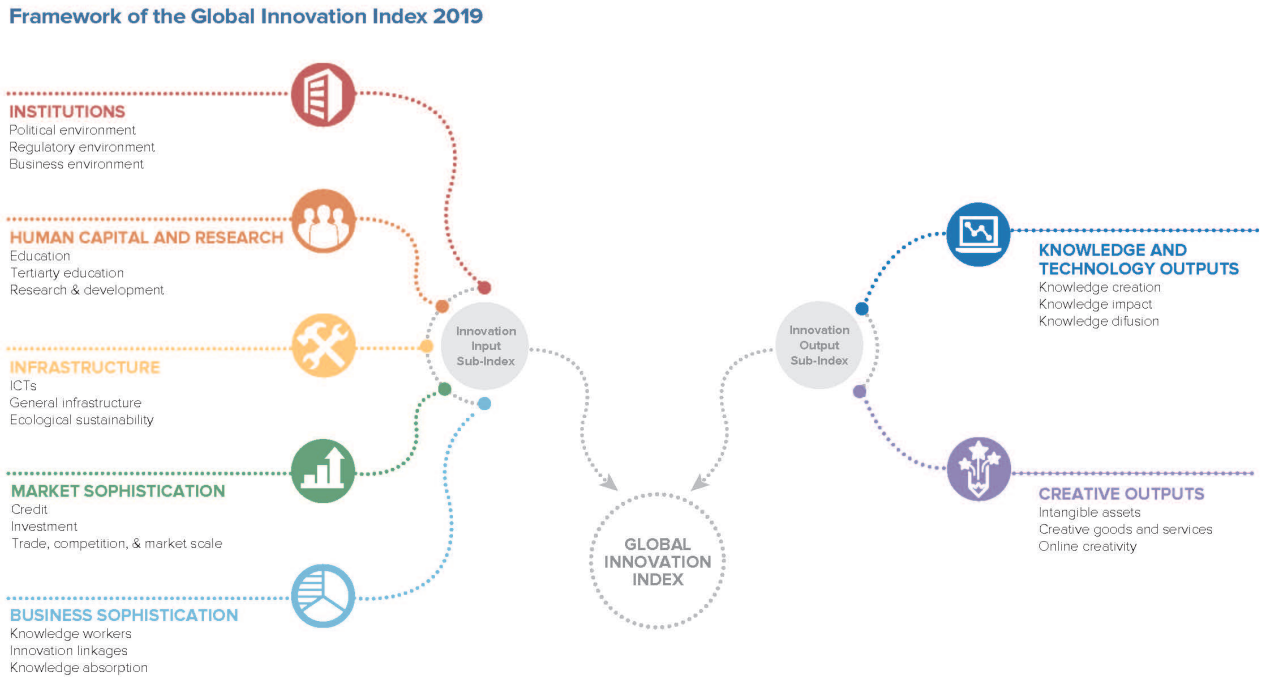
Changes to the GII 2019 framework

	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.



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.