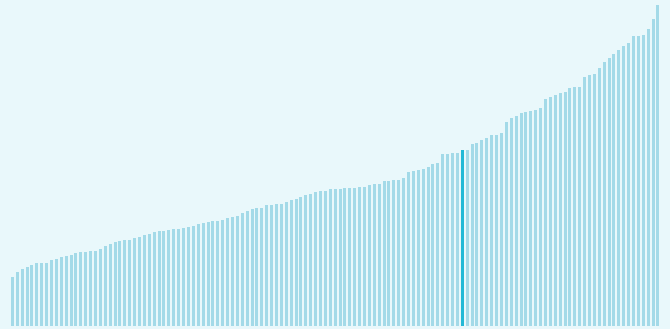


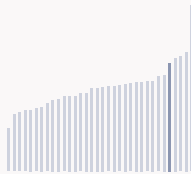
## Thailand ranking in the Global Innovation Index 2024

Thailand ranks **41st** among the 133 economies featured in the GII 2024.

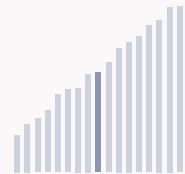
The Global Innovation Index (GII) ranks world economies according to their innovation capabilities. Consisting of roughly 80 indicators, grouped into innovation inputs and outputs, the GII aims to capture the multi-dimensional facets of innovation.



Thailand ranks **5th** among the 34 upper-middle-income group economies.



Thailand ranks **9th** among the 17 economies in South East Asia, East Asia, and Oceania.



### Thailand GII Ranking (2020-2024)

The table shows the rankings of Thailand over the past four years. 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 Thailand in the GII 2024 is between ranks 40 and 45.

Year	GII Position	Innovation Inputs	Innovation Outputs
2020	44th	48th	44th
2021	43rd	47th	46th
2022	43rd	48th	44th
2023	43rd	44th	43rd
2024	41st	41st	39th

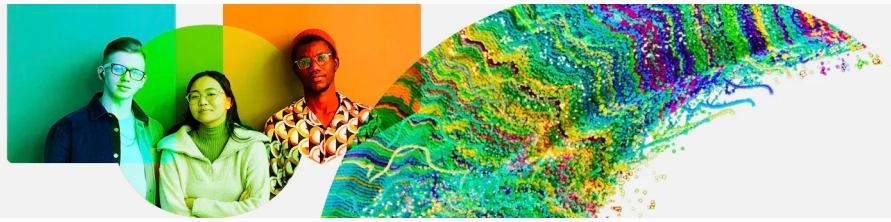
Thailand performs better in innovation outputs than innovation inputs in 2024.

This year Thailand ranks **41st in innovation inputs**. This position is higher than last year.

Thailand ranks **39th in innovation outputs**. This position is higher than last year.

Thailand has no clusters in the top 100 S&T clusters of the Global Innovation Index.

# Global Innovation Index 2024



## > Global Innovation Tracker

The Global Innovation Tracker 2024 shows what is the current state of innovation in Thailand, how rapidly is technology being embraced and what are the resulting societal impacts.



For Thailand, 6 indicators have improved in the short-term and 6 indicators have worsened.

### Science and innovation investment

Scientific publications	R&D investments	Venture capital		International patent filings
		Deal numbers	Deal values	
▼ -13.5% 2022 - 2023	▼ -7.6% 2020 - 2021	▼ -80% 2022 - 2023	▼ -41.8% 2022 - 2023	▼ -8% 2022 - 2023
▲ 6.9% 2013 - 2023	▲ 15.4% 2011 - 2021	▲ 37.8% 2013 - 2023	n/a	▲ 8% 2013 - 2023

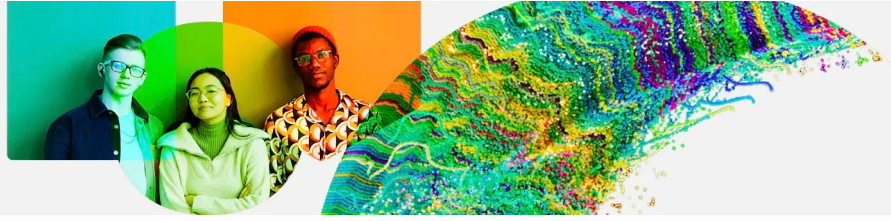
### Technology adoption

Safe sanitation	Connectivity		Robots	Electric vehicles
	Fixed broadband	5G		
▲ 0.2% 2021 - 2022	▲ 1% 2021 - 2022	▲ 12.8% 2021 - 2022	▲ 2.2% 2021 - 2022	n/a
▲ 1.3% 2012 - 2022	▲ 10.4% 2012 - 2022		▲ 8.7% 2012 - 2022	n/a
26.3 per 100 inhabitants in 2022	17.5 per 100 inhabitants in 2022	85.4 per 100 inhabitants in 2022		n/a

### Socioeconomic impact

Labor productivity	Life expectancy	Temperature change
▲ 1% 2022 - 2023	▲ 1.2% 2021 - 2022	▲ 1.4°C 2023
▲ 2.1% 2013 - 2023	▲ 0.4% 2012 - 2022	n/a
39,502 USD in 2023	79.7 years in 2022	

Notes: Not all indicators of the Global Innovation Tracker are used to calculate the Global Innovation Index. Long-term annual growth refers to the compound annual growth rate (CAGR) over the indicated period. For each variable, a one-year growth rate is set for the short run, and ten-year CAGR is set for the long run; time windows might differ when gaps exist in data availability. The end period corresponds to the most recent available observation, which may differ among countries. Temperature change is an exception: it indicates the change in degrees Celsius with respect to the average temperature in the country from 1951–1980. Figures are rounded.



## Expected vs. observed innovation performance

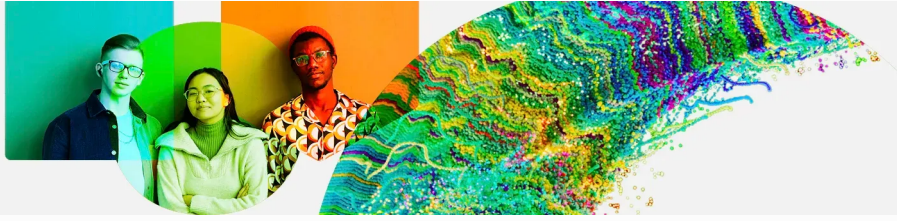
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected and those below are performing below expectations.



Relative to GDP, Thailand is performing above expectations for its level of development.

### > Innovation overperformers relative to their economic 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.

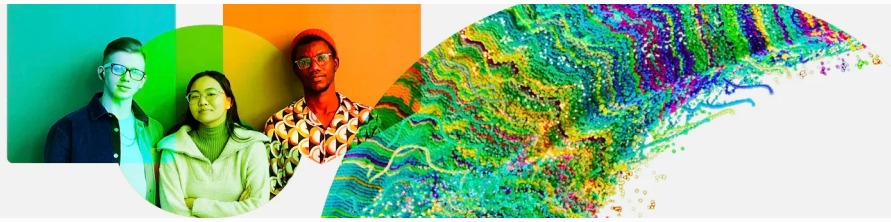


Thailand produces more innovation outputs relative to its level of innovation investments.

### > Relationship between innovation inputs and outputs

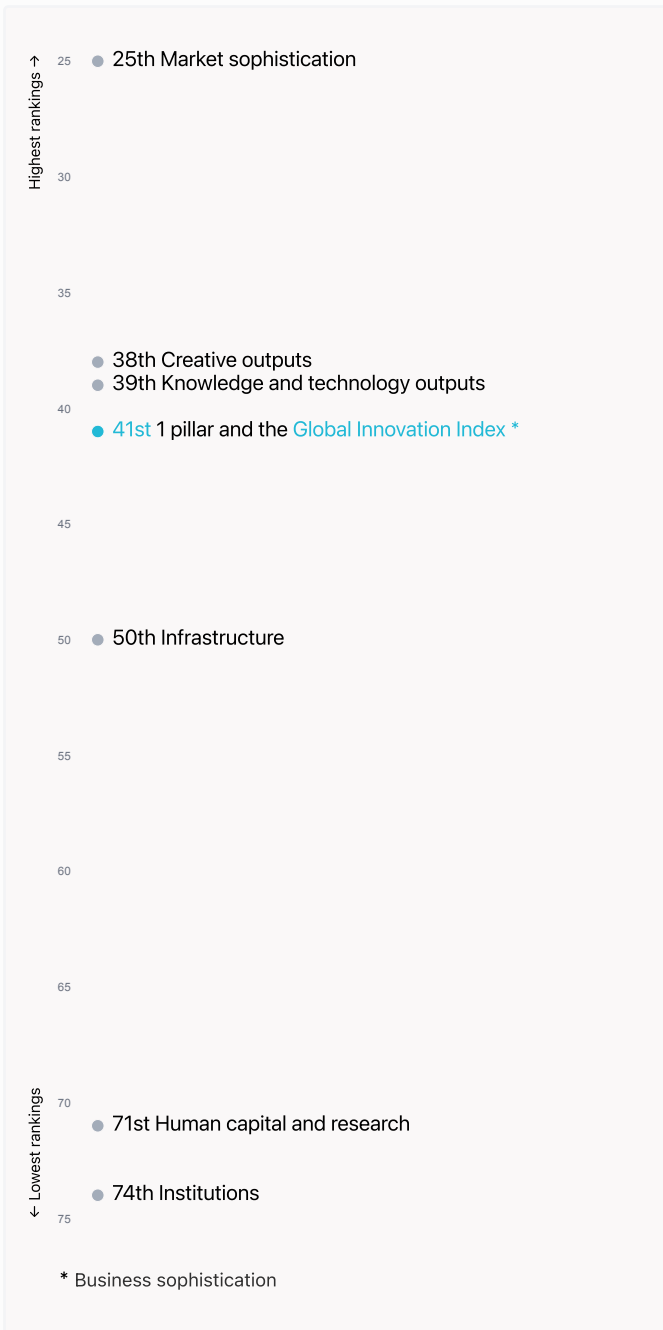


# Global Innovation Index 2024



## Overview of Thailand's rankings in the seven areas of the GII in 2024

The chart shows the ranking for each of the seven areas that the GII comprises. The strongest areas for Thailand are those that rank above the GII (shown in blue) and the weakest are those that rank below.



### Highest rankings



Thailand ranks highest in Market sophistication (25th), Creative outputs (38th), Knowledge and technology outputs (39th) and Business sophistication (41st).

### Lowest rankings



Thailand ranks lowest in Institutions (74th), Human capital and research (71st) and Infrastructure (50th).

The full WIPO Intellectual Property Statistics profile for Thailand can be found on [this link](#).

# Global Innovation Index 2024



## Benchmark of Thailand against other economy groupings for each of the seven areas of the GII Index

The charts show the relative position of Thailand (blue bar) against other economy groupings (grey bars), for each of the seven areas of the GII Index.



### Upper-Middle-Income economies

Thailand performs above the upper-middle-income group average in all pillars.



### South East Asia, East Asia, And Oceania

Thailand performs above the regional average in Infrastructure, Market sophistication, Knowledge and technology outputs, Creative outputs.

#### Institutions

Top 10 | Score: 80.81

SEAO | Score: 59.26

Thailand | Score: 44.81

Upper middle income | Score: 43.0

#### Human capital and research

Top 10 | Score: 61.30

SEAO | Score: 39.09

Thailand | Score: 30.71

Upper middle income | Score: 29.5

#### Infrastructure

Top 10 | Score: 58.57

Thailand | Score: 45.80

SEAO | Score: 45.67

Upper middle income | Score: 39.8

#### Market sophistication

Top 10 | Score: 62.12

Thailand | Score: 50.61

SEAO | Score: 45.28

Upper middle income | Score: 32.9

#### Business sophistication

Top 10 | Score: 63.64

SEAO | Score: 39.01

Thailand | Score: 35.35

Upper middle income | Score: 27.6

#### Knowledge and technology outputs

Top 10 | Score: 57.29

Thailand | Score: 29.78

SEAO | Score: 29.72

Upper middle income | Score: 20.6

#### Creative outputs

Top 10 | Score: 56.54

Thailand | Score: 34.85

SEAO | Score: 33.06

Upper middle income | Score: 24.3



## Innovation strengths and weaknesses in Thailand

The table below gives an overview of the indicator strengths and weaknesses of Thailand in the GII 2024.

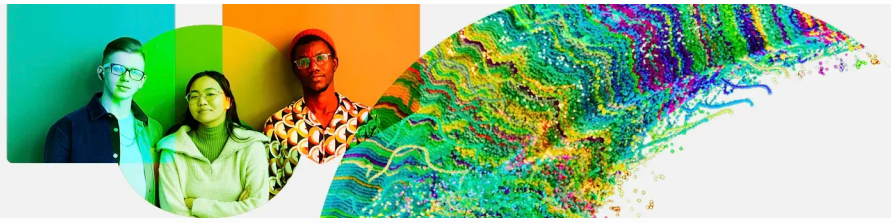


Thailand's main innovation strengths are **GERD financed by business, %** (rank 1), **Utility models by origin/bn PPP\$ GDP** (rank 5) and **Creative goods exports, % total trade** (rank 7).

### Strengths

### Weaknesses

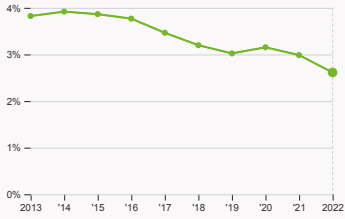
Rank	Code	Indicator name	Rank	Code	Indicator name
1	5.1.4	GERD financed by business, %	129	6.3.4	ICT services exports, % total trade
5	6.1.3	Utility models by origin/bn PPP\$ GDP	122	5.3.3	ICT services imports, % total trade
7	7.2.4	Creative goods exports, % total trade	112	2.1.1	Expenditure on education, % GDP
8	4.1.2	Domestic credit to private sector, % GDP	108	6.2.1	Labor productivity growth, %
8	6.3.3	High-tech exports, % total trade	107	2.1.5	Pupil–teacher ratio, secondary
12	5.3.2	High-tech imports, % total trade	101	3.3.2	Low-carbon energy use, %
13	5.3.5	Research talent, % in businesses	69	7.2.2	National feature films/mn pop. 15–69
14	5.3.1	Intellectual property payments, % total trade	67	2.1.4	PISA scales in reading, maths and science
14	2.2.2	Graduates in science and engineering, %	41	2.3.3	Global corporate R&D investors, top 3, mn USD
15	4.2.3	VC recipients, deals/bn PPP\$ GDP			



## Thailand's innovation system

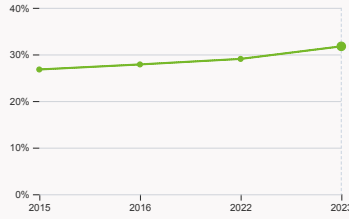
As far as practicable, the plots below present unscaled indicator data.

### > Innovation inputs in Thailand



#### 2.1.1 Expenditure on education

was equal to 2.61 % GDP in 2022, down by 0.37 percentage points from the year prior – and equivalent to an indicator rank of 112.



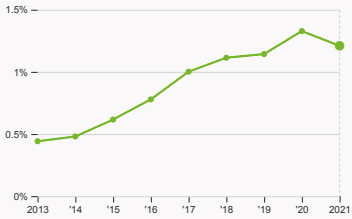
#### 2.2.2 Graduates in science and engineering

was equal to 31.74 % of total graduates in 2023, up by 2.7 percentage points from the year prior – and equivalent to an indicator rank of 14.



#### 2.3.1 Researchers

was equal to 1699.06 FTE per million population in 2021, down by 16.05% from the year prior – and equivalent to an indicator rank of 44.



#### 2.3.2 Gross expenditure on R&D

was equal to 1.21 % GDP in 2021, down by 0.12 percentage points from the year prior – and equivalent to an indicator rank of 34.



#### 2.3.4 QS university ranking

was equal to an average score of 31.33 for the top three universities in 2023, down by 5.35% from the year prior – and equivalent to an indicator rank of 39.

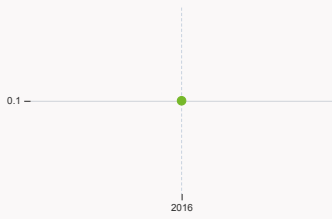
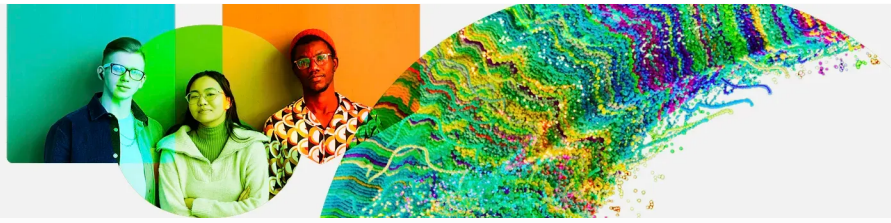


#### 4.2.4 VC received, value

was equal to 567.94 thousand USD in 2023, down by 41.81% from the year prior – and equivalent to an indicator rank of 44.



# Global Innovation Index 2024

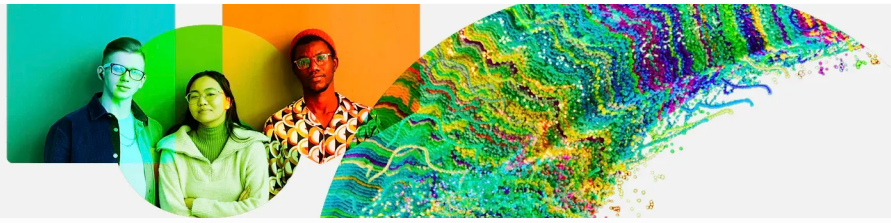


**4.3.2 Domestic industry diversification** was equal to an index score of 0.1 in 2016 – and equivalent to an indicator rank of 25.

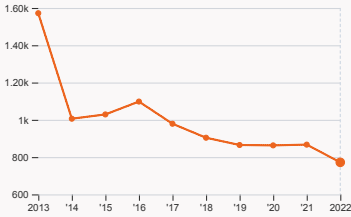


**5.1.1 Knowledge-intensive employment** was equal to 14.2 % in 2022, up by 0.54 percentage points from the year prior – and equivalent to an indicator rank of 94.

# Global Innovation Index 2024

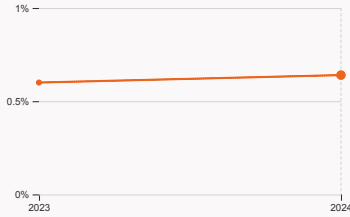


## › Innovation outputs in Thailand



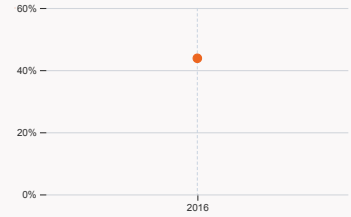
### 6.1.1 Patents by origin

was equal to 772 patents in 2022, down by 10.96% from the year prior – and equivalent to an indicator rank of 74.



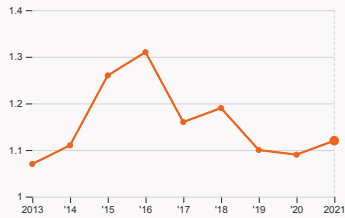
### 6.2.2 Unicorn valuation

was equal to 0.64 % GDP in 2024, up by 0.04 percentage points from the year prior – and equivalent to an indicator rank of 37.



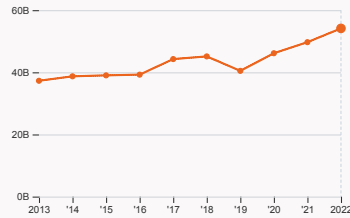
### 6.2.4 High-tech manufacturing

was equal to 43.81 % of total manufacturing output in 2016 – and equivalent to an indicator rank of 20.



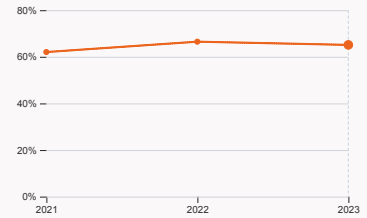
### 6.3.2 Production and export complexity

was equal to a score of 1.12 in 2021, up by 2.75% from the year prior – and equivalent to an indicator rank of 23.



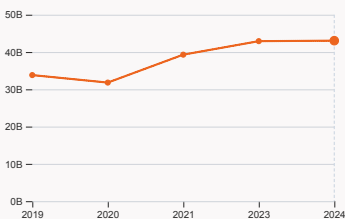
### 6.3.3 High-tech exports

was equal to 54.14 billion USD in 2022, up by 8.93% from the year prior – and equivalent to an indicator rank of 8.



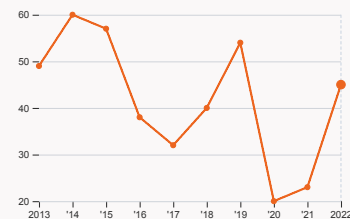
### 7.1.1 Intangible asset intensity

was equal to 65.1 % for the top 15 companies in 2023, down by 1.38 percentage points from the year prior – and equivalent to an indicator rank of 28.



### 7.1.3 Global brand value

was equal to 43.04 billion USD for the brands in the top 5,000 in 2024, up by 0.3% from the year prior – and equivalent to an indicator rank of 26.



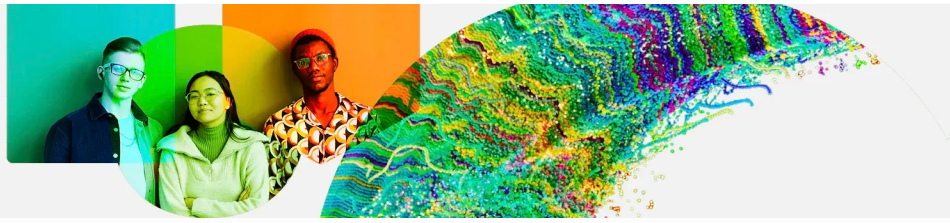
### 7.2.2 National feature films

was equal to 45 films in 2022, up by 95.65% from the year prior – and equivalent to an indicator rank of 69.



### 7.3.3 Mobile app creation

was equal to 299.49 million global downloads of mobile apps in 2023, up by 8.44% from the year prior – and equivalent to an indicator rank of 63.



## Thailand's innovation top performers

### 2.3.4 QS university ranking of Thailand's top universities

Rank	University	Score
211	CHULALONGKORN UNIVERSITY	44.30
382	MAHIDOL UNIVERSITY	29.00
571	CHIANG MAI UNIVERSITY	20.70

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2023>).  
 Note: QS Quacquarelli Symonds Ltd annually assesses over 1,200 universities across the globe and scores them between [0,100].  
 Ranks can represent a single value "x", a tie "x=" or a range "x-y".

### 6.2.2 Top Unicorn Companies in Thailand

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	ASCEND MONEY	Financial Services	Bangkok	2
2	LINE MAN WONGNAI	Consumer & Retail	Bangkok	1
2	FLASH EXPRESS	Industrials	Bangkok	1

Source: CBInsights, Tracker – The Complete List of Unicorn Companies: <https://www.cbinsights.com/research-unicorn-companies>

### 7.1.1 Top 15 intangible-asset intensive companies in Thailand

Rank	Firm	Intensity, %
1	DELTA ELECTRONICS	94.07
2	AIRPORTS OF THAILAND PUBLIC COMPANY LIMITED	85.01
3	CP ALL PUBLIC COMPANY LIMITED	77.23

Source: Brand Finance (<https://brandirectory.com/reports/gift-2022>).  
 Note: Brand Finance only provides within economy ranks.

### 7.1.3 Top 5,000 companies in Thailand with highest global brand value

Rank	Brand	Industry	Brand Value, mn USD
1	PTT	Oil & Gas	8,274.1
2	AIS	Telecoms	3,048.8
3	SCG	Engineering	2,511.5

Source: Brand Finance (<https://brandirectory.com>).  
 Note: Rank corresponds to within economy ranks.

# Global Innovation Index 2024



## Thailand

GII 2024 rank

41

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
39	41	Upper middle	SEAO	71.7	1,578.5	22,490.6
			Score / Value Rank			
<b>Institutions</b>			44.8 74	<b>Business sophistication</b> 35.4 41		
<b>1.1 Institutional environment</b>			55 63	<b>5.1 Knowledge workers</b> 39 51		
1.1.1 Operational stability for businesses*			62.7 65	5.1.1 Knowledge-intensive employment, % 14.2 94		
1.1.2 Government effectiveness*			47.3 59	5.1.2 Firms offering formal training, % 18 83		
<b>1.2 Regulatory environment</b>			46 61	5.1.3 GERD performed by business, % GDP 0.8 30		
1.2.1 Regulatory quality*			46.2 62	5.1.4 GERD financed by business, % 80.8 1		
1.2.2 Rule of law*			45.8 60	5.1.5 Females employed w/advanced degrees, % 11.3 68		
<b>1.3 Business environment</b>			33.5 92	<b>5.2 Innovation linkages</b> 24.7 60		
1.3.1 Policy stability for doing business*			34.9 97	5.2.1 Public Research-Industry co-publications, % 1.2 80		
1.3.2 Entrepreneurship policies and culture*			32 51	5.2.2 University-industry R&D collaboration+ 54.2 48		
<b>Human capital and research</b>			30.7 71	5.2.3 State of cluster development+ 45.9 68		
<b>2.1 Education</b>			39.3 100	5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP 0.02 50		
2.1.1 Expenditure on education, % GDP			2.6 112	5.2.5 Patent families/bn PPP\$ GDP 0.08 57		
2.1.2 Government funding/pupil, secondary, % GDP/cap			n/a n/a	<b>5.3 Knowledge absorption</b> 42.4 26		
2.1.3 School life expectancy, years			15.4 46	5.3.1 Intellectual property payments, % total trade 1.8 14		
2.1.4 PISA scales in reading, maths and science			394 67	5.3.2 High-tech imports, % total trade 17.8 12		
2.1.5 Pupil-teacher ratio, secondary			23.6 107	5.3.3 ICT services imports, % total trade 0.3 122		
<b>2.2 Tertiary education</b>			35.7 56	5.3.4 FDI net inflows, % GDP 1.3 94		
2.2.1 Tertiary enrolment, % gross			48.8 71	5.3.5 Research talent, % in businesses 60.8 13		
2.2.2 Graduates in science and engineering, %			31.7 14	<b>Knowledge and technology outputs</b> 29.8 39		
2.2.3 Tertiary inbound mobility, %			1.4 84	<b>6.1 Knowledge creation</b> 23.6 42		
<b>2.3 Research and development (R&amp;D)</b>			17.2 47	6.1.1 Patents by origin/bn PPP\$ GDP 0.5 74		
2.3.1 Researchers, FTE/mn pop.			1,699.1 44	6.1.2 PCT patents by origin/bn PPP\$ GDP 0.09 63		
2.3.2 Gross expenditure on R&D, % GDP			1.2 34	6.1.3 Utility models by origin/bn PPP\$ GDP 2.2 5		
2.3.3 Global corporate R&D investors, top 3, mn USD			0 41	6.1.4 Scientific and technical articles/bn PPP\$ GDP 8 85		
2.3.4 QS university ranking, top 3*			31.7 39	6.1.5 Citable documents H-index 21.5 41		
<b>Infrastructure</b>			45.8 50	<b>6.2 Knowledge impact</b> 33.2 44		
<b>3.1 Information and communication technologies (ICTs)</b>			83.2 32	6.2.1 Labor productivity growth, % -0.5 108		
3.1.1 ICT access*			93.7 53	6.2.2 Unicorn valuation, % GDP 0.6 37		
3.1.2 ICT use*			85.9 29	6.2.3 Software spending, % GDP 0.3 45		
3.1.3 Government's online service*			75.3 47	6.2.4 High-tech manufacturing, % 43.8 20		
3.1.4 E-participation*			77.9 18	<b>6.3 Knowledge diffusion</b> 32.5 36		
<b>3.2 General infrastructure</b>			37.4 43	6.3.1 Intellectual property receipts, % total trade 0.09 60		
3.2.1 Electricity output, GWh/mn pop.			2,537.6 71	6.3.2 Production and export complexity 71.2 23		
3.2.2 Logistics performance*			63.6 33	6.3.3 High-tech exports, % total trade 16.3 8		
3.2.3 Gross capital formation, % GDP			26.5 39	6.3.4 ICT services exports, % total trade 0.1 129		
<b>3.3 Ecological sustainability</b>			16.8 84	6.3.5 ISO 9001 quality/bn PPP\$ GDP 9.2 32		
3.3.1 GDP/unit of energy use			9.2 83	<b>Creative outputs</b> 34.9 38		
3.3.2 Low-carbon energy use, %			5.8 101	<b>7.1 Intangible assets</b> 39.6 38		
3.3.3 ISO 14001 environment/bn PPP\$ GDP			3.2 29	7.1.1 Intangible asset intensity, top 15, % 65.1 28		
<b>Market sophistication</b>			50.6 25	7.1.2 Trademarks by origin/bn PPP\$ GDP 21.3 83		
<b>4.1 Credit</b>			54 19	7.1.3 Global brand value, top 5,000, % GDP 7.9 26		
4.1.1 Finance for startups and scaleups+			50.1 39	7.1.4 Industrial designs by origin/bn PPP\$ GDP 2.6 33		
4.1.2 Domestic credit to private sector, % GDP			156.4 8	<b>7.2 Creative goods and services</b> 35.8 19		
4.1.3 Loans from microfinance institutions, % GDP			n/a n/a	7.2.1 Cultural and creative services exports, % total trade n/a n/a		
<b>4.2 Investment</b>			30 27	7.2.2 National feature films/mn pop. 15-69 0.8 69		
4.2.1 Market capitalization, % GDP			116.3 13	7.2.3 Entertainment and media market/th pop. 15-69 8.7 38		
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP			0.2 34	7.2.4 Creative goods exports, % total trade 7.5 7		
4.2.3 VC recipients, deals/bn PPP\$ GDP			0.2 15	<b>7.3 Online creativity</b> 24.4 70		
4.2.4 VC received, value, % GDP			0.001 44	7.3.1 Top-level domains (TLDs)/th pop. 15-69 2.4 75		
<b>4.3 Trade, diversification and market scale</b>			67.8 23	7.3.2 GitHub commits/mn pop. 15-69 4.5 82		
4.3.1 Applied tariff rate, weighted avg., %			2.6 74	7.3.3 Mobile app creation/bn PPP\$ GDP 66.3 63		
4.3.2 Domestic industry diversification			93 25			
4.3.3 Domestic market scale, bn PPP\$			1,578.5 22			

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; \* an index; + a survey question, ● that the economy's data is outdated. Square brackets [ ] indicate the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level; n/a represents missing values; a dash - indicates an indicator which is not relevant to this economy and thus not considered for DMC thresholds.



## Data availability

The following tables list indicators that are either missing or outdated for Thailand.



Thailand has missing data for three indicators and outdated data for ten indicators.

### Missing data for Thailand

Code	Indicator name	Economy Year	Model Year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	n/a	2020	UNESCO Institute for Statistics
4.1.3	Loans from microfinance institutions, % GDP	n/a	2022	International Monetary Fund, Financial Access Survey (FAS)
7.2.1	Cultural and creative services exports, % total trade	n/a	2022	World Trade Organization Global Services Trade Data Hub

### Outdated data for Thailand

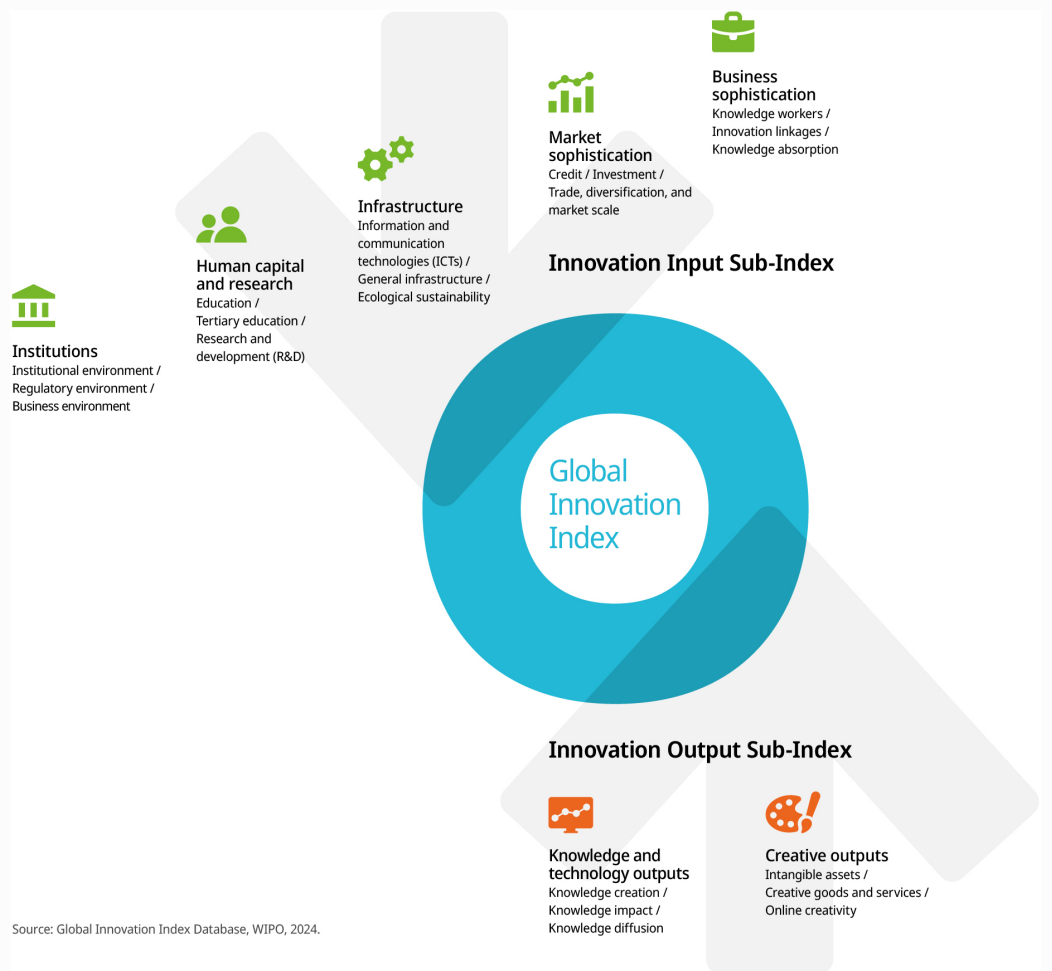
Code	Indicator name	Economy Year	Model Year	Source
2.1.3	School life expectancy, years	2020	2022	UNESCO Institute for Statistics
2.3.1	Researchers, FTE/mn pop.	2021	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
2.3.2	Gross expenditure on R&D, % GDP	2021	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
4.3.2	Domestic industry diversification	2016	2021	United Nations Industrial Development Organization (UNIDO), Industrial Statistics Database (INDSTAT) Rev.3 and 4
5.1.2	Firms offering formal training, %	2016	2023	World Bank Enterprise Surveys
5.1.3	GERD performed by business, % GDP	2017	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.4	GERD financed by business, %	2017	2021	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
5.1.5	Females employed w/advanced degrees, %	2022	2023	International Labour Organization
5.3.5	Research talent, % in businesses	2017	2022	UNESCO Institute for Statistics; Eurostat; OECD; RICYT
6.2.4	High-tech manufacturing, %	2016	2021	United Nations Industrial Development Organization

# Global Innovation Index 2024



## 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.



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.