Global Innovation Index 2022

INDONESIA

75th Indonesia ranks 75th 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 Indonesia 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 Indonesia in the GII 2022 is between ranks 70 and 76.

Rankings for Indonesia (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	85	91	76
2021	87	87	84
2022	75	72	74

- Indonesia performs better in innovation inputs than innovation outputs in 2022.
- This year Indonesia ranks 72nd in innovation inputs, higher than both 2021 and 2020.
- As for innovation outputs, Indonesia ranks 74th. This position is higher than both 2021 and 2020.

9th Indonesia ranks 9th among the 36 lower-middle-income group economies.

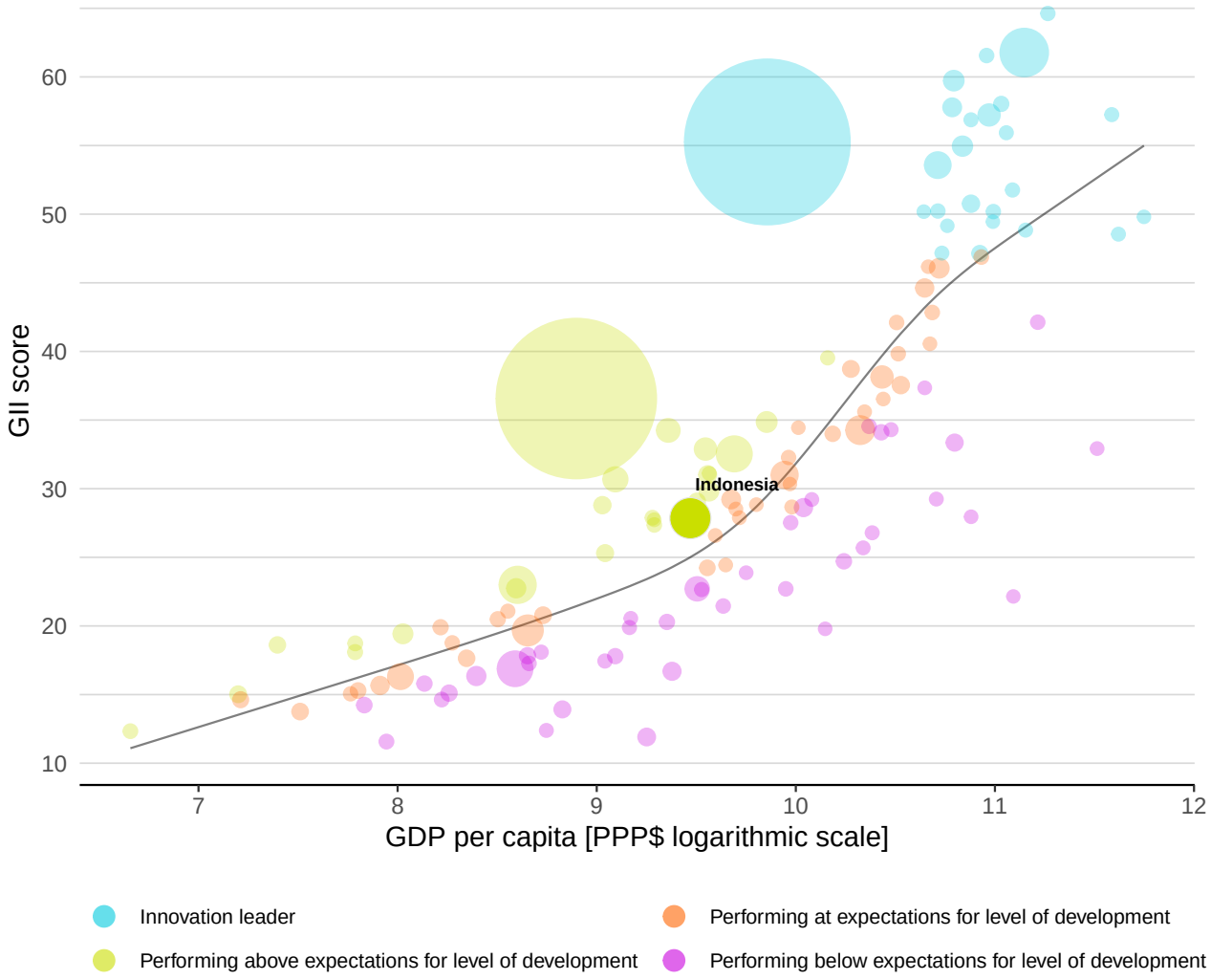
13th Indonesia ranks 13th among the 17 economies in South East Asia, East Asia, and Oceania.

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

The positive relationship between innovation and development

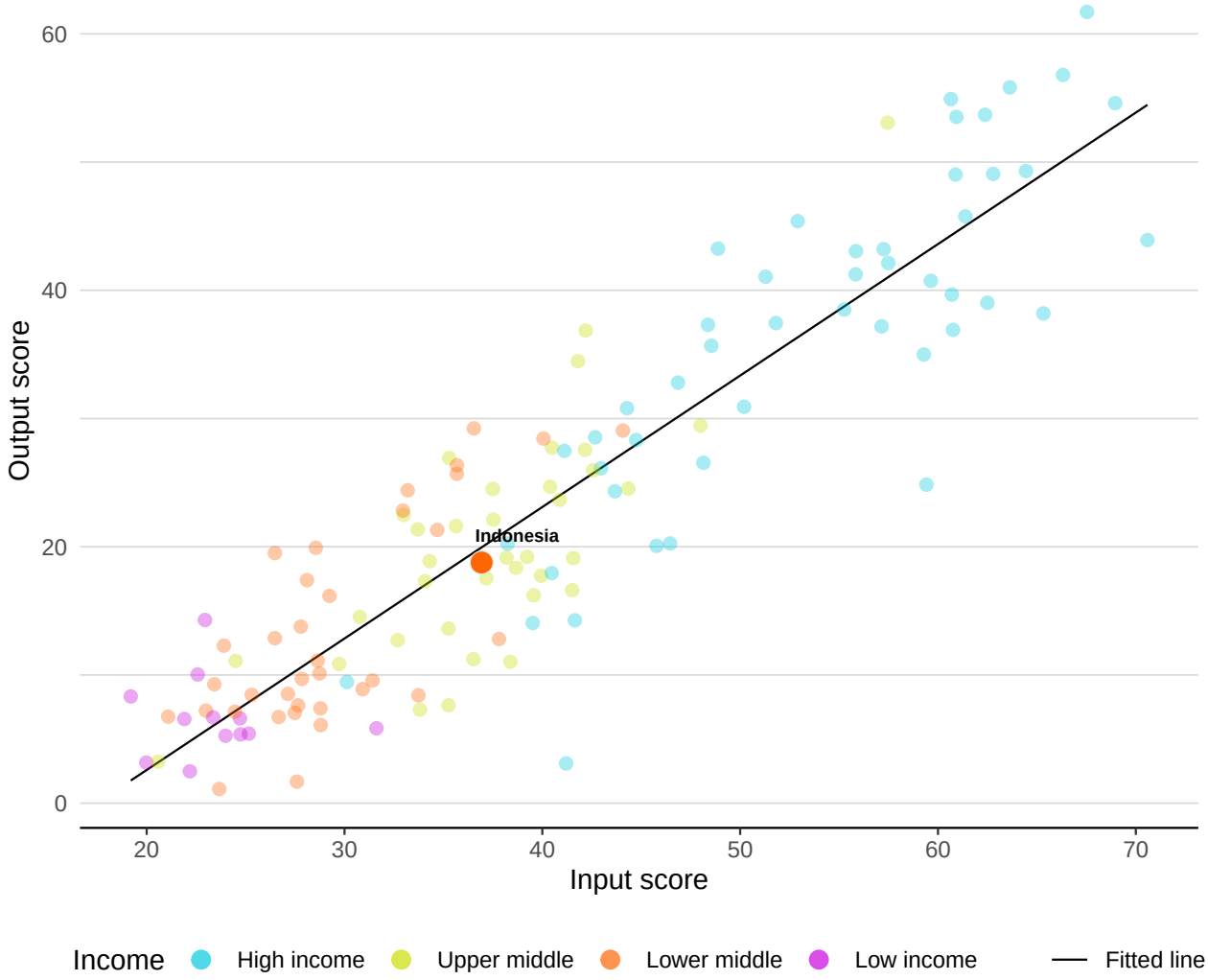


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

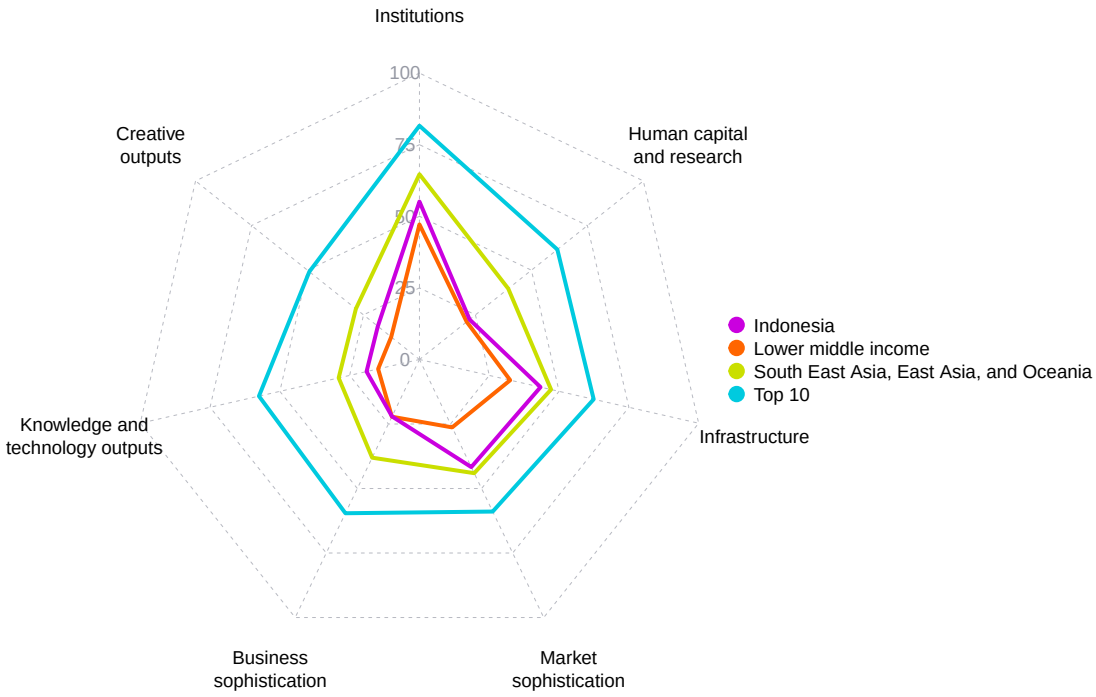
Indonesia produces less innovation outputs relative to its level of innovation investments.

Innovation input to output performance



BENCHMARKING AGAINST OTHER LOWER MIDDLE-INCOME GROUP ECONOMIES AND SOUTH EAST ASIA, EAST ASIA, AND OCEANIA

The seven GII pillar scores for Indonesia



Lower-middle-income group economies

Indonesia performs above the lower-middle-income group average in six pillars, namely: Institutions; Human capital and research; Infrastructure; Market sophistication; Knowledge and technology outputs; and, Creative outputs.

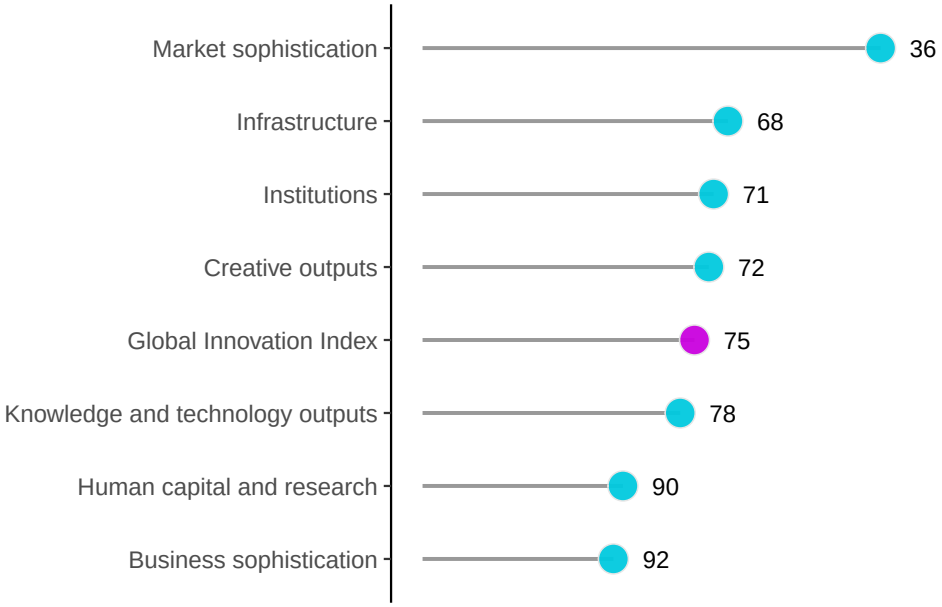
South East Asia, East Asia, and Oceania

Indonesia performs below the regional average in all GII pillars.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Indonesia performs best in Market sophistication and its weakest performance is in Business sophistication.

The seven GII pillar ranks for Indonesia



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

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

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

INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths and weaknesses for Indonesia

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
1.3.2	Entrepreneurship policies and culture	2	1.2.3	Cost of redundancy dismissal	130
3.2.3	Gross capital formation, % GDP	18	2.1.2	Government funding/pupil, secondary, % GDP/cap	96
4.1.1	Finance for startups and scaleups	4	2.1.4	PISA scales in reading, maths and science	72
4.3.2	Domestic industry diversification	20	2.2.3	Tertiary inbound mobility, %	110
4.3.3	Domestic market scale, bn PPP$	7	2.3.3	Global corporate R&D investors, top 3, mn USD	38
5.2.1	University-industry R&D collaboration	13	3.3.2	Environmental performance	119
5.2.2	State of cluster development and depth	9	4.1.3	Loans from microfinance institutions, % GDP	58
6.2.3	Software spending, % GDP	24	5.1.2	Firms offering formal training, %	98
7.1.1	Intangible asset intensity, top 15, %	13	5.2.3	GERD financed by abroad, % GDP	94
7.2.5	Creative goods exports, % total trade	22	6.1.4	Scientific and technical articles/bn PPP$ GDP	128

GII 2022 rank

Indonesia

75

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
74	72	Lower middle	SEAO	276.4	3,530.3	12,967

		Score/ Value	Rank	
Institutions		**55.1**	**71**	◆
1.1	**Political environment**	61.6	58	◆
1.1.1	Political and operational stability*	65.5	74	
1.1.2	Government effectiveness*	57.7	51	◆
1.2	**Regulatory environment**	21.8	131 ○	◇
1.2.1	Regulatory quality*	46.9	69	◆
1.2.2	Rule of law*	37.3	80	
1.2.3	Cost of redundancy dismissal	57.8	130 ○	◇
1.3	**Business environment**	82.1	5 ●	◆
1.3.1	Policies for doing business†	65.2	26	◆
1.3.2	Entrepreneurship policies and culture* 🕘	98.9	2 ●	◆
Human capital and research		**22.4**	**90**	
2.1	**Education**	35.0	110	
2.1.1	Expenditure on education, % GDP 🕘	2.8	112	
2.1.2	Government funding/pupil, secondary, % GDP/cap 🕘	10.5	96 ○	
2.1.3	School life expectancy, years 🕘	13.6	75	
2.1.4	PISA scales in reading, maths and science	381.9	72 ○	
2.1.5	Pupil-teacher ratio, secondary 🕘	15.2	75	
2.2	**Tertiary education**	18.7	93	
2.2.1	Tertiary enrolment, % gross 🕘	36.3	78	
2.2.2	Graduates in science and engineering, % 🕘	19.4	73	
2.2.3	Tertiary inbound mobility, % 🕘	0.1	110 ○	
2.3	**Research and development (R&D)**	13.5	49	◆
2.3.1	Researchers, FTE/mn pop.	395.7	75	
2.3.2	Gross expenditure on R&D, % GDP	0.3	80	
2.3.3	Global corporate R&D investors, top 3, mn USD	0.0	38 ○	◇
2.3.4	QS university ranking, top 3*	35.9	34	◆
Infrastructure		**43.4**	**68**	◆
3.1	**Information and communication technologies (ICTs)**	72.5	66	◆
3.1.1	ICT access*	89.2	54	◆
3.1.2	ICT use*	57.8	79	◆
3.1.3	Government's online service*	68.2	72	
3.1.4	E-participation*	75.0	57	◆
3.2	**General infrastructure**	34.3	48	◆
3.2.1	Electricity output, GWh/mn pop.	1,052.9	96	
3.2.2	Logistics performance*	51.2	44	◆
3.2.3	Gross capital formation, % GDP	31.5	18 ●	
3.3	**Ecological sustainability**	23.2	79	
3.3.1	GDP/unit of energy use	13.4	34	
3.3.2	Environmental performance*	28.2	119 ○	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.7	75	
Market sophistication		**41.7**	**36**	◆
4.1	**Credit**	23.5	76	
4.1.1	Finance for startups and scaleups* 🕘	57.3	4 ●	◆
4.1.2	Domestic credit to private sector, % GDP	38.7	82	
4.1.3	Loans from microfinance institutions, % GDP	0.0	58 ○	
4.2	**Investment**	13.9	42	
4.2.1	Market capitalization, % GDP	46.8	39	
4.2.2	Venture capital investors, deals/bn PPP$ GDP	0.0	69	
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	0.0	56	
4.2.4	Venture capital received, value, % GDP	0.0	26	
4.3	**Trade, diversification, and market scale**	87.7	7 ●	◆
4.3.1	Applied tariff rate, weighted avg., %	2.0	63	◆
4.3.2	Domestic industry diversification 🕘	96.8	20 ●	◆
4.3.3	Domestic market scale, bn PPP$	3,530.3	7 ●	◆

		Score/ Value	Rank	
Business sophistication		**22.1**	**92**	
5.1	**Knowledge workers**	9.7	123 ○	◇
5.1.1	Knowledge-intensive employment, %	10.9	104	
5.1.2	Firms offering formal training, % 🕘	7.7	98 ○	◇
5.1.3	GERD performed by business, % GDP 🕘	0.0	82	
5.1.4	GERD financed by business, % 🕘	8.0	79	
5.1.5	Females employed w/advanced degrees, %	6.6	88	
5.2	**Innovation linkages**	27.4	46	◆
5.2.1	University-industry R&D collaboration†	66.4	13 ●	◆
5.2.2	State of cluster development and depth†	68.4	9 ●	◆
5.2.3	GERD financed by abroad, % GDP 🕘	0.0	94 ○	
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	113	
5.2.5	Patent families/bn PPP$ GDP	0.0	98	
5.3	**Knowledge absorption**	29.1	68	
5.3.1	Intellectual property payments, % total trade	0.9	49	◆
5.3.2	High-tech imports, % total trade	10.6	32	
5.3.3	ICT services imports, % total trade	2.0	39	◆
5.3.4	FDI net inflows, % GDP	2.0	76	
5.3.5	Research talent, % in businesses 🕘	7.5	63	
Knowledge and technology outputs		**19.0**	**78**	
6.1	**Knowledge creation**	6.9	92	
6.1.1	Patents by origin/bn PPP$ GDP	0.4	80	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	100	
6.1.3	Utility models by origin/bn PPP$ GDP	0.7	30	
6.1.4	Scientific and technical articles/bn PPP$ GDP	2.0	128 ○	
6.1.5	Citable documents H-index	14.1	57	
6.2	**Knowledge impact**	27.7	66	
6.2.1	Labor productivity growth, %	1.5	48	
6.2.2	New businesses/th pop. 15–64 🕘	0.3	105	
6.2.3	Software spending, % GDP	0.4	24 ●	◆
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	2.2	81	
6.2.5	High-tech manufacturing, % 🕘	29.9	43	◆
6.3	**Knowledge diffusion**	22.3	70	
6.3.1	Intellectual property receipts, % total trade	0.0	77	
6.3.2	Production and export complexity	42.0	60	
6.3.3	High-tech exports, % total trade	3.8	46	
6.3.4	ICT services exports, % total trade	0.8	92	
Creative outputs		**18.6**	**72**	
7.1	**Intangible assets**	30.4	59	
7.1.1	Intangible asset intensity, top 15, %	75.3	13 ●	◆
7.1.2	Trademarks by origin/bn PPP$ GDP	24.4	87	
7.1.3	Global brand value, top 5,000, % GDP	36.1	40	◆
7.1.4	Industrial designs by origin/bn PPP$ GDP	0.7	78	
7.2	**Creative goods and services**	11.3	79	
7.2.1	Cultural and creative services exports, % total trade	0.0	96	
7.2.2	National feature films/mn pop. 15–69	0.7	64	
7.2.3	Entertainment and media market/th pop. 15–69	3.3	50	◆
7.2.4	Printing and other media, % manufacturing 🕘	0.9	50	
7.2.5	Creative goods exports, % total trade	2.3	22 ●	
7.3	**Online creativity**	2.3	81	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.5	89	
7.3.2	Country-code TLDs/th pop. 15–69	0.8	93	
7.3.3	GitHub commit pushes received/mn pop. 15–69	3.0	72	
7.3.4	Mobile app creation/bn PPP$ GDP	4.1	60	

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 Indonesia.

Missing data for Indonesia

Code	Indicator name	Economy year	Model year	Source

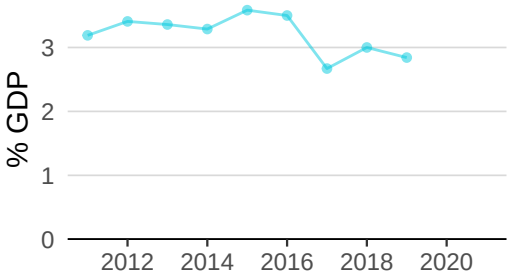
Outdated data for Indonesia

Code	Indicator name	Economy year	Model year	Source
1.3.2	Entrepreneurship policies and culture	2020	2021	Global Entrepreneurship Monitor
2.1.1	Expenditure on education, % GDP	2019	2020	UNESCO Institute for Statistics
2.1.2	Government funding/pupil, secondary, % GDP/cap	2015	2018	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	2018	2019	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2018	2019	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2018	2019	UNESCO Institute for Statistics
2.2.2	Graduates in science and engineering, %	2018	2020	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	2018	2019	UNESCO Institute for Statistics
4.1.1	Finance for startups and scaleups	2020	2021	Global Entrepreneurship Monitor
4.3.2	Domestic industry diversification	2018	2019	United Nations Industrial Development Organization
5.1.2	Firms offering formal training, %	2015	2019	World Bank Enterprise Surveys
5.1.3	GERD performed by business, % GDP	2018	2020	UNESCO Institute for Statistics
5.1.4	GERD financed by business, %	2018	2019	UNESCO Institute for Statistics
5.2.3	GERD financed by abroad, % GDP	2018	2019	UNESCO Institute for Statistics
5.3.5	Research talent, % in businesses	2018	2020	UNESCO Institute for Statistics
6.2.2	New businesses/th pop. 15–64	2016	2020	World Bank, Enterpreneurship Database
6.2.5	High-tech manufacturing, %	2018	2019	United Nations Industrial Development Organization
7.2.4	Printing and other media, % manufacturing	2018	2019	United Nations Industrial Development Organization

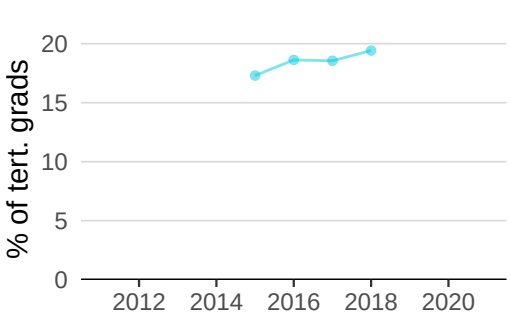
INDONESIA'S INNOVATION SYSTEM

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

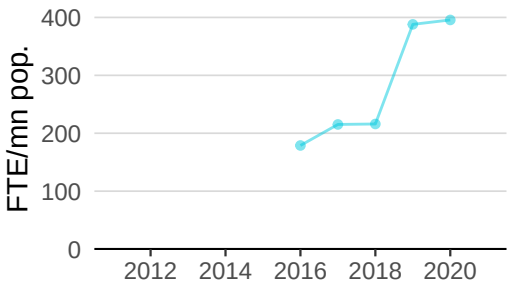
Innovation inputs



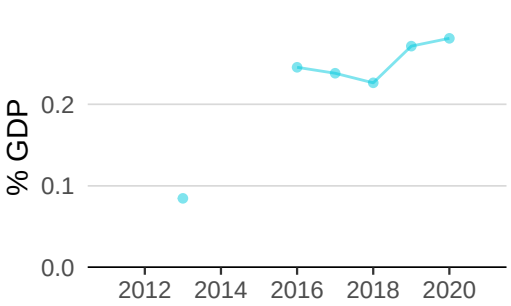
2.1.1 Expenditure on education was equal to 2.8% GDP in 2019–down by 5 percentage points from the year prior–and equivalent to an indicator rank of 112.



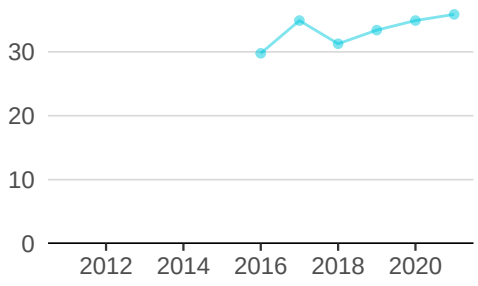
2.2.2 Graduates in science and engineering was equal to 19.4% of tert. grads in 2018–up by 5 percentage points from the year prior–and equivalent to an indicator rank of 73.



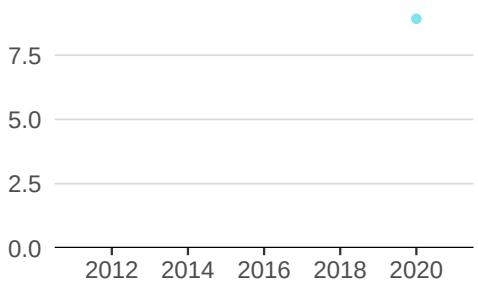
2.3.1 Researchers was equal to 395.7 FTE/mn pop. in 2020–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 75.



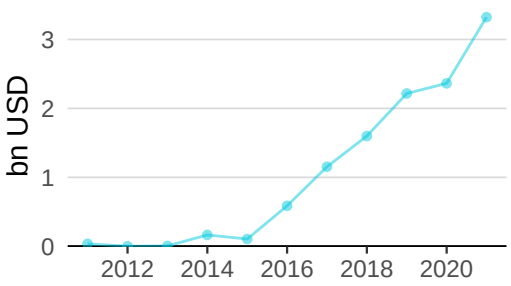
2.3.2 Gross expenditure on R&D was equal to 0.3% GDP in 2020–up by 4 percentage points from the year prior–and equivalent to an indicator rank of 80.



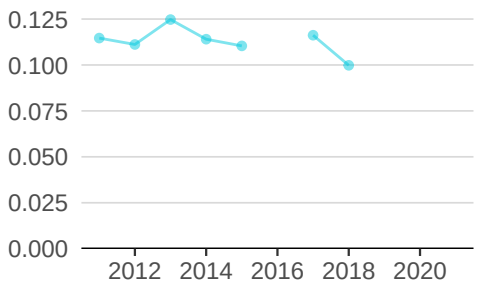
2.3.4 QS university ranking was equal to 35.9 in 2021–up by 3 percentage points from the year prior–and equivalent to an indicator rank of 34.



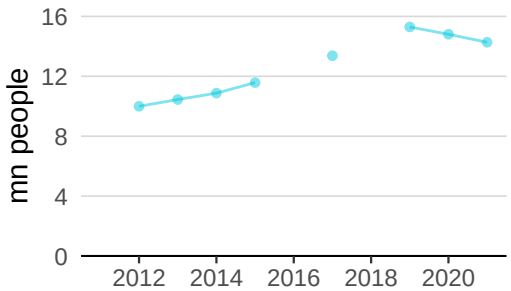
3.1.1 ICT access was equal to 8.9 in 2020 and equivalent to an indicator rank of 54.



4.2.4 Venture capital received was equal to 3.3 bn USD in 2021–up by 41 percentage points from the year prior–and equivalent to an indicator rank of 26.

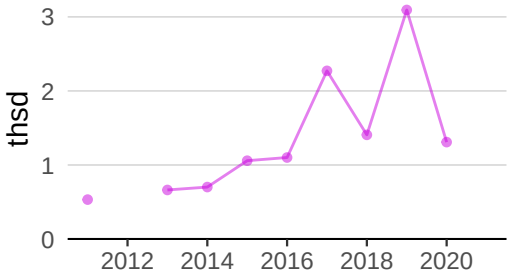


4.3.2 Domestic industry diversification was equal to 0.1 in 2018–down by 14 percentage points from the year prior–and equivalent to an indicator rank of 20.

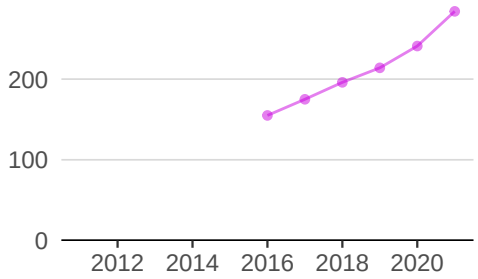


5.1.1 Knowledge-intensive employment was equal to 14.3 mn people in 2021–down by 4 percentage points from the year prior–and equivalent to an indicator rank of 104.

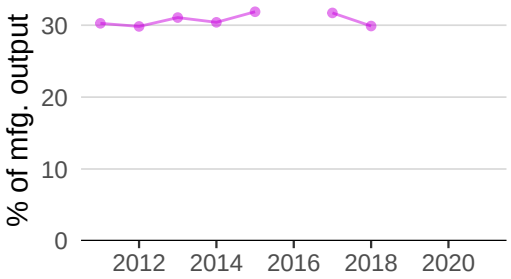
Innovation outputs



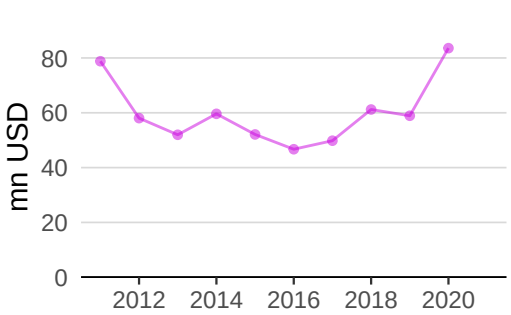
6.1.1 Patents by origin was equal to 1.3 thsd in 2020–down by 58 percentage points from the year prior–and equivalent to an indicator rank of 80.



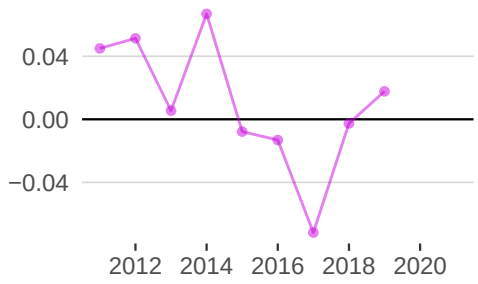
6.1.5 Citable documents H-index was equal to 284.0 in 2021–up by 18 percentage points from the year prior–and equivalent to an indicator rank of 57.



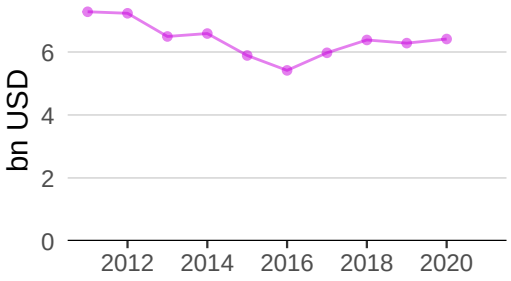
6.2.5 High-tech manufacturing was equal to 29.9% of mfg. output in 2018–down by 6 percentage points from the year prior–and equivalent to an indicator rank of 43.



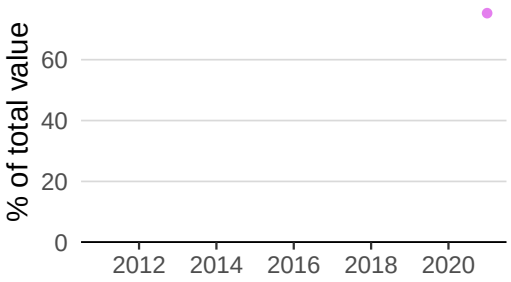
6.3.1 Intellectual property receipts was equal to 83.6 mn USD in 2020–up by 42 percentage points from the year prior–and equivalent to an indicator rank of 77.



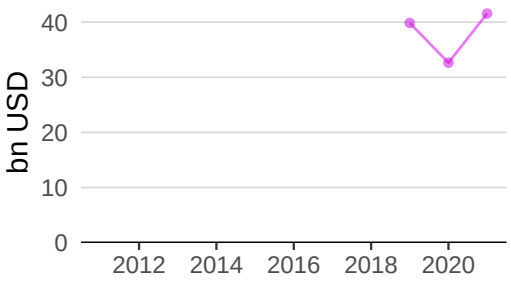
6.3.2 Production and export complexity was equal to 0.0 in 2019–up by 777 percentage points from the year prior–and equivalent to an indicator rank of 60.



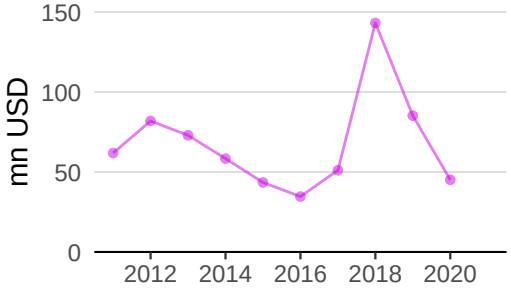
6.3.3 High-tech exports was equal to 6.4 bn USD in 2020–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 46.



7.1.1 Intangible asset intensity was equal to 75.3% of total value in 2021 and equivalent to an indicator rank of 13.



7.1.3 Global brand value was equal to 41.6 bn USD in 2021–up by 27 percentage points from the year prior–and equivalent to an indicator rank of 40.



7.2.1 Cultural and creative services exports was equal to 45.1 mn USD in 2020–down by 47 percentage points from the year prior–and equivalent to an indicator rank of 96.

INDONESIA'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank

No observations

Source: European Commission's Joint Research Centre (https://iri.jrc.ec.europa.eu/scoreboard/2021-eu-industrial-rd-investment-scoreboard).

2.3.4 QS university ranking

University	Score	Rank
UNIVERSITAS GADJAH MADA	38.3	254
UNIVERSITY OF INDONESIA	35.1	290=
BANDUNG INSTITUTE OF TECHNOLOGY	34.2	303=

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
BANK CENTRAL ASIA	1
BANK RAKYAT INDONESIA PERSER	2
TELKOM INDONESIA PERSERO	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

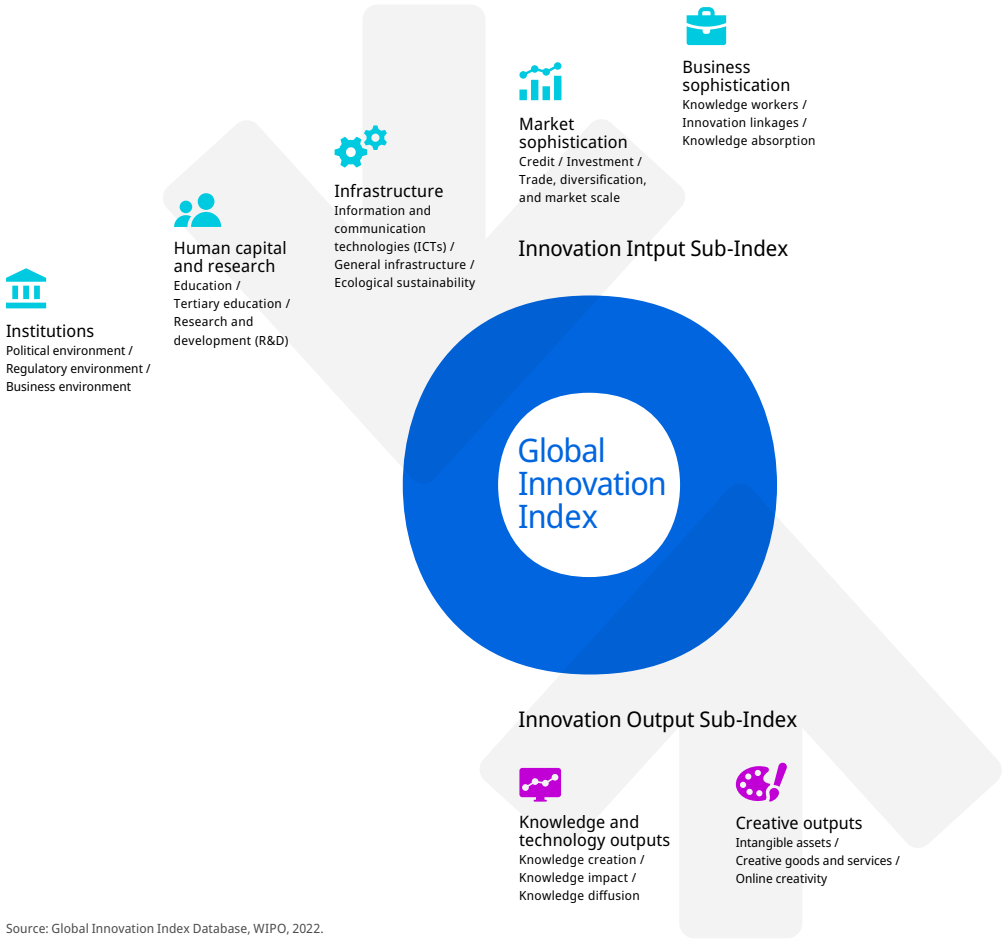
Brand	Industry	Rank
TELKOM INDONESIA	Telecoms	1
BRI	Banking	2
BANK MANDIRI	Banking	3

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.



Source: Global Innovation Index Database, WIPO, 2022.

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.