

# GLOBAL INNOVATION INDEX 2018

Switzerland

**1<sup>st</sup>** Switzerland is ranked 1st in the GII 2018 since 2011.

The GII indicators are grouped into innovation inputs and innovation outputs. The table below show Switzerland's rankings over time<sup>1</sup>.

Switzerland's ranking over time				
	GII	Input	Output	Efficiency
2018	1	2	1	1
2017	1	3	1	2
2016	1	6	1	5

- Over the last eight years, Switzerland upheld its first place in the GII. It also ranks number 1 in the innovation outputs since 2012.
- In innovation inputs, Switzerland improves its rankings, ranking 2nd globally, up from the 3rd position in 2017 and the 6th in 2016.
- Switzerland ranks 1st in the world in the Innovation Efficiency Ratio, which means that Switzerland is among the most efficient world economies in translating innovation inputs into innovation outputs. The Innovation Efficiency Ratio has constantly improved over the last years, moving up from the 2nd spot last year and the 5th in 2016.

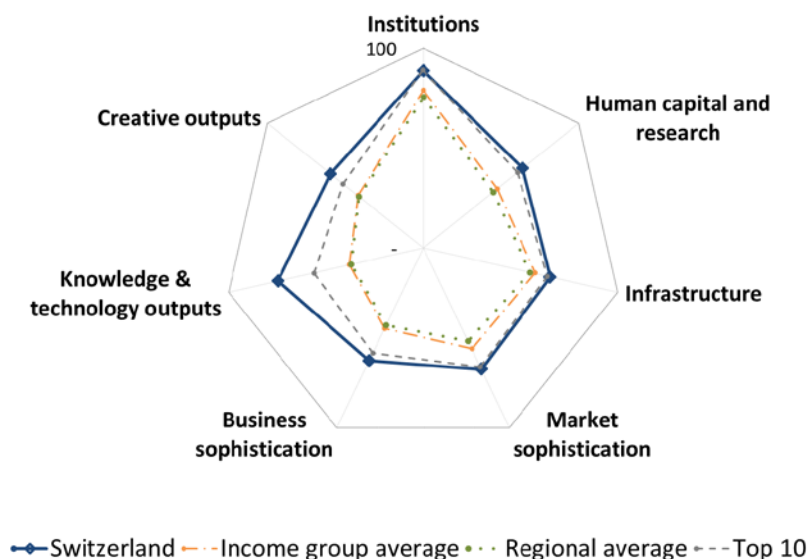
**1<sup>st</sup>** Switzerland is ranked 1st among the 47 high-income countries in the GII 2018.

**1<sup>st</sup>** Switzerland is the most innovative country in Europe.

<sup>1</sup> Note that year-on-year comparisons of the GII ranks are imperfect and influenced by changes in the GII model and data availability.

## Benchmarking Switzerland to other high-income countries and the Europe region

Switzerland's scores by area



### High-income countries

Switzerland has high scores in 6 GII areas – **Human Capital and Research, Infrastructure, Market Sophistication, Business Sophistication, Knowledge and Technology Outputs, and Creative Outputs**, in which it scores above the average of the top 10 countries in the GII.

Top scores in GII areas such as *Research & Development (R&D)*, *Information & Communication Technologies (ICTs)*, *Trade, competition & market scale*, *Knowledge workers*, *Knowledge creation* and *Intangible assets* are behind this high ranking.

### Europe region

Compared to other countries in the Europe region, Switzerland performs above average in all GII areas.

## Switzerland's innovation profile

### Strengths

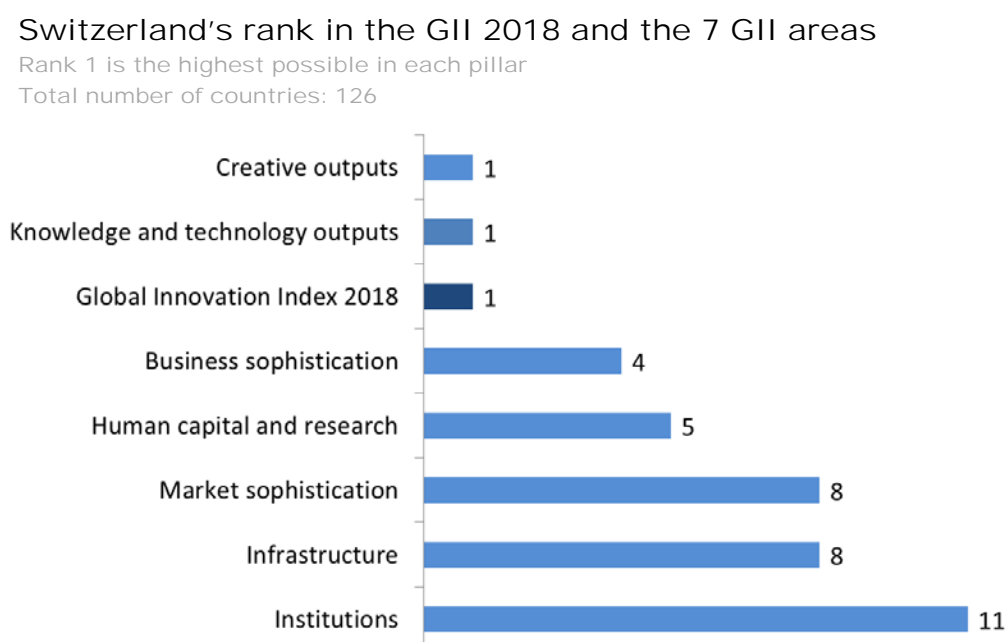
- Switzerland has strengths in the **Global Innovation Index, Innovation Output Sub-index, and Innovation Efficiency Ratio** in which it ranks 1st globally. The country also has strength in the **Innovation Input Sub-index** in which it ranks 2nd.
- In **Institutions** (11th), Switzerland has strengths in the area *Political environment* (2nd) and in indicator *Government effectiveness* (2nd).
- In **Human capital and Research** (5th), it exhibits strengths in the area *Research & development (R&D)* (2nd) and in indicators *R&D expenditures*, *Global R&D companies expenditures*, and *Quality of universities*, all ranking 3rd.
- In **Infrastructure** (8th), Switzerland has strength in the area *Ecological sustainability* (3rd) and in indicators *ICT use* (2nd) and *Environmental performance* (1st).
- In **Market sophistication** (8th), the variable *Applied tariff rate* (1st) is marked as a strength.
- In **Business sophistication** (4th), it exhibits strengths in two of its components – *Knowledge workers* (3rd) and *Innovation linkages* (3rd) – as well as in indicators *Knowledge-intensive employment* (3rd), *University/industry research collaboration* (1st), and *Patent families in two or more offices* (1st).

- Switzerland also presents a rather exceptional number of comparative strengths in the innovation output side of the GII. Both areas that capture innovation outputs, **Knowledge and Technology Outputs** and **Creative Outputs** (both ranking 1st), are strengths.
- In **Knowledge and Technology Outputs**, strengths are found in two areas: *Knowledge creation* (1st) and *Knowledge diffusion* (3rd). The country also demonstrates strength in several indicators: *PCT patents by origin* (1st), *Scientific and technical articles* (2nd), *Computer software spending* (3rd), *High and medium-high-tech manufactures* (2nd), *Intellectual property receipts* (1st), and *FDI outflows* (1st).
- In **Creative Outputs**, Switzerland shows strengths in indicators *ICTs & business model creation* (1st), *Entertainment and Media market* (3rd), and *Country-code TLDs* (1st).

## Weaknesses

- In **Institutions** (11th), Switzerland has relative weakness in indicator *Ease of starting a business* (59th).
- In **Human Capital and Research** (5th), indicator *Expenditure on education* (50th) is identified as a weakness.
- In **Infrastructure** (8th), indicators *Government's online service* (64th) and *E-participation* (70th) are relative weaknesses.
- In **Market Sophistication** (8th), Switzerland demonstrates relative weaknesses in indicators *Ease of getting credit* (61st) and *Ease of protecting minority investors* (92nd).
- In **Business Sophistication** (4th), it exhibits weaknesses in indicators *R&D financed by abroad* (43rd) and *High-tech imports* (59th).
- In **innovation outputs**, Switzerland demonstrates relative weaknesses in *Productivity growth* (84th) and *Printing & other media* (48th).

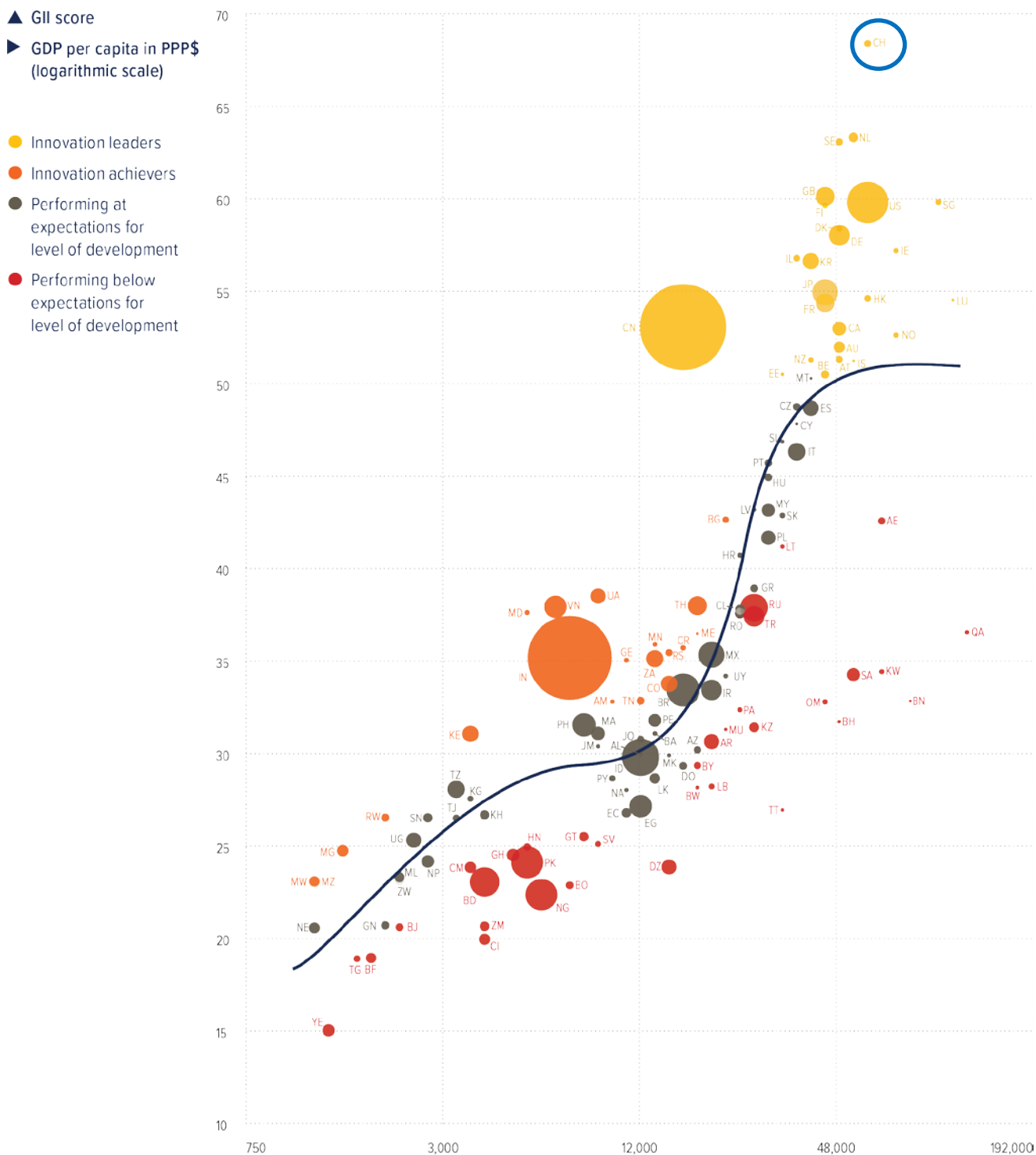
The following figure presents a summary of Switzerland's ranks in the 7 GII areas, as well as the overall rank in the GII 2018.



## Expected vs. Observed Innovation Performance

The GII bubble chart shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The depicted trendline gives an indication of the expected innovation performance at different levels of income. Countries located above the trendline are performing better than what would be expected based on their income level. Countries below the line are Innovation Under-performers relative to GDP.

Relative to GDP, Switzerland performs well above its expected level of development.



## Missing and Outdated Data

More and better data improves the ability of a country to understand its strengths and weaknesses and give policymakers greater capacity to plan and adapt public policies accordingly. The GII 2018 covers 126 countries that complied with the minimum indicator coverage of 35 indicators in the Innovation Input Sub-Index (66%) and 18 indicators in the Innovation Output Sub-Index (66%).

The following tables show data for Switzerland that is not available or that is outdated.

### Missing Data





Code	Indicator	Country Year	Model Year	Source
4.1.3	Microfinance gross loans, % GDP	n/a	2016	Microfinance Information Exchange, Mix Market
5.1.2	Firms offering formal training, % firms	n/a	2013	World Bank, Enterprise Surveys
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2016	WIPO, Intellectual Property Statistics
7.2.1	Cultural & creative services exports, % total trade	n/a	2016	WTO, Trade in Commercial Services




### Outdated Data

Code	Indicator	Country Year	Model Year	Source
2.1.5	Pupil-teacher ratio, secondary	2012	2016	UNESCO Institute for Statistics
2.2.2	Graduates in science & engineering, %	2015	2016	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2015	2016	UNESCO Institute for Statistics
2.3.2	Gross expenditure on R&D, % GDP	2015	2016	UNESCO Institute for Statistics
5.1.3	GERD performed by business, % GDP	2015	2016	UNESCO Institute for Statistics
5.3.5	Research talent, % in business enterprise	2015	2016	UNESCO Institute for Statistics
7.2.4	Printing & other media, % manufacturing	2013	2015	UNIDO, Industrial Statistics



Output rank	Input rank	Income	Region	Efficiency ratio	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2017 rank
1 ●	2 ●	High	EUR	1 ●	8.5	516.7	61,421.8	1

	Score/Value	Rank
 <b>Institutions</b> .....	<b>88.9</b>	<b>11</b>
1.1 Political environment.....	95.4	2 ●◆
1.1.1 Political stability & safety*.....	95.2	5
1.1.2 Government effectiveness*.....	95.5	2 ●◆
1.2 Regulatory environment.....	95.9	5
1.2.1 Regulatory quality*.....	93.1	5
1.2.2 Rule of law*.....	97.0	4
1.2.3 Cost of redundancy dismissal, salary weeks.....	10.1	32
1.3 Business environment.....	75.5	44 ◇
1.3.1 Ease of starting a business*.....	88.4	59 ○
1.3.2 Ease of resolving insolvency*.....	62.6	42 ◇
 <b>Human capital &amp; research</b> .....	<b>64.0</b>	<b>5</b>
2.1 Education.....	56.9	32
2.1.1 Expenditure on education, % GDP.....	5.1	50 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap.....	25.3	23
2.1.3 School life expectancy, years.....	16.2	29
2.1.4 PISA scales in reading, maths & science.....	506.3	13
2.1.5 Pupil-teacher ratio, secondary <sup>②</sup> .....	9.3	19 ◆
2.2 Tertiary education.....	54.8	16
2.2.1 Tertiary enrolment, % gross.....	57.9	43
2.2.2 Graduates in science & engineering, % <sup>②</sup> .....	24.4	32
2.2.3 Tertiary inbound mobility, %.....	17.6	7 ◆
2.3 Research & development (R&D).....	80.2	2 ●◆
2.3.1 Researchers, FTE/mn pop. <sup>②</sup> .....	5,257.3	10
2.3.2 Gross expenditure on R&D, % GDP <sup>②</sup> .....	3.4	3 ●◆
2.3.3 Global R&D companies, top 3, mn US\$.....	93.3	3 ●
2.3.4 QS university ranking, average score top 3*.....	84.6	3 ●
 <b>Infrastructure</b> .....	<b>65.3</b>	<b>8</b>
3.1 Information & communication technologies (ICTs).....	73.8	30 ◇
3.1.1 ICT access*.....	88.5	7
3.1.2 ICT use*.....	88.8	2 ●◆
3.1.3 Government's online service*.....	60.1	64 ○◇
3.1.4 E-participation*.....	57.6	70 ○◇
3.2 General infrastructure.....	52.0	25
3.2.1 Electricity output, kWh/cap.....	7,306.1	28
3.2.2 Logistics performance*.....	89.0	11
3.2.3 Gross capital formation, % GDP.....	23.7	52
3.3 Ecological sustainability.....	70.2	3 ●◆
3.3.1 GDP/unit of energy use.....	18.9	6 ◆
3.3.2 Environmental performance*.....	87.4	1 ◆
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP.....	6.2	16 ◆
 <b>Market sophistication</b> .....	<b>67.5</b>	<b>8</b>
4.1 Credit.....	68.3	9
4.1.1 Ease of getting credit*.....	60.0	61 ○
4.1.2 Domestic credit to private sector, % GDP.....	175.3	5 ◆
4.1.3 Microfinance gross loans, % GDP.....	n/a	n/a
4.2 Investment.....	59.6	17
4.2.1 Ease of protecting minority investors*.....	50.0	92 ○◇
4.2.2 Market capitalization, % GDP.....	214.8	4 ◆
4.2.3 Venture capital deals/bn PPP\$ GDP.....	0.1	13
4.3 Trade, competition, & market scale.....	74.6	19
4.3.1 Applied tariff rate, weighted mean, %.....	0.0	1 ●◆
4.3.2 Intensity of local competition <sup>†</sup> .....	74.6	28
4.3.3 Domestic market scale, bn PPP\$.....	516.7	37

	Score/Value	Rank
 <b>Business sophistication</b> .....	<b>62.6</b>	<b>4</b> ◆
5.1 Knowledge workers.....	76.7	3 ●◆
5.1.1 Knowledge-intensive employment, %.....	52.5	3 ●
5.1.2 Firms offering formal training, % firms.....	n/a	n/a
5.1.3 GERD performed by business, % GDP <sup>②</sup> .....	2.4	4
5.1.4 GERD financed by business, %.....	63.5	8
5.1.5 Females employed w/advanced degrees, %.....	17.8	29
5.2 Innovation linkages.....	57.9	3 ●◆
5.2.1 University/industry research collaboration <sup>†</sup> .....	79.5	1 ●◆
5.2.2 State of cluster development <sup>†</sup> .....	68.6	11
5.2.3 GERD financed by abroad, %.....	10.2	43 ○
5.2.4 JV—strategic alliance deals/bn PPP\$ GDP.....	0.1	12
5.2.5 Patent families 2+ offices/bn PPP\$ GDP.....	8.3	1 ●◆
5.3 Knowledge absorption.....	53.3	9
5.3.1 Intellectual property payments, % total trade.....	3.1	5 ◆
5.3.2 High-tech net imports, % total trade.....	8.3	59 ○
5.3.3 ICT services imports, % total trade.....	3.7	5 ◆
5.3.4 FDI net inflows, % GDP.....	4.9	32
5.3.5 Research talent, % in business enterprise <sup>②</sup> .....	50.1	23
 <b>Knowledge &amp; technology outputs</b> .....	<b>74.9</b>	<b>1</b> ●◆
6.1 Knowledge creation.....	89.9	1 ●◆
6.1.1 Patents by origin/bn PPP\$ GDP.....	17.4	5 ◆
6.1.2 PCT patents by origin/bn PPP\$ GDP.....	8.7	1 ●◆
6.1.3 Utility models by origin/bn PPP\$ GDP.....	n/a	n/a
6.1.4 Scientific & technical articles/bn PPP\$ GDP.....	38.0	2 ●◆
6.1.5 Citable documents H index.....	66.5	9
6.2 Knowledge impact.....	57.9	4 ◆
6.2.1 Growth rate of PPP\$ GDP/worker, %.....	(0.2)	84 ○
6.2.2 New businesses/th pop. 15–64.....	4.3	30
6.2.3 Computer software spending, % GDP.....	0.8	3 ●◆
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP.....	22.3	16 ◆
6.2.5 High- & medium-high-tech manufactures, %.....	0.6	2 ●◆
6.3 Knowledge diffusion.....	76.9	3 ●◆
6.3.1 Intellectual property receipts, % total trade.....	4.4	1 ●◆
6.3.2 High-tech net exports, % total trade.....	14.1	11
6.3.3 ICT services exports, % total trade.....	3.3	26
6.3.4 FDI net outflows, % GDP.....	8.9	1 ●◆
 <b>Creative outputs</b> .....	<b>59.4</b>	<b>1</b> ●◆
7.1 Intangible assets.....	62.0	8
7.1.1 Trademarks by origin/bn PPP\$ GDP.....	73.1	25
7.1.2 Industrial designs by origin/bn PPP\$ GDP.....	7.6	16
7.1.3 ICTs & business model creation <sup>†</sup> .....	86.2	1 ●◆
7.1.4 ICTs & organizational model creation <sup>†</sup> .....	76.9	9
7.2 Creative goods & services.....	55.2	4 ◆
7.2.1 Cultural & creative services exports, % total trade.....	n/a	n/a
7.2.2 National feature films/mn pop. 15–69.....	16.9	7
7.2.3 Entertainment & Media market/th pop. 15–69.....	95.0	3 ●◆
7.2.4 Printing & other media, % manufacturing <sup>②</sup> .....	1.2	48 ○
7.2.5 Creative goods exports, % total trade.....	3.7	14
7.3 Online creativity.....	58.4	4
7.3.1 Generic top-level domains (TLDs)/th pop. 15–69.....	59.6	13
7.3.2 Country-code TLDs/th pop. 15–69.....	100.0	1 ●◆
7.3.3 Wikipedia edits/mn pop. 15–69.....	47.4	27
7.3.4 Mobile app creation/bn PPP\$ GDP.....	42.0	13

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25–ranked GII economies; ◇ a weakness relative to the other top 25;

\* an index; † a survey question. ② indicates that the country'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; see pagepage 75 of this appendix for details.