

Country Brief Global Innovation Index 2017: Morocco



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1) GII 2017 THEME AND ITS CONCEPTUAL FRAMEWORK

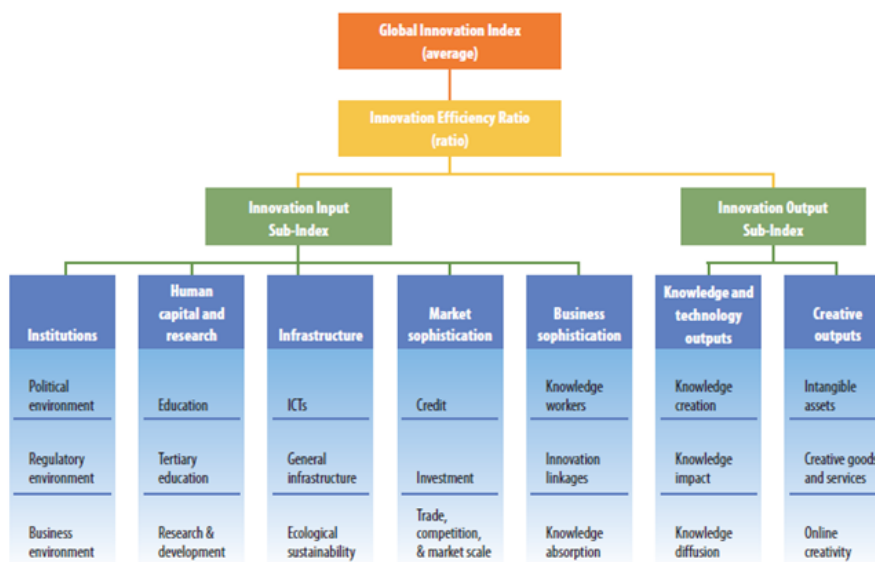
GII model

- The GII consists of a ranking of world economies’ innovation capabilities and results.
- The GII measures innovation based on criteria such as institutions, human capital and research, infrastructure, credit, investment, linkages, the creation, absorption, diffusion of knowledge, and creative outputs. It has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index (see Figure below).

Four measures are calculated (see Figure below):

- 1) **The Innovation Input Sub-Index:** Five input pillars capture elements of the economy that enable innovative activities: (1) Institutions, (2) Human capital and research, (3) Infrastructure, (4) Market sophistication, and (5) Business sophistication.
- 2) **The Innovation Output Sub-Index:** Innovation outputs are the results of innovative activities within the economy. There are two output pillars: (6) Knowledge & technology outputs and (7) Creative outputs.
- 3) **The overall GII score** is the simple average of the Input and Output Sub-Indices.
- 4) **The Innovation Efficiency Ratio** is the ratio of the Output Sub-Index over the Input Sub-Index. It shows how much innovation output a country is getting for its inputs.

Figure 2. Framework of the Global Innovation Index 2017



- In 2017, the GII model includes 127 economies that represent more than 92% of the world’s population and close to 98% of the world’s GDP (in current US dollars). It includes 81 indicators. A transparent and replicable computation methodology including 90% confidence intervals for each index ranking (GII, output and input sub-indices) is used.
- The GII compares the performance of national innovation systems across economies. Importantly, making inferences about absolute or relative performance on the basis of year-on-year differences in rankings can be misleading. Several factors influence the year-on-year ranking of a country/economy: the actual performance of the economy in question; adjustments made to the GII framework to better capture innovation; data updates, the treatment of outliers, and missing values; and the inclusion or exclusion of countries/economies in the sample.

2) MOROCCO IN THE GLOBAL INNOVATION INDEX 2017

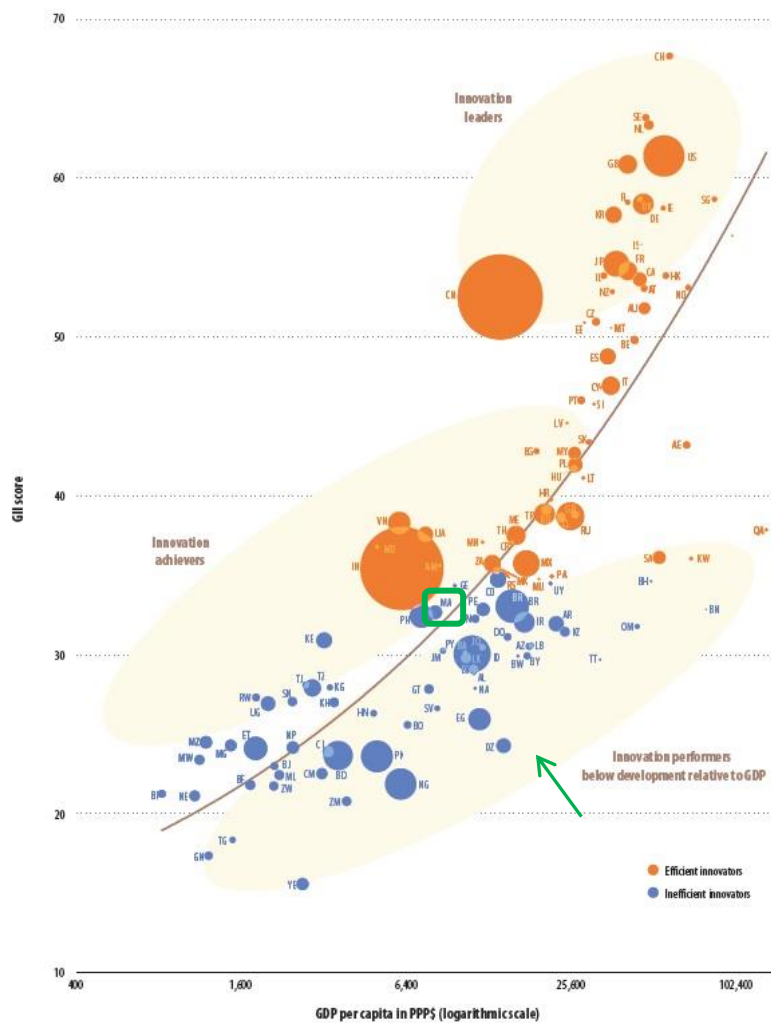
- Morocco is ranked 72nd, the same position as in 2016 ranking.
- The following table reflects Morocco’s ranking over time, well-noting that year-on-year comparisons of this kind are imperfect, and influenced by modeling and other changes.

	Morocco’s ranking over time			
	GII	Input	Output	Efficiency
2017	72	79	68	71
2016	72	75	70	64
2015	78	76	84	102

- Taking statistical variation into account, the intervals provided show that with 90% confidence, Morocco’s expected rank range is between 69th and 73rd.
- Relative to GDP, Morocco performs at the expected level of development, see figure on next page.
- Among its income group (Lower-middle income) it ranks 7th and in its region (Northern Africa and Western Asia) it now ranks 11th, also before Tunisia and Algeria.

- Morocco's Innovation output and input have reached their best rank in 2016. This year, Morocco exhibits a decrease in in the ranking of innovation inputs, dropping by 4 positions as compared to 2016. The output rank shows an improvement, going up by 2 positions this year.
- Morocco's Innovation Efficiency Ratio showed its best performance in 2016, increasing from 102nd position in 2015 up to 64th position. Innovation Efficiency Ratio drops this year, moving down to 71st position.
- Morocco ranks 11th in its region (Northern Africa and Western Asia) in both the Innovation Input and Output Sub-Indices.

Figure 4. GII scores and GDP per capita in PPP\$ (bubbles sized by population)



- Since the 2013 edition of the GII, quality has been measured by (1) quality of local universities (2.3.4, QS university rankings average score of top 3 universities); (2) internationalization of local inventions

(5.2.5, patent families filed in three offices, changed to patent families filed in two offices in the GII 2016); and (3) the number of citations that local research documents receive abroad (6.1.5, citable documents H index). Morocco ranks 36th among the middle-income economies and 83rd overall in this composite indicator. It has scores in the quality of local universities, patents filed and the number of citations that are below the overall middle income group average.

- Most of Morocco's strengths are found in three of the seven GII pillars.
 - In Infrastructure (51st), particular strengths are exhibited in indicators Online e-participation (17th), Gross capital formation (18th) and GDP per unit of energy use (21st).
 - On the Innovation Output side, Morocco's strengths are exhibited in Knowledge & technology outputs (77th). It has a strong performance in Growth rate of GDP per person engaged (26th) and ICT services exports (31st).
 - In Creative outputs (68th) pillar it has strong performance at the variable level in Industrial designs by origin (8th).
- On the Innovation Input side, Morocco also shows particular strengths in the indicators Ease of starting a business (34th), Ease of paying taxes (36th), Government expenditure on education per pupil, secondary (9th) and Graduates in science and engineering (4th).
- On the Innovation Input side pillar of Business sophistication (122nd) is positioned as a relative weakness. Morocco performs weakly in sub-pillars Knowledge workers (109th), Innovation linkages (115th) and Knowledge absorption (118th) and in the indicators Employment in knowledge-intensive services (99th), Patent families filed in two offices (99th) and Research talent in business enterprise (69th).
- Other relative weaknesses are also found, at the variable level, in Ease of resolving insolvency (109th), Global R&D companies, average expenditure top 3 (43rd), QS university ranking average score top 3 universities (75th) and Electricity output (97th).
- On the Innovation output side, Morocco performs weakly in Creative outputs (68th) pillar, where weaknesses are shown in sub-pillar Creative goods and services (106th) and at the variable level in Global entertainment and media market (60th) and Video uploads on YouTube (62nd).
- Only one relative weakness is exhibited at the variable level in Knowledge & technology outputs (77th) pillar: Intellectual property receipts, ranking 95th.

- Morocco’s overall **strengths** and **weaknesses** in the GII model are shown below

Strengths	Weaknesses
1.3.1 Ease of starting a business (34th) 1.3.3 Ease of paying taxes (36th) 2.1.2 Government expenditure on education per pupil, secondary (9th) 2.2.2 Graduates in science and engineering (4th) 3.1.4 Online e-participation (17th) 3.2.3 Gross capital formation (18th) 3.3.1 GDP per unit of energy use (21st) 6.2.1 Growth rate of GDP per person engaged (26th) 6.3.3 ICT services exports (31st) 7.1.2 Industrial designs by origin (8th)	1.3.2 Ease of resolving insolvency (109th) 2.3.3 Global R&D companies, average expenditure top 3 (43rd) 2.3.4 QS university ranking average score top 3 universities (75th) 3.2.1 Electricity output (97th) 5. Business sophistication (122nd) 5.1. Knowledge workers (109th) 5.1.1 Employment in knowledge-intensive services (99th) 5.2. Innovation linkages (115th) 5.2.5 Patent families filed in two offices (99th) 5.3. Knowledge absorption (118th) 5.3.5 Research talent in business enterprise (69th) 6.3.1 Intellectual property receipts (95th) 7.2. Creative goods and services (106th) 7.2.3 Global entertainment and media market (60th) 7.3.4 Video uploads on YouTube (62nd)

3) MOROCCO COMPARED TO ITS LOWER-MIDDLE INCOME PEERS

Morocco’s innovation rankings this year reflect high scores in the 5 pillars – Institutions, Human capital and research, Infrastructure, Knowledge & technology outputs and Creative outputs in which it scores above the average of the overall lower-middle income group to which it belongs. Relative strong performance in sub-pillars such as Business environment (67th), Education (66th), Information and communication technologies (ICTs) (53rd), Knowledge impact (48th), and Intangible assets (39th), are all factors behind this high ranking.

Compared to the more than 120 countries covered, Morocco ranks above countries such as Philippines, Tunisia, Islamic Republic of Iran, Argentina, Oman, Kenya, Kenya and Azerbaijan.

Over the last seven years Morocco has exhibited consistent performance ranking among top 15 economies in the Northern Africa and Western Asia region and has kept its position among the top 20 GII-ranked lower-middle income innovation nations. In fact, Morocco has improved its rank in the region reaching 11th position for the first time in 2017. Its ranking among lower-middle income economies has also improved from 20th position in 2011 to 7th in 2015, which it retains this year. Morocco exhibits an

upward trajectory in its ranking of both innovation inputs and outputs during 2014-2016. This year, the ranking of inputs experiences a slight drop, while that of outputs grows even more, improving by 2 positions. Morocco's Innovation Efficiency Ratio showed a surge in 2016, reaching its highest position, but decreased slightly this year and now ranks 71st globally. At the pillar level, Morocco shows its best performance in Human capital and research (63rd), Infrastructure (51st) and Creative outputs (68th).

4) STATUS AS A PILLAR OUTPERFORMER IN PREVIOUS YEARS

This year, Morocco is signaled as **Pillar Outperformer**. These countries are those that outperform their peers in four or more GII pillars. This is the sixth time, including years 2016, 2015, 2014, 2013 and 2012, that Morocco is identified as such.

5) MISSING AND OUTDATED DATA

The following table shows data that is not available or outdated for Morocco in the GII 2017. In this year's report economies with minimum indicator coverage of 36 indicators in the Innovation Input Sub-Index (66%) and 18 indicators in the Innovation Output Sub-Index (66%) were retained. The GII will continue its efforts to improve data coverage for all countries included in the report.

Missing Data				
Code	Name	Country year	Mode Year	Source
2.1.4	PISA scales in reading, maths, & science	n/a	2015	PISA
2.1.5	Pupil-teacher ratio, secondary	n/a	2015	UNESCO Inst. For Statistics (Education)
5.1.5	Females employed w/advanced degrees, % total	n/a	2015	ILOSTAT
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2015	WIPO
Outdated Data				
Code	Name	Country year	Mode Year	Source
2.1.1	Expenditure on education, % GDP	2009	2013	UNESCO Inst. For Statistics (Education)
2.1.2	Gov't expenditure/pupil, secondary, % GDP/cap	2012	2013	UNESCO Inst. For Statistics (Education)
2.1.3	School life expectancy, years	2012	2014	UNESCO Inst. For Statistics (Education)
2.2.2	Graduates in science & engineering, %	2010	2013	UNESCO Inst. For Statistics (Education)
2.2.3	Tertiary inbound mobility, %	2014	2015	UNESCO Inst. For Statistics (Education)
2.3.1	Researchers, FTE/mn pop.	2014	2015	UNESCO Inst. For Statistics (R&D)
2.3.2	Gross expenditure on R&D, % GDP	2010	2015	UNESCO Inst. For Statistics (R&D)
5.1.1	Knowledge-intensive employment, %	2008	2015	ILOSTAT
5.1.3	GERD performed by business, % of GDP	2010	2015	UNESCO Inst. For Statistics (R&D)
5.1.4	GERD financed by business, %	2010	2015	UNESCO Inst. For Statistics (R&D)
5.2.3	GERD financed by abroad, %	2010	2015	UNESCO Inst. For Statistics (R&D)
5.3.1	Intellectual property payments, % total trade	2013	2015	WTO
5.3.3	ICT services imports, % total trade	2013	2015	WTO
5.3.5	Research talent, % in business enterprise	2014	2015	UNESCO Inst. For Statistics (R&D)
6.2.5	High- & medium-high-tech manufactures, %	2013	2014	UNIDO
6.3.1	Intellectual property receipts, % total trade	2013	2015	WTO
6.3.3	ICT services exports, % total trade	2013	2015	WTO
7.2.4	Printing & publishing manufactures, %	2013	2014	UNIDO