

Country Brief Global Innovation Index 2016: Morocco



1) GII 2016 Theme and its Conceptual Framework

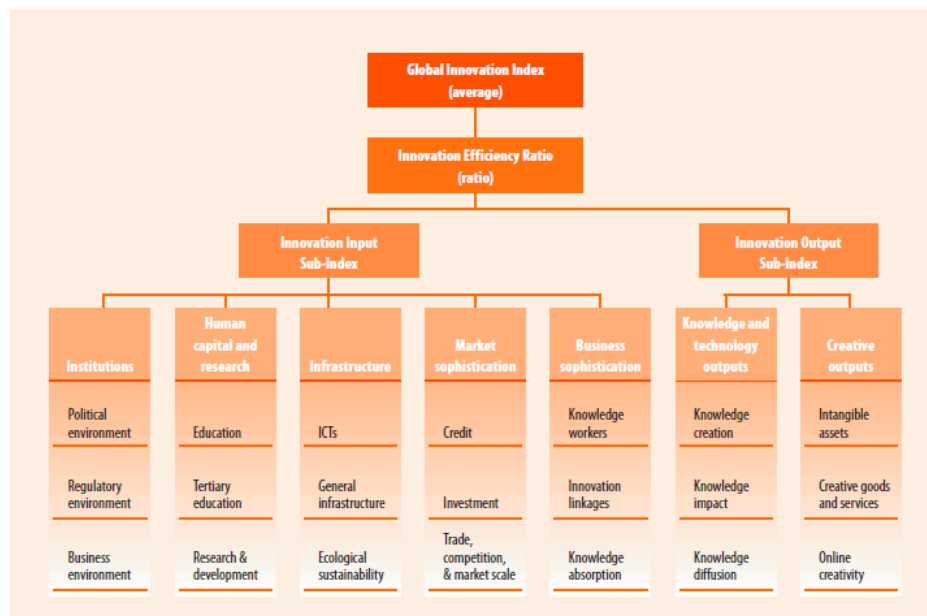
GII model

- 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 on next page).

Four measures are calculated (see Figure on next page):

- 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 and 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 1: Framework of the Global Innovation Index 2016



- In 2016, the GII model includes 128 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 82 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.

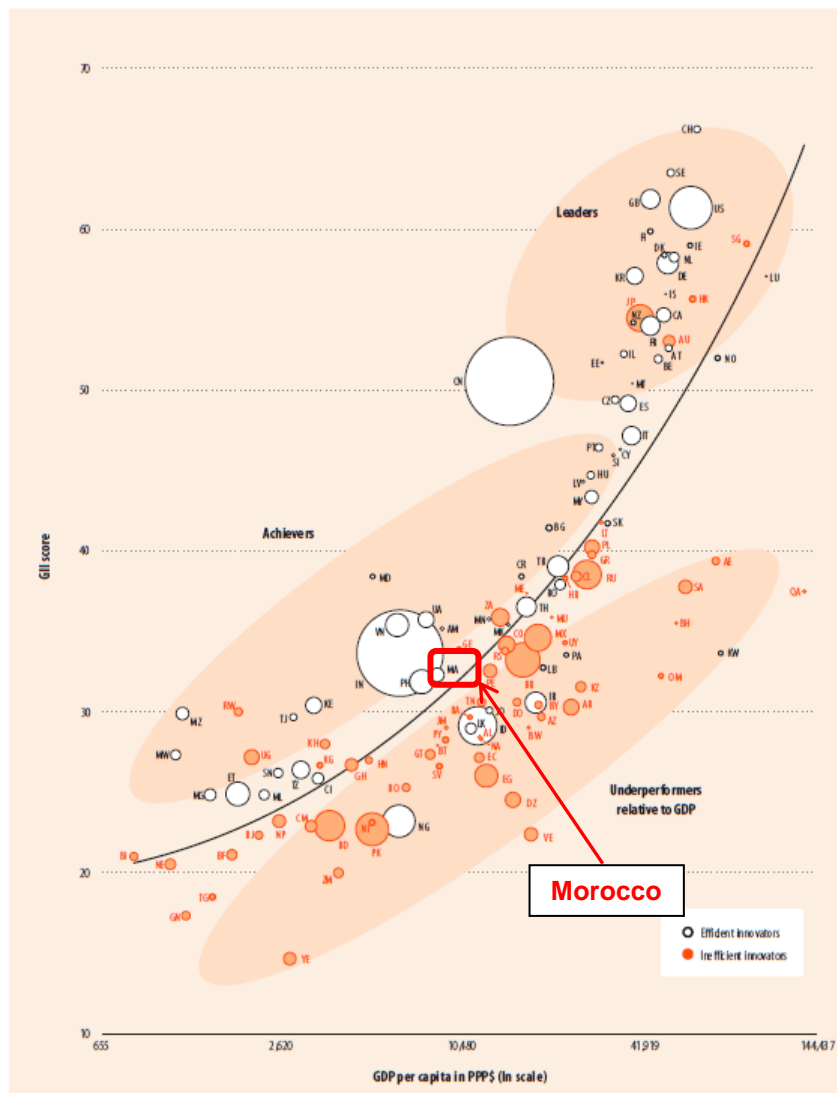
2) MOROCCO in the Global Innovation Index 2016

- Morocco is ranked 72nd, up 6 positions from 2015 ranking. This move is driven not only by Morocco's innovation performance but also by methodological considerations, such as the addition of new indicators.
- 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
2016	72	75	70	64
2015	78	76	84	102
2014	84	89	86	83

- Taking statistical variation into account, the intervals provided show that with 90% confidence, Morocco's expected rank range is between 63rd 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 ranks 12th.
- Morocco exhibits an upward trajectory in the ranking of both innovation inputs and outputs during 2014-2016. Innovation output and input have reached their best rank in the last three years.
- Morocco's Innovation Efficiency Ratio is showing its best performance this year, increasing from 102nd position in 2015 up to 64th position. Innovation Efficiency Ratio is strong, mainly due to higher ranking innovation outputs (70th) than inputs (75th).
- Morocco ranks 10th and 11th in its region (Northern Africa and Western Asia) in the Innovation Input and Output Sub-Indices, respectively.

Figure 3: 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 34th among the middle-income economies and 85th 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, however.
- Overall, Morocco ranks as number 7 economy in the group of lower-middle income economies.

	Global Innovation Index	Innovation Input Sub-index	Innovation Output Sub-index	Innovation Efficiency Ratio
Lower-middle-income economies (29 in total)				
1	Moldova, Rep. (46)	Bhutan (54)	Moldova, Rep. (36)	Moldova, Rep. (4)
2	Ukraine (56)	Georgia (67)	Ukraine (40)	Viet Nam (11)
3	Viet Nam (59)	India (72)	Viet Nam (42)	Ukraine (12)
4	Armenia (60)	Moldova, Rep. (74)	Armenia (43)	Armenia (15)
5	Georgia (64)	Morocco (75)	India (59)	Côte d'Ivoire (19)
6	India (66)	Ukraine (76)	Georgia (60)	Tajikistan (29)
7	Morocco (72)	Viet Nam (79)	Philippines (64)	Kenya (30)
8	Philippines (74)	Armenia (80)	Kenya (65)	Philippines (49)
9	Kenya (80)	Philippines (86)	Tajikistan (69)	Indonesia (52)
10	Tajikistan (86)	El Salvador (89)	Morocco (70)	Sri Lanka (54)

- Most of Morocco's strengths are found in one of the seven GII pillars.
 - In Infrastructure (45th), particular strengths are exhibited in indicators Government's online service (30th), Online e-participation (17th), Gross capital formation (9th) and GDP per unit of energy use (21st).
 - On the Innovation Output side, Morocco's strengths are exhibited in Knowledge and technology outputs (72nd). It has a strong performance in Growth rate of GDP per person engaged (26th) and ICT services exports (27th)
 - In Creative outputs (67th) pillar it has strong performance in sub-pillar Intangible assets (36th) and, 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 (37th), Government expenditure on education per pupil, secondary (10th) and Graduates in science and engineering (4th).
- On the Innovation Input side pillar of Business sophistication (125th) is positioned as a relative weakness. Morocco performs weakly in sub-pillars Knowledge workers (113th) and Innovation linkages (118th) and in indicators Employment in knowledge-intensive services (98th), GERD financed by abroad (81st), Joint venture/strategic alliance deals (71st), Patent families filed in two offices (102nd) and Research talent in business enterprise (67th).
- Other relative weaknesses are also found, at the variable level, in Ease of resolving insolvency (107th), Global R&D companies, average expenditure top 3 (45th) and QS university ranking average score top 3 universities (73rd).
- On the Innovation output side there are only two relative weaknesses exhibited at the variable level in Intellectual property receipts (91st) and Global entertainment and media market (56th).
- Morocco's overall **strengths** and **weaknesses** in the GII model are shown below

Strengths	Weaknesses
<p>1.3.1 Ease of starting a business (37th)</p> <p>2.1.2 Government expenditure on education per pupil, secondary (10th)</p> <p>2.2.2 Graduates in science and engineering (4th)</p> <p>3.1.3 Government's online service (30th)</p> <p>3.1.4 Online e-participation (17th)</p> <p>3.2.3 Gross capital formation (9th)</p> <p>3.3.1 GDP per unit of energy use (21st)</p> <p>6.2.1 Growth rate of GDP per person engaged (26th)</p> <p>6.3.3 ICT services exports (27th)</p> <p>7.1. Intangible assets (36th)</p> <p>7.1.2 Industrial designs by origin (8th)</p>	<p>1.3.2 Ease of resolving insolvency (107th)</p> <p>2.3.3 Global R&D companies, average expenditure top 3 (45th)</p> <p>2.3.4 QS university ranking average score top 3 universities (73rd)</p> <p>4.2. Investment (109th)</p> <p>5. Business sophistication (125th)</p> <p>5.1. Knowledge workers (113th)</p> <p>5.1.1 Employment in knowledge-intensive services (98th)</p> <p>5.2. Innovation linkages (118th)</p> <p>5.2.3 GERD financed by abroad (81st)</p> <p>5.2.4 Joint venture/strategic alliance deals (71st)</p> <p>5.2.5 Patent families filed in two offices (102nd)</p> <p>5.3. Knowledge absorption (120th)</p> <p>5.3.5 Research talent in business enterprise (67th)</p> <p>6.3.1 Intellectual property receipts (91st)</p> <p>7.2.3 Global entertainment and media market (56th)</p>

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 and technology outputs and Creative outputs in which it scores above the average of the overall lower-middle income group to which it belongs. Top scores in indicators such as Business environment (71st), Education (64th), Tertiary education (36th), Information and communication technologies (ICTs)(45th), Knowledge impact (70th) and Intangible assets (36th), are all factors behind this high ranking.

Compared to the more than 120 countries covered, Morocco ranks above countries such as South Africa, Islamic Republic of Iran, Mozambique, United Arab Emirates, Indonesia, Jordan and Brazil.

Over the last six years Morocco has exhibited consistent performance ranking among top 20 economies in the Northern Africa and Western Asia region and has kept its position among the top 15 GII-ranked lower-middle income innovation nations. In fact, Morocco has improved its rank in the region reaching 12th position in 2016, in comparison to 17th position in 2011. It also improved its ranking among lower-middle income economies, becoming number 7 economy this year, up from 15th in 2011. Morocco exhibits an upward trajectory in its ranking of both innovation inputs and outputs during 2014-2016. Morocco's Innovation Efficiency Ratio has improved since

last year, increasing from 102nd up to 64th – best result in the past 3 years. At the pillar level, Morocco shows its best performance in Infrastructure (45th).

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 fifth time, including years 2015, 2014, 2013 and 2012, that Morocco is identified as such.