SENEGAL

105th
Senegal ranks 105th among the 132 economies featured in the GII 2021.

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 Senegal 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 Senegal in the GII 2021 is between ranks 100 and 108.

Rankings for Senegal (2019–2021)

	GII	Innovation inputs	Innovation outputs
2021	105	105	102
2020	102	102	84
2019	96	103	81

- Senegal performs better in innovation outputs than innovation inputs in 2021.
- This year Senegal ranks 105th in innovation inputs, lower than both 2020 and 2019.
- As for innovation outputs, Senegal ranks 102nd. This position is lower than both 2020 and 2019.

19th
Senegal ranks 19th among the 34 lower middle-income group economies.

8th
Senegal ranks 8th among the 27 economies in Sub-Saharan Africa.

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, Senegal's performance is at expectations for its level of development.

The positive relationship between innovation and development

- **Innovation leader**
- **Performing above expectations for level of development**
- **Performing at expectations for level of development**
- **Performing below expectations for level of development**
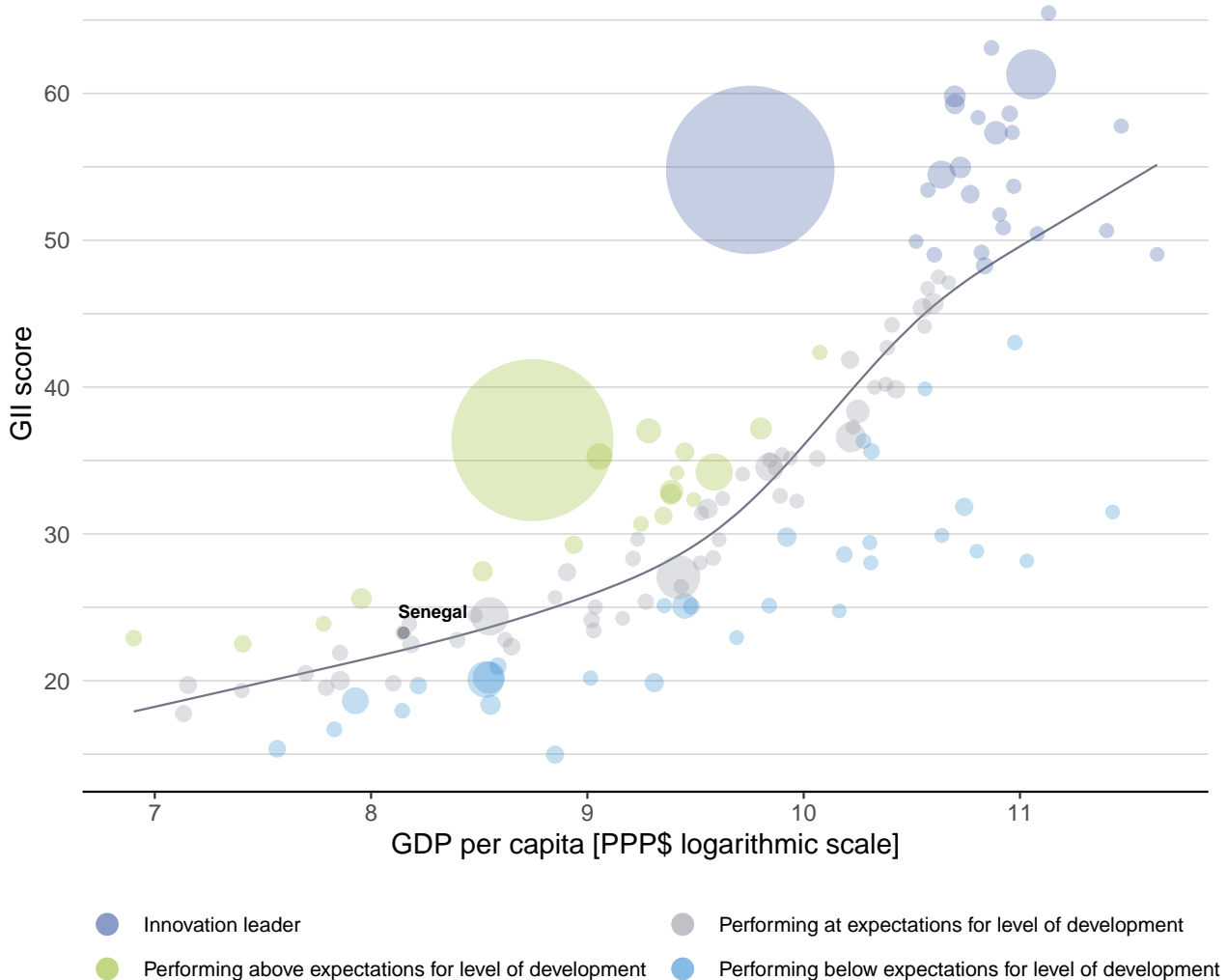
EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

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

Innovation input to output performance
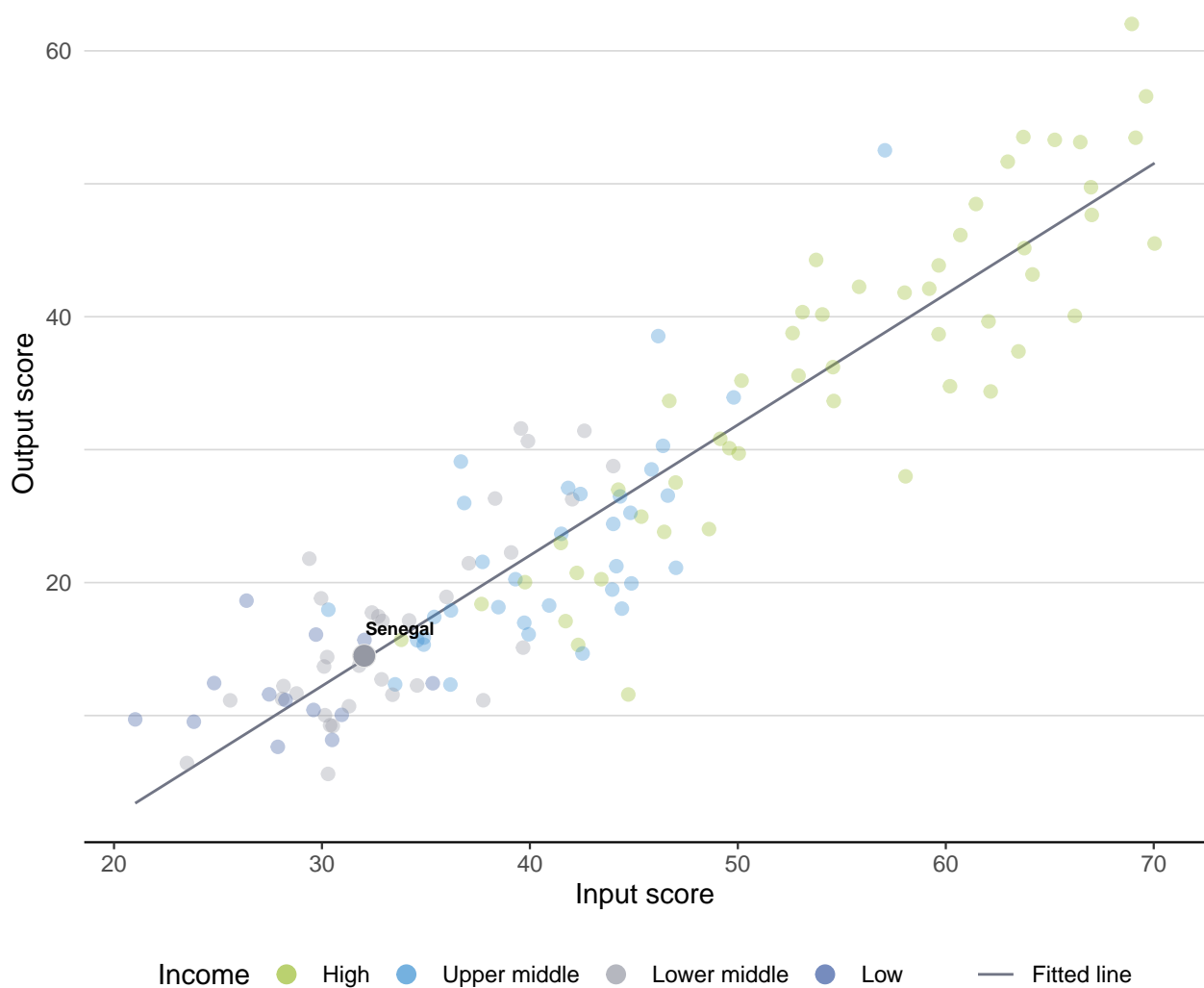
BENCHMARKING AGAINST OTHER LOWER MIDDLE-INCOME GROUP ECONOMIES AND SUB-SAHARAN AFRICA

The seven GII pillar scores for Senegal
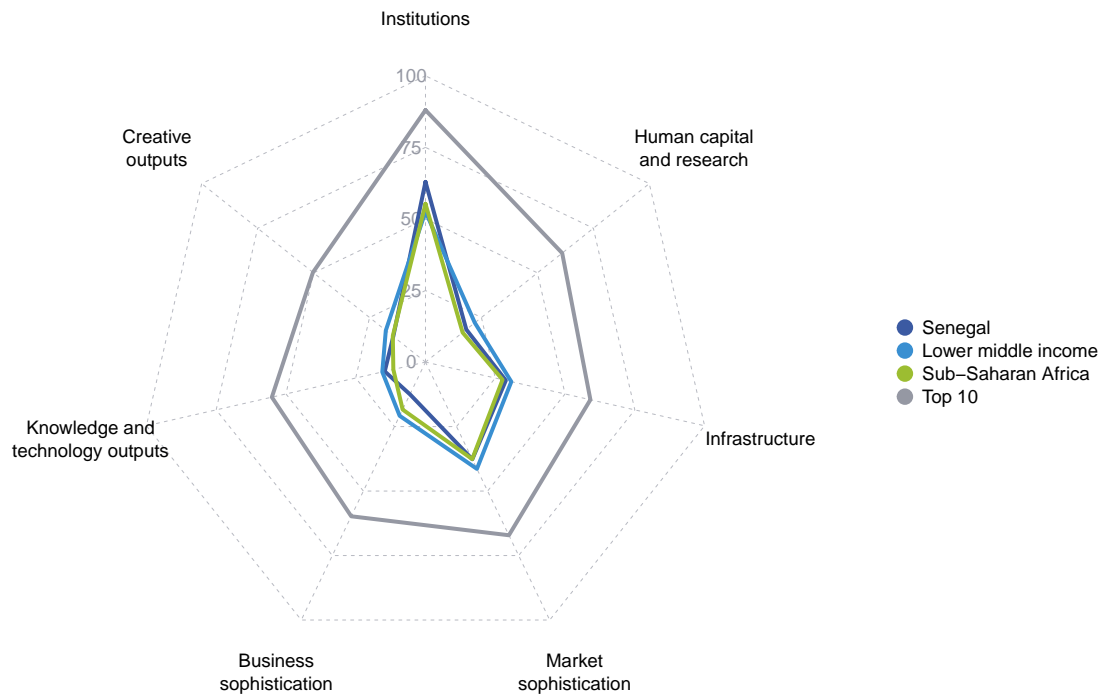
Lower middle-income group economies

Senegal performs above the lower middle-income group average in Institutions.

Sub-Saharan Africa

Senegal performs above the regional average in five pillars, namely: Institutions; Human capital and research; Infrastructure; Market sophistication; and, Knowledge and technology outputs.

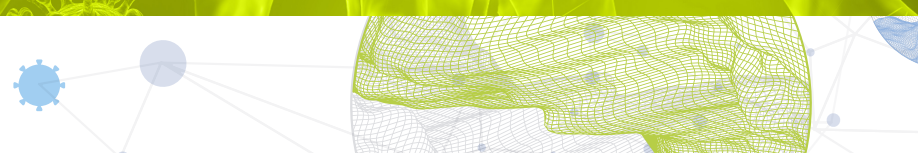# OVERVIEW OF RANKINGS IN THE SEVEN GII 2021 AREAS

Senegal performs best in Institutions and its weakest performance is in Business sophistication.

The seven GII pillar ranks for Senegal

Pillar	Rank
Institutions	68
Knowledge and technology outputs	88
Human capital and research	104
Global Innovation Index 2021	105
Market sophistication	107
Infrastructure	108
Creative outputs	109
Business sophistication	131
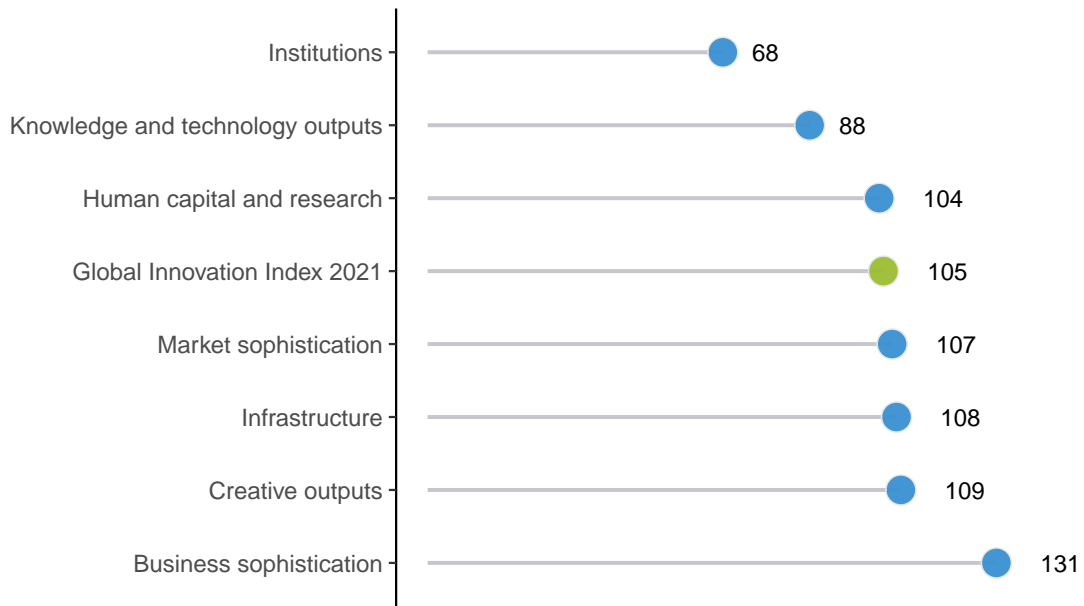
Note: The highest possible ranking in each pillar is one.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Senegal in the GII 2021.

Strengths and weaknesses for Senegal

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
1.3.1	Ease of starting a business	51	2.1.3	School life expectancy, years	114
2.2.3	Tertiary inbound mobility, %	34	2.3.3	Global corporate R&D investors, top 3, mn US$	41
3.2.3	Gross capital formation, % GDP	16	2.3.4	QS university ranking, top 3	74
3.3.1	GDP/unit of energy use	44	3.2.2	Logistics performance	121
4.1.3	Microfinance gross loans, % GDP	18	5.1	Knowledge workers	127
5.3.3	ICT services imports, % total trade	33	5.1.1	Knowledge-intensive employment, %	116
5.3.4	FDI net inflows, % GDP	38	5.1.5	Females employed w/advanced degrees, %	120
6.2.1	Labor productivity growth, %	21	5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	122
6.3.4	ICT services exports, % total trade	38	5.2.5	Patent families/bn PPP$ GDP	100
7.2.1	Cultural and creative services exports, % total trade	28	5.3.5	Research talent, % in businesses	87
			7.2.2	National feature films/mn pop. 15–69	105

Senegal

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$	GII 2020 rank
102	105	Lower middle	SSF	16.7	58.1	3,463	102

		Score/Value	Rank	
🏛 **Institutions**		**63.0**	**68**	◆
1.1	**Political environment**	**57.3**	**68**	◆
1.1.1	Political and operational stability*	73.2	44	◆
1.1.2	Government effectiveness*	49.4	75	◆
1.2	**Regulatory environment**	**63.8**	**69**	◆
1.2.1	Regulatory quality*	40.6	79	◆
1.2.2	Rule of law*	41.7	73	
1.2.3	Cost of redundancy dismissal	14.8	58	
1.3	**Business environment**	**67.7**	**76**	
1.3.1	Ease of starting a business*	91.2	51	●
1.3.2	Ease of resolving insolvency*	44.3	87	

		Score/Value	Rank	
👥 **Human capital and research**		**18.2**	**104**	
2.1	**Education**	**37.3**	**99**	
2.1.1	Expenditure on education, % GDP	4.8	45	
2.1.2	Government funding/pupil, secondary, % GDP/cap ⌛	20.5	47	
2.1.3	School life expectancy, years	8.8	114	○◇
2.1.4	PISA scales in reading, maths and science	n/a	n/a	
2.1.5	Pupil-teacher ratio, secondary ⌛	20.4	96	
2.2	**Tertiary education**	**12.9**	**109**	
2.2.1	Tertiary enrolment, % gross	13.1	107	
2.2.2	Graduates in science and engineering, %	n/a	n/a	
2.2.3	Tertiary inbound mobility, %	7.6	34	●◆
2.3	**Research and development (R&D)**	**4.5**	**79**	
2.3.1	Researchers, FTE/mn pop. ⌛	564.3	65	
2.3.2	Gross expenditure on R&D, % GDP ⌛	0.6	60	◆
2.3.3	Global corporate R&D investors, top 3, mn US$	0.0	41	○◇
2.3.4	QS university ranking, top 3*	0.0	74	○◇

		Score/Value	Rank	
⚙ **Infrastructure**		**28.8**	**108**	
3.1	**Information and communication technologies (ICTs)**	**39.5**	**111**	
3.1.1	ICT access*	36.0	114	
3.1.2	ICT use*	28.5	105	
3.1.3	Government's online service*	49.4	108	
3.1.4	E-participation*	44.0	110	
3.2	**General infrastructure**	**25.1**	**80**	
3.2.1	Electricity output, GWh/mn pop.	306.6	115	
3.2.2	Logistics performance*	9.6	121	○◇
3.2.3	Gross capital formation, % GDP	33.1	16	●
3.3	**Ecological sustainability**	**21.8**	**88**	
3.3.1	GDP/unit of energy use	12.4	44	●
3.3.2	Environmental performance*	30.7	119	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	0.2	106	

		Score/Value	Rank	
📊 **Market sophistication**		**37.7**	**107**	
4.1	**Credit**	**35.7**	**84**	
4.1.1	Ease of getting credit*	65.0	61	
4.1.2	Domestic credit to private sector, % GDP	29.3	97	
4.1.3	Microfinance gross loans, % GDP	1.6	18	●
4.2	**Investment**	**17.8**	**121**	
4.2.1	Ease of protecting minority investors*	44.0	98	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital investors, deals/bn PPP$ GDP	0.0	64	
4.2.4	Venture capital recipients, deals/bn PPP$ GDP	0.0	62	
4.3	**Trade, diversification, and market scale**	**59.6**	**97**	
4.3.1	Applied tariff rate, weighted avg., %	9.1	111	
4.3.2	Domestic industry diversification ⌛	84.8	67	
4.3.3	Domestic market scale, bn PPP$	58.1	98	

		Score/Value	Rank	
💼 **Business sophistication**		**12.5**	**131**	○◇
5.1	**Knowledge workers**	**6.9**	**127**	○◇
5.1.1	Knowledge-intensive employment, % ⌛	6.4	116	○◇
5.1.2	Firms offering formal training, % ⌛	17.4	86	◇
5.1.3	GERD performed by business, % GDP	n/a	n/a	
5.1.4	GERD financed by business, % ⌛	2.1	88	
5.1.5	Females employed w/advanced degrees, % ⌛	0.6	120	○
5.2	**Innovation linkages**	**15.3**	**106**	
5.2.1	University-industry R&D collaboration†	40.0	74	
5.2.2	State of cluster development and depth†	41.2	97	
5.2.3	GERD financed by abroad, % GDP ⌛	0.0	54	
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.0	122	○
5.2.5	Patent families/bn PPP$ GDP	0.0	100	○◇
5.3	**Knowledge absorption**	**15.3**	**116**	
5.3.1	Intellectual property payments, % total trade	0.1	99	
5.3.2	High-tech imports, % total trade	4.9	113	
5.3.3	ICT services imports, % total trade	2.0	33	●◆
5.3.4	FDI net inflows, % GDP	3.5	38	●
5.3.5	Research talent, % in businesses ⌛	0.1	87	○◇

		Score/Value	Rank	
📈 **Knowledge and technology outputs**		**14.6**	**88**	
6.1	**Knowledge creation**	**5.3**	**110**	
6.1.1	Patents by origin/bn PPP$ GDP	0.2	95	
6.1.2	PCT patents by origin/bn PPP$ GDP	0.0	79	
6.1.3	Utility models by origin/bn PPP$ GDP	0.0	64	
6.1.4	Scientific and technical articles/bn PPP$ GDP	9.5	88	
6.1.5	Citable documents H-index	6.8	91	
6.2	**Knowledge impact**	**25.2**	**84**	
6.2.1	Labor productivity growth, %	2.4	21	●
6.2.2	New businesses/th pop. 15–64	0.5	100	
6.2.3	Software spending, % GDP	0.2	71	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	1.4	100	
6.2.5	High-tech manufacturing, % ⌛	16.6	68	
6.3	**Knowledge diffusion**	**13.4**	**76**	
6.3.1	Intellectual property receipts, % total trade	0.1	65	
6.3.2	Production and export complexity	29.4	94	
6.3.3	High-tech exports, % total trade	0.1	116	
6.3.4	ICT services exports, % total trade	2.8	38	●

		Score/Value	Rank	
🎨 **Creative outputs**		**14.4**	**109**	
7.1	**Intangible assets**	**20.2**	**100**	
7.1.1	Trademarks by origin/bn PPP$ GDP	9.6	112	
7.1.2	Global brand value, top 5,000, % GDP	16.4	52	
7.1.3	Industrial designs by origin/bn PPP$ GDP	0.3	97	
7.1.4	ICTs and organizational model creation†	58.1	52	◆
7.2	**Creative goods and services**	**8.9**	**84**	
7.2.1	Cultural and creative services exports, % total trade	1.0	28	●◆
7.2.2	National feature films/mn pop. 15–69	0.2	105	○
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing and other media, % manufacturing ⌛	0.8	67	
7.2.5	Creative goods exports, % total trade	0.1	109	
7.3	**Online creativity**	**8.4**	**106**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	1.0	95	
7.3.2	Country-code TLDs/th pop. 15–69	0.2	112	
7.3.3	Wikipedia edits/mn pop. 15–69	27.2	109	
7.3.4	Mobile app creation/bn PPP$ GDP	n/a	n/a	

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 IV 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.
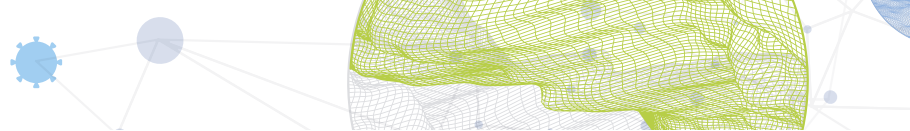
DATA AVAILABILITY

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

Missing data for Senegal

Code	Indicator name	Economy year	Model year	Source
2.1.4	PISA scales in reading, maths and science	n/a	2018	OECD Programme for International Student Assessment (PISA)
2.2.2	Graduates in science and engineering, %	n/a	2018	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
4.2.2	Market capitalization, % GDP	n/a	2019	World Federation of Exchanges
5.1.3	GERD performed by business, % GDP	n/a	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2020	PwC
7.3.4	Mobile app creation/bn PPP$ GDP	n/a	2020	App Annie

Outdated data for Senegal

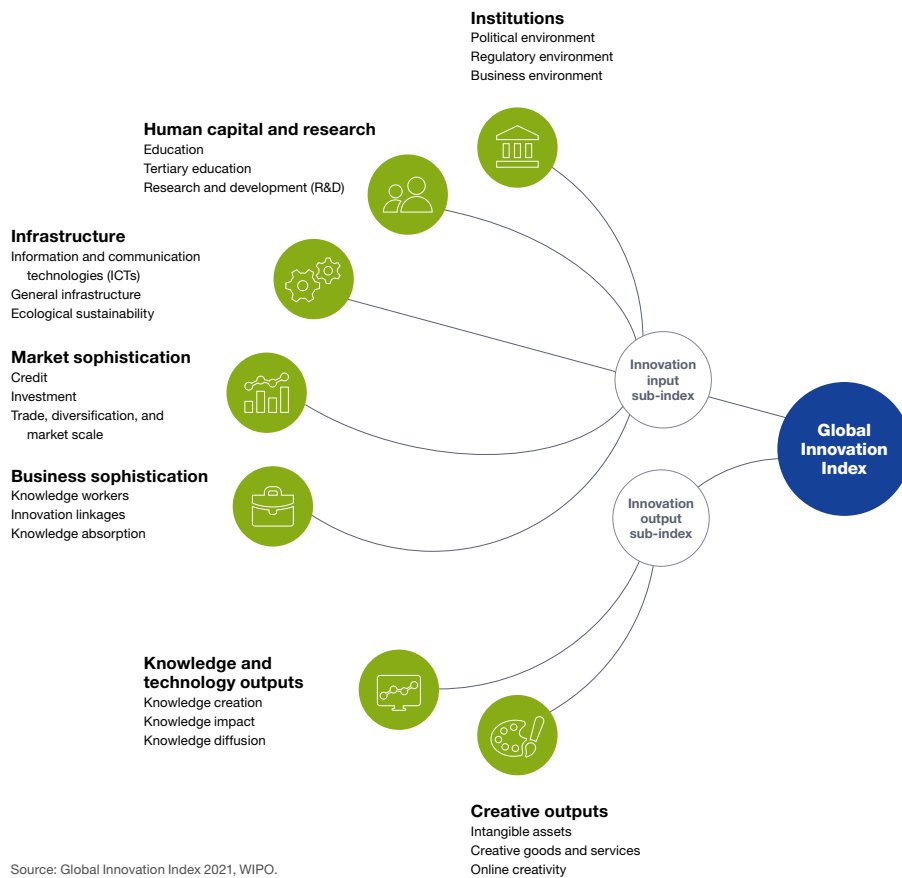| Code	Indicator name	Economy year	Model year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	2015	2017	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2015	2019	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2015	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
2.3.2	Gross expenditure on R&D, % GDP	2015	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
4.3.2	Domestic industry diversification	2014	2018	United Nations Industrial Development Organization
5.1.1	Knowledge-intensive employment, %	2015	2019	International Labour Organization
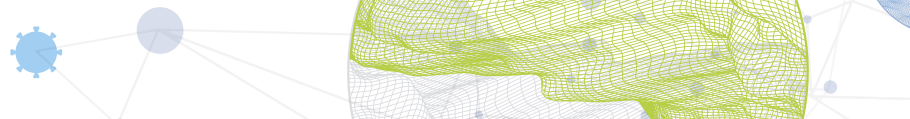
Code	Indicator name	Economy year	Model year	Source
5.1.2	Firms offering formal training, %	2014	2019	World Bank
5.1.4	GERD financed by business, %	2015	2018	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
5.1.5	Females employed w/advanced degrees, %	2017	2019	International Labour Organization
5.2.3	GERD financed by abroad, % GDP	2015	2018	UNESCO Institute for Statistics
5.3.5	Research talent, % in businesses	2010	2019	UNESCO Institute for Statistics; Eurostat; OECD - Main Science and Technology Indicators
6.2.5	High-tech manufacturing, %	2014	2018	United Nations Industrial Development Organization
7.2.4	Printing and other media, % manufacturing	2012	2018	United Nations Industrial Development Organization

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.

Institutions
Political environment
Regulatory environment
Business environment

Human capital and research
Education
Tertiary education
Research and development (R&D)

Infrastructure
Information and communication
    technologies (ICTs)
General infrastructure
Ecological sustainability

Market sophistication
Credit
Investment
Trade, diversification, and
    market scale

Business sophistication
Knowledge workers
Innovation linkages
Knowledge absorption

Knowledge and technology outputs
Knowledge creation
Knowledge impact
Knowledge diffusion

Creative outputs
Intangible assets
Creative goods and services
Online creativity

Innovation input sub-index

Innovation output sub-index

Global Innovation Index

Source: Global Innovation Index 2021, WIPO.

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.