

GLOBAL INNOVATION INDEX 2018

Thailand

44th Thailand is ranked 44th in the GII 2018, moving up 7 positions from the previous year.

The GII indicators are grouped into innovation inputs and outputs. The following table reflects Thailand's rankings over time¹.

Thailand's ranking over time

	GII	Input	Output	Efficiency
2018	44	52	45	33
2017	51	65	43	24
2016	52	57	50	53

- Thailand is constantly improving in the GII rankings, taking the 44th spot this year and moving up 8 positions from 2016.
- This year Thailand improves in innovation inputs, reaching the 52nd position, up from the 65th last year.
- Its rank in innovation outputs slightly deteriorates, ranking 45th and dropping 2 spots from 2017.
- The country ranks 33rd in the Innovation Efficiency Ratio, lower than in 2017, but much higher than the 53th rank in 2016. This shows that Thailand is very efficient in translating its innovation inputs into outputs.

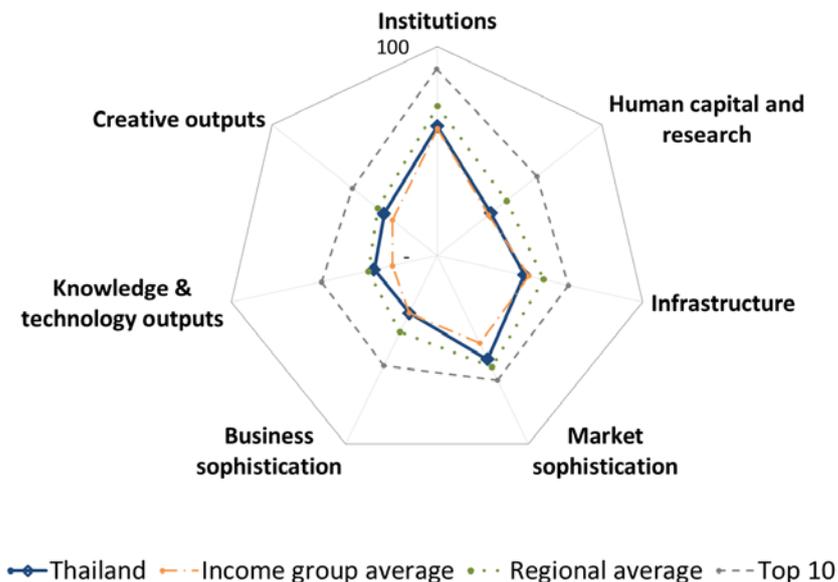
5th Thailand is ranked 5th among the 34 upper-middle-income countries in the GII 2018.

9th Thailand is ranked 9th among the 15 countries in South East Asia and Oceania.

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

Benchmarking Thailand to other upper-middle-income countries and the South East Asia and Oceania region

Thailand's scores by area



Upper-middle-income countries

Thailand has high scores in 6 of the 7 GII areas – **Institutions, Human Capital & Research, Market Sophistication, Business Sophistication, Knowledge & Technology Outputs, and Creative Outputs**, in which it scores above the average of the upper-middle income group.

Top scores in areas such as *Business environment, Education, Trade, competition & market scale, Knowledge absorption, Knowledge impact, and Intangible assets* are behind these high rankings.

South East Asia and Oceania region

Compared to other countries in the South East Asia and Oceania region, Thailand performs below-average in all 7 GII areas.

Thailand's innovation profile

Strengths

- Thailand's strengths are concentrated in few areas of the GII.
- In **Market Sophistication** (28th), it has strong performance in indicators *Domestic credit to private sector* (8th), *Ease of protecting minority investors* (16th), *Market capitalization* (9th), and *Domestic market scale* (20th).
- Thailand also demonstrates strengths in **Business Sophistication** (62nd) in indicators *R&D financed by business*, where it ranks 6th in the world, and *High-tech imports* (11th).
- On the **innovation output** side, most of Thailand's strengths are exhibited in **Knowledge & Technology Outputs** (40th), where it performs strongly in indicators *Productivity growth* (11th), *High- & medium-high-tech manufactures* (15th), and *High-tech exports* (8th).
- In **Creative Outputs** (50th), Thailand shows strong performance in the indicator *Creative goods exports*, where it ranks 6th globally.

Weaknesses

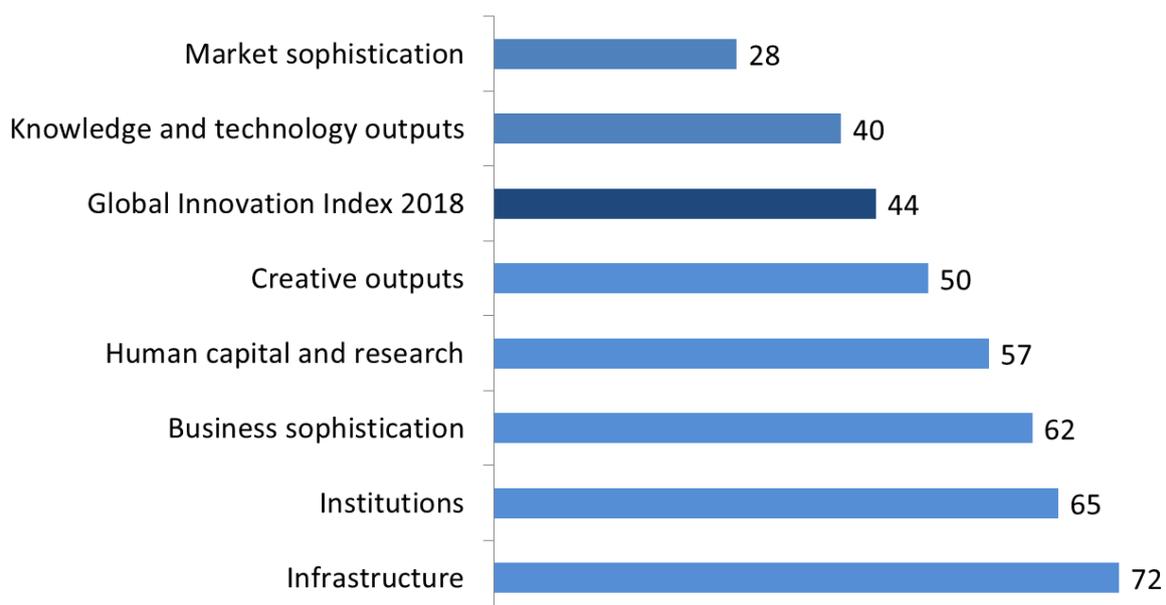
- Thailand's relative weaknesses are mainly accrued among **innovation inputs**, and in particular across four of the five GII areas capturing innovation inputs.
- In **Institutions** (65th), Thailand performs relatively weakly in indicators *Political stability & safety* (107th) and *Cost of redundancy dismissal* (116th).
- In **Human Capital & Research** (57th), GII weaknesses are found in indicators *Pupil-teacher ratio* (100th) and *Tertiary inbound mobility* (88th).
- In **Market Sophistication** (28th), indicators *Microfinance gross loans* (80th) and *Venture capital deals* (76th) are marked as GII weaknesses.
- In **Business Sophistication** (62nd), indicators *Firms offering formal training* (78th), *R&D financed by abroad* (85th), and *ICT services imports* (116th) present a relatively weak performance.
- On the **Innovation Output** side, Thailand exhibits only one relative weakness in the indicator *ICT services exports* (114th) within the **Knowledge & Technology Outputs** (40th) area.

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

Thailand's rank in the GII 2018 and the 7 GII areas

Rank 1 is the highest possible in each pillar

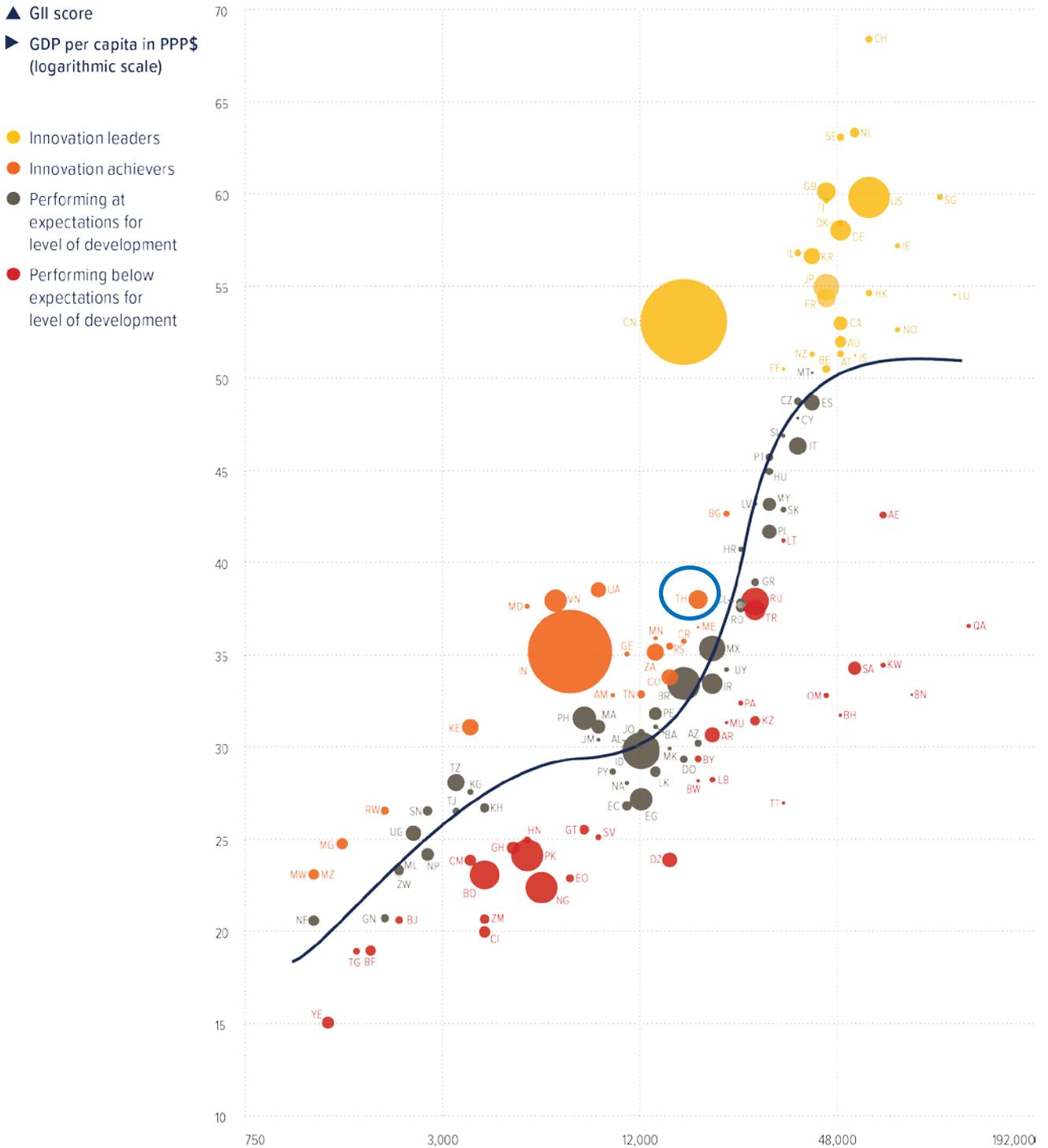
Total number of countries: 126



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, Thailand performs above its expected level of development.



Missing and Outdated Data

More and better data improve 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 Thailand that is not available or that is outdated.

Missing Data

Code	Indicator	Country Year	Model Year	Source
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
2.1.1	Expenditure on education, % GDP	2013	2014	UNESCO Institute for Statistics (UIS)
2.1.2	Government funding/pupil, secondary, % GDP/cap	2013	2014	UNESCO Institute for Statistics (UIS)
2.1.3	School life expectancy, years	2015	2016	UNESCO Institute for Statistics (UIS)
2.1.5	Pupil-teacher ratio, secondary	2015	2016	UNESCO Institute for Statistics (UIS)
2.2.1	Tertiary enrolment, % gross	2015	2016	UNESCO Institute for Statistics (UIS)
2.2.2	Graduates in science & engineering, %	2015	2016	UNESCO Institute for Statistics (UIS)
2.2.3	Tertiary inbound mobility, %	2014	2016	UNESCO Institute for Statistics (UIS)
2.3.1	Researchers, FTE/mn pop.	2015	2016	UNESCO Institute for Statistics (UIS)
2.3.2	Gross expenditure on R&D, % GDP	2015	2016	UNESCO Institute for Statistics (UIS)
4.1.3	Microfinance gross loans, % GDP	2011	2016	Microfinance Information Exchange, Mix Market
4.3.1	Applied tariff rate, weighted mean, %	2015	2016	World Bank, World Development Indicators
5.1.3	GERD performed by business, % GDP	2015	2016	UNESCO Institute for Statistics (UIS)
5.3.5	Research talent, % in business enterprise	2015	2016	UNESCO Institute for Statistics (UIS)
6.2.5	High- & medium-high-tech manufactures, %	2011	2015	UNIDO, Industrial Statistics
7.2.2	National feature films/mn pop. 15–69	2010	2015	UNESCO Institute for Statistics (UIS)
7.2.4	Printing & other media, % manufacturing	2011	2015	UNIDO, Industrial Statistics



Output rank	Input rank	Income	Region	Efficiency ratio	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2017 rank
45	52	Upper-middle	SEAO	33	69.0	1,228.9	17,855.8	51

	Score/Value	Rank
Institutions	62.0	65
1.1 Political environment	50.0	69
1.1.1 Political stability & safety*	43.1	107 ○◇
1.1.2 Government effectiveness*	53.5	50
1.2 Regulatory environment	51.8	102
1.2.1 Regulatory quality*	48.4	62
1.2.2 Rule of law*	44.3	61
1.2.3 Cost of redundancy dismissal, salary weeks	36.0	116 ○◇
1.3 Business environment	84.0	21 ◆
1.3.1 Ease of starting a business*	92.3	32
1.3.2 Ease of resolving insolvency*	75.6	24 ◆
Human capital & research	32.5	57
2.1 Education	37.7	92
2.1.1 Expenditure on education, % GDP ^②	4.1	75
2.1.2 Government funding/pupil, secondary, % GDP/cap ^②	18.0	59
2.1.3 School life expectancy, years ^②	15.5	40
2.1.4 PISA scales in reading, maths & science	415.3	56
2.1.5 Pupil-teacher ratio, secondary ^②	28.2	100 ○◇
2.2 Tertiary education	34.2	55
2.2.1 Tertiary enrolment, % gross ^②	45.9	61
2.2.2 Graduates in science & engineering, % ^②	26.8	20
2.2.3 Tertiary inbound mobility, % ^②	0.5	88 ○
2.3 Research & development (R&D)	25.7	39
2.3.1 Researchers, FTE/mn pop. ^②	865.4	53
2.3.2 Gross expenditure on R&D, % GDP ^②	0.6	53
2.3.3 Global R&D companies, top 3, mn US\$	45.4	31 ◆
2.3.4 QS university ranking, average score top 3*	32.9	38
Infrastructure	42.3	72
3.1 Information & communication technologies (ICTs)	55.6	72
3.1.1 ICT access*	54.8	76
3.1.2 ICT use*	53.3	62
3.1.3 Government's online service*	55.1	77
3.1.4 E-participation*	59.3	65
3.2 General infrastructure	38.4	60
3.2.1 Electricity output, kWh/cap	2,615.7	68
3.2.2 Logistics performance*	55.1	44 ◆
3.2.3 Gross capital formation, % GDP	22.7	63
3.3 Ecological sustainability	32.8	85
3.3.1 GDP/unit of energy use	7.6	80
3.3.2 Environmental performance*	49.9	97 ○
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	3.0	34
Market sophistication	55.1	28 ◆
4.1 Credit	44.6	42
4.1.1 Ease of getting credit*	70.0	38
4.1.2 Domestic credit to private sector, % GDP	147.3	8 ◆◆
4.1.3 Microfinance gross loans, % GDP ^②	0.0	80 ○◇
4.2 Investment	47.9	41
4.2.1 Ease of protecting minority investors*	73.3	16 ◆◆
4.2.2 Market capitalization, % GDP	99.9	9 ◆◆
4.2.3 Venture capital deals/bn PPP\$ GDP	0.0	76 ○
4.3 Trade, competition, & market scale	72.9	23 ◆
4.3.1 Applied tariff rate, weighted mean, % ^②	3.5	70
4.3.2 Intensity of local competition [†]	72.8	40
4.3.3 Domestic market scale, bn PPP\$	1,228.9	20 ●

	Score/Value	Rank
Business sophistication	30.5	62
5.1 Knowledge workers	29.2	79
5.1.1 Knowledge-intensive employment, %	14.3	90 ◇
5.1.2 Firms offering formal training, % firms	18.0	78 ○◇
5.1.3 GERD performed by business, % GDP ^②	0.4	37
5.1.4 GERD financed by business, %	66.2	6 ◆◆
5.1.5 Females employed w/advanced degrees, %	9.5	63
5.2 Innovation linkages	23.0	86
5.2.1 University/industry research collaboration [†]	48.6	38
5.2.2 State of cluster development [†]	46.2	63
5.2.3 GERD financed by abroad, %	1.5	85 ○
5.2.4 JV-strategic alliance deals/bn PPP\$ GDP	0.0	51
5.2.5 Patent families 2+ offices/bn PPP\$ GDP	0.1	64
5.3 Knowledge absorption	39.5	28 ◆
5.3.1 Intellectual property payments, % total trade	1.6	19
5.3.2 High-tech net imports, % total trade	15.5	11 ◆◆
5.3.3 ICT services imports, % total trade	0.2	116 ○◇
5.3.4 FDI net inflows, % GDP	1.4	92
5.3.5 Research talent, % in business enterprise ^②	50.9	21 ◆
Knowledge & technology outputs	30.8	40
6.1 Knowledge creation	19.1	50
6.1.1 Patents by origin/bn PPP\$ GDP	0.9	65
6.1.2 PCT patents by origin/bn PPP\$ GDP	0.1	60
6.1.3 Utility models by origin/bn PPP\$ GDP	2.1	11
6.1.4 Scientific & technical articles/bn PPP\$ GDP	4.6	84
6.1.5 Citable documents H index	19.9	38
6.2 Knowledge impact	44.1	31
6.2.1 Growth rate of PPP\$ GDP/worker, %	4.1	11 ●
6.2.2 New businesses/th pop. 15-64	1.0	71
6.2.3 Computer software spending, % GDP	0.3	51
6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	8.3	42
6.2.5 High- & medium-high-tech manufactures, % ^②	0.4	15 ◆◆
6.3 Knowledge diffusion	29.2	33 ◆
6.3.1 Intellectual property receipts, % total trade	0.0	79
6.3.2 High-tech net exports, % total trade	15.5	8 ◆◆
6.3.3 ICT services exports, % total trade	0.2	114 ○
6.3.4 FDI net outflows, % GDP	2.0	31
Creative outputs	32.2	50
7.1 Intangible assets	43.2	60
7.1.1 Trademarks by origin/bn PPP\$ GDP	30.7	74
7.1.2 Industrial designs by origin/bn PPP\$ GDP	3.2	40
7.1.3 ICTs & business model creation [†]	69.3	33 ◆
7.1.4 ICTs & organizational model creation [†]	59.9	40 ◆
7.2 Creative goods & services	37.1	23 ◆
7.2.1 Cultural & creative services exports, % total trade	n/a	n/a
7.2.2 National feature films/mn pop. 15-69 ^②	1.0	78
7.2.3 Entertainment & Media market/th pop. 15-69	6.0	44
7.2.4 Printing & other media, % manufacturing ^②	0.8	72
7.2.5 Creative goods exports, % total trade	9.0	6 ◆◆
7.3 Online creativity	5.5	66
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	5.3	54
7.3.2 Country-code TLDs/th pop. 15-69	0.4	97
7.3.3 Wikipedia edits/mn pop. 15-69	5.6	80
7.3.4 Mobile app creation/bn PPP\$ GDP	12.7	55

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * 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 page 75 of this appendix for details.