

Series report of national innovation survey

National Innovation Index Report

2025

Chinese Academy of Science and Technology for Development



科学技术文献出版社
SCIENTIFIC AND TECHNICAL DOCUMENTATION PRESS

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· 北京 ·

图书在版编目(CIP)数据

国家创新指数报告. 2025 = National Innovation
Index Report 2025: 英文 / 中国科学技术发展战略研
究院著. -- 北京: 科学技术文献出版社, 2026. 6.
ISBN 978-7-5235-3647-6
I. F204; G322.0
China中国国家版本馆CIP数据核字第2026ZZ8312号

National Innovation Index Report 2025

策划编辑: 郝迎聪 李紫馨 责任编辑: 韩 晶 责任校对: 宋红梅 责任出版: 张志平

出 版 者 科学技术文献出版社
地 址 北京市复兴路15号 邮编 100038
出 版 部 (010) 58882903, 58882087 (传真)
发 行 部 (010) 58882868, 58882870 (传真)
官 方 网 址 www.stdp.com.cn
发 行 者 科学技术文献出版社发行 全国各地新华书店经销
印 刷 者 北京厚诚则铭印刷科技有限公司
版 次 2026年6月第1版 2026年6月第1次印刷
开 本 889×1194 1/16
字 数 344千
印 张 10.5
书 号 ISBN 978-7-5235-3647-6
定 价 86.00元



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National Innovation Index Report

2025

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Foreword

Innovation is the primary driving force for development. At present, the world is undergoing accelerated changes unseen in a century, with a new round of scientific and technological revolution and industrial transformation advancing in depth. While the global economy shows resilience, growth momentum remains insufficient. Major-power competition has become more complex and intense, and crises such as heightened geopolitical risks and the reconstruction of industrial and supply chains are emerging. China places innovation at the center of its national development agenda and vigorously implements an innovation-driven development strategy. In 2006, the Chinese government formulated and implemented the *Outline of the National Program for Medium- and Long-Term Scientific and Technological Development (2006–2020)*, setting the goal of establishing China as an innovative country by 2020. In 2022, the 20th National Congress of the Communist Party of China (CPC) officially declared that China had become an innovative country and set forth the strategic goal of reaching the forefront of innovative countries and becoming a world leader in science and technology by 2035.

In order to comprehensively monitor and evaluate the development of the country's innovation capacity, the Chinese Academy of Science and Technology for Development (CASTED) has been releasing the *National Innovation Index Report* annually since 2011. Drawing on theories and methodologies related to national competitiveness and innovation evaluation from both domestic and international sources, the report constructs an indicator system for the National Innovation Index (NII) across five dimensions: innovation resources, knowledge creation, enterprise innovation, innovation performance, and innovation governance, encompassing 43 basic indicators. It selects 60 countries worldwide as evaluation targets and uses the internationally recognized benchmarking method to calculate the NII. The data used in the report are all sourced from databases and publications of international organizations or national governments to ensure international comparability. The *National Innovation Index Report 2025* is the 14th issue of this report series. Unless otherwise specified, the indicator values in the main text are all based on 2023 data, and China's data currently exclude those from Hong Kong, Macao, and Taiwan regions.

Compared with previous reports, the current edition features an optimized indicator system. In terms of innovation resources, the indicator that reflects corporate expenditure on

basic research has been added to capture the structural dynamics of a country's basic research activities. Indicators measuring the number of students enrolled in postgraduate education and the proportion of international students in total higher education enrollment have also been added to reflect a country's capacity for cultivating high-level scientific and technological talent and appeal to international talent. On knowledge creation, the indicator that measures the number of major international S&T awards obtained has been added to reflect the contribution and global influence of a country's scientific and technological innovation achievements. On innovation performance, adjustments have been made to the indicator measuring the proportion of ICT service exports in total service exports, thereby reflecting the development of digital and information-based technology service industries. The category of innovation environment has been changed to innovation governance, and the indicator related to international standard-setting has been added to reflect market maturity and the capacity to participate in international science and technology governance. At the same time, methods for data acquisition and index calculation have been further refined.

It must be noted that due to the revision of the indicator system and the expansion of the country coverage for evaluation, direct comparison of the National Innovation Index rankings between this edition and previous years is not recommended. Unless otherwise specified, the analysis of "higher (lower) ranking compared to the previous year" in the report is all based on comparison with the previous year's results recalculated using the new indicator system.

Monitoring and evaluating changes in national innovation capacity and comparing differences in science, technology, and innovation development among countries is a challenging task that requires continuous exploration and in-depth research. We will keep pace with innovation trends to adjust and refine the indicator system, and expand the scope of countries covered in our monitoring and evaluation. We sincerely hope that through this annual series of *National Innovation Index Report*, we can provide a window for domestic and international audiences to understand the state of science, technology, and innovation development in China and other countries.

Editorial Committee of
National Innovation Index Report 2025

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Overall ranking on National Innovation Index

Ranking on innovation resources

Ranking on knowledge creation

Ranking on enterprise innovation

Ranking on innovation performance

Ranking on innovation governance



National Innovation Index Report 2025

Overall ranking on National Innovation Index

Ranking	Country	Score
1	US	100.0
2	Switzerland	83.5
3	Sweden	71.4
4	UK	70.6
5	Germany	69.2
6	Japan	69.2
7	Denmark	68.9
8	ROK	67.6
9	China	67.2
10	Netherlands	67.1
11	France	64.5
12	Israel	63.7
13	Singapore	63.3
14	Ireland	62.6
15	Finland	61.5
16	Norway	61.3
17	Belgium	58.7
18	Australia	58.1
19	Austria	57.2
20	Iceland	56.2
21	Canada	54.4
22	Luxembourg	54.2
23	New Zealand	52.0
24	Italy	50.0
25	Estonia	49.0
26	Malaysia	48.0
27	Slovenia	47.7
28	Spain	46.9
29	Czech Republic	45.9
30	Hungary	45.5
31	Portugal	45.3
32	Qatar	43.1
33	Lithuania	43.0
34	UAE	42.4
35	Greece	41.1
36	India	40.8
37	Bulgaria	40.7
38	Saudi Arabia	40.1
39	Poland	40.0
40	Chile	39.3
41	Latvia	38.8
42	Croatia	38.5
43	Romania	37.7
44	Türkiye	37.1
45	Slovakia	37.0
46	Costa Rica	36.6
47	Ukraine	35.6
48	Russia	34.5
49	South Africa	33.3
50	Thailand	32.6
51	Argentina	31.7
52	Indonesia	31.0
53	Mexico	30.8
54	Brazil	30.4
55	Morocco	29.9
56	Colombia	29.5
57	Egypt	28.8
58	Montenegro	26.7
59	Belarus	26.1
60	Iran	23.8

Ranking on innovation resources

Ranking	Country	Score
1	US	100.0
2	Germany	58.4
3	ROK	56.2
4	Japan	53.4
5	China	53.1
6	UK	52.4
7	Israel	50.8
8	Switzerland	50.5
9	Sweden	48.0
10	France	46.9
11	Netherlands	45.2
12	Singapore	45.0
13	Austria	44.9
14	Denmark	44.7
15	Belgium	44.7
16	Australia	42.4
17	Finland	41.8
18	Ireland	38.8
19	Canada	37.7
20	Italy	37.4
21	Slovenia	36.3
22	Spain	36.0
23	Norway	35.9
24	New Zealand	34.5
25	Greece	33.6
26	Luxembourg	33.5
27	Portugal	33.4
28	Czech Republic	32.9
29	Türkiye	32.6
30	Iceland	31.4
31	Russia	30.3
32	Estonia	30.0
33	Poland	28.6
34	UAE	27.7
35	Hungary	27.2
36	Malaysia	26.4
37	Iran	24.7
38	Lithuania	24.7
39	Croatia	24.5
40	Slovakia	23.9
41	Belarus	22.6
42	Chile	21.4
43	Argentina	21.3
44	India	20.1
45	Qatar	19.4
46	Latvia	19.1
47	Thailand	19.0
48	Romania	18.5
49	Mexico	18.5
50	Saudi Arabia	17.7
51	Bulgaria	16.9
52	Morocco	15.1
53	South Africa	15.0
54	Brazil	15.0
55	Costa Rica	14.6
56	Ukraine	14.4
57	Egypt	11.6
58	Colombia	10.1
59	Indonesia	9.7
60	Montenegro	6.0

Ranking on knowledge creation

Ranking	Country	Score
1	US	100.0
2	Japan	63.2
3	Switzerland	55.8
4	UK	54.4
5	ROK	48.8
6	Denmark	48.5
7	France	48.0
8	Italy	46.6
9	Germany	43.1
10	China	42.8
11	Austria	42.0
12	Netherlands	40.8
13	Sweden	40.6
14	Singapore	38.3
15	Australia	37.6
16	New Zealand	36.3
17	Iceland	35.8
18	Luxembourg	35.2
19	Ireland	35.1
20	Finland	34.4
21	Belgium	34.2
22	Israel	34.0
23	Greece	33.4
24	Qatar	33.0
25	Canada	33.0
26	South Africa	32.0
27	Romania	31.5
28	Malaysia	31.3
29	Hungary	30.9
30	Slovenia	29.8
31	Bulgaria	29.8
32	Norway	29.7
33	Latvia	29.6
34	Morocco	29.4
35	Ukraine	28.9
36	Colombia	28.9
37	UAE	28.0
38	Portugal	27.6
39	Chile	27.4
40	Egypt	26.8
41	Spain	26.8
42	Czech Republic	26.7
43	Croatia	25.5
44	Montenegro	24.7
45	Lithuania	23.2
46	Saudi Arabia	23.0
47	Estonia	22.5
48	Iran	20.7
49	India	20.5
50	Belarus	20.3
51	Costa Rica	18.9
52	Türkiye	18.5
53	Argentina	18.3
54	Poland	17.8
55	Thailand	12.7
56	Russia	12.6
57	Slovakia	11.6
58	Mexico	9.5
59	Indonesia	4.2
60	Brazil	4.2

Ranking on enterprise innovation

Ranking	Country	Score
1	US	100.0
2	Japan	63.6
3	Switzerland	55.7
4	ROK	55.7
5	Israel	53.8
6	Sweden	52.4
7	UK	50.0
8	Netherlands	48.9
9	China	47.7
10	Denmark	46.9
11	Singapore	46.4
12	Germany	46.2
13	France	41.3
14	Australia	40.5
15	Finland	39.6
16	Iceland	39.1
17	Canada	38.3
18	Luxembourg	35.6
19	Hungary	34.8
20	Slovenia	33.2
21	Belgium	32.8
22	Ireland	31.2
23	Russia	30.8
24	New Zealand	30.3
25	Estonia	30.2
26	Poland	29.0
27	India	27.9
28	Norway	27.6
29	Bulgaria	27.0
30	Türkiye	26.3
31	Spain	26.1
32	Portugal	24.6
33	Italy	24.1
34	Malaysia	24.0
35	Austria	24.0
36	Chile	24.0
37	Brazil	22.6
38	Czech Republic	22.2
39	Costa Rica	21.9
40	Croatia	21.6
41	Greece	20.3
42	South Africa	19.6
43	Ukraine	19.5
44	Saudi Arabia	19.2
45	Argentina	19.0
46	Slovakia	18.4
47	Lithuania	17.2
48	Romania	17.0
49	UAE	16.9
50	Mexico	16.0
51	Indonesia	16.0
52	Qatar	15.2
53	Latvia	14.4
54	Montenegro	14.1
55	Thailand	13.8
56	Belarus	13.7
57	Morocco	13.3
58	Egypt	12.6
59	Colombia	10.8
60	Iran	9.3

Ranking on innovation performance

Ranking	Country	Score
1	Ireland	100.0
2	Switzerland	89.3
3	Singapore	72.7
4	Israel	71.4
5	Norway	65.8
6	Sweden	60.8
7	Denmark	58.0
8	Netherlands	50.8
9	UK	50.3
10	France	47.9
11	US	47.5
12	Belgium	47.5
13	Luxembourg	47.0
14	Germany	46.9
15	Austria	45.1
16	Iceland	44.4
17	Finland	42.7
18	ROK	40.6
19	Malaysia	37.2
20	Czech Republic	36.1
21	Italy	35.7
22	Australia	35.5
23	China	35.4
24	Romania	34.4
25	New Zealand	33.7
26	Japan	33.6
27	Spain	33.3
28	Hungary	32.2
29	Bulgaria	31.4
30	Slovakia	31.4
31	India	30.7
32	Canada	30.7
33	Qatar	30.5
34	Estonia	29.9
35	Lithuania	28.8
36	UAE	28.0
37	Slovenia	27.3
38	Latvia	27.2
39	Portugal	25.9
40	Costa Rica	25.5
41	Mexico	24.7
42	Poland	24.6
43	Croatia	22.9
44	Greece	22.8
45	Chile	21.5
46	Ukraine	21.4
47	Thailand	20.7
48	Argentina	18.9
49	Brazil	18.8
50	Türkiye	16.8
51	Belarus	16.5
52	Saudi Arabia	16.0
53	Russia	15.9
54	Colombia	15.6
55	Indonesia	13.8
56	Morocco	13.5
57	Montenegro	13.0
58	Iran	11.6
59	South Africa	11.0
60	Egypt	7.2

Ranking on innovation governance

Ranking	Country	Score
1	Singapore	100.0
2	Switzerland	95.8
3	UAE	95.3
4	Finland	95.1
5	Germany	94.8
6	Sweden	93.1
7	US	93.1
8	Netherlands	92.9
9	Luxembourg	92.1
10	UK	92.0
11	Denmark	90.4
12	Norway	89.6
13	Ireland	89.2
14	Saudi Arabia	88.0
15	France	87.8
16	Australia	86.8
17	Estonia	86.7
18	China	86.1
19	Canada	86.1
20	Japan	85.5
21	ROK	85.0
22	Austria	84.3
23	Israel	84.0
24	Belgium	83.8
25	New Zealand	82.5
26	Iceland	82.0
27	Lithuania	81.6
28	Qatar	81.3
29	Malaysia	79.5
30	Portugal	76.3
31	Indonesia	76.0
32	Slovenia	72.2
33	Spain	71.8
34	Latvia	71.7
35	Czech Republic	71.4
36	Italy	70.8
37	Chile	69.4
38	Costa Rica	67.5
39	India	67.0
40	Croatia	65.7
41	South Africa	64.9
42	Ukraine	64.9
43	Hungary	64.8
44	Greece	64.6
45	Thailand	64.5
46	Bulgaria	64.2
47	Egypt	64.1
48	Poland	63.2
49	Slovakia	62.2
50	Colombia	60.0
51	Türkiye	59.0
52	Brazil	58.0
53	Romania	57.1
54	Morocco	56.7
55	Montenegro	55.0
56	Mexico	53.9
57	Argentina	53.2
58	Russia	51.4
59	Belarus	37.8
60	Iran	36.3

2

Overview of Global Innovation Landscape

Major countries have seen a slowdown in R&D expenditure growth, while R&D investment by leading enterprises in key sectors such as ICT products and services, health, and automotive manufacturing remains active

The global STI output is highly concentrated, and some countries in the Global South are gaining notable momentum

Leading countries hold significant strengths in STI, yet the innovation gap remains evident

Asia, North America and Europe remain the three pillars on the global innovation landscape, with countries in the Middle East and Latin America emerging as new forces driving the diversification of global innovation

Innovation development is closely linked to economic strength and national will, and countries such as the US, Japan, the ROK, and China have demonstrated strong innovation performance

Europe's share of R&D expenditure has declined notably, while the eastward shift of the global STI output center has become more pronounced

China's position on the global innovation landscape has further improved

I. Major countries have seen a slowdown in R&D expenditure growth, while R&D investment by leading enterprises in key sectors such as ICT products and services, health, and automotive manufacturing remains active

At present, the world is undergoing accelerated changes unseen in a century. While global growth lacks momentum, STI is emerging as a strategic arena for international competition, particularly among major countries. In 2023, R&D expenditure in major countries continued to grow, though at a slower pace, and R&D investment by leading enterprises maintained relatively rapid growth.

The growth rate of R&D expenditure in major STI countries has declined, with China facing significant pressure to maintain high levels of investment. In 2023, global R&D expenditure (in USD) increased by approximately 5.2% compared to the previous year, outpacing global economic growth. The top 10 countries in terms of R&D expenditure were the US, China, Japan, Germany, the ROK, the UK, France, Canada, Israel, and Italy, and seven of them saw a decline in R&D expenditure growth (Figure 2-1). Calculated in national currencies, R&D expenditure in the US grew by 5.4%, five percentage points lower than that of the previous year. China's R&D expenditure grew by 8.4%, a decrease of 1.7 percentage points from the previous year. The ROK's R&D expenditure grew by 5.7%, a decrease of 4.6 percentage points from the previous year. R&D expenditure in the UK and France both grew by 4.3%, dropping by 0.6 and 1.9 percentage points respectively from the previous year. Canada's R&D expenditure grew by 2.8%, a decrease of 6.2 percentage points from the previous year. Israel's R&D expenditure grew by 9.3%, a decrease of 10.1 percentage points from the previous year. Only three countries—Japan, Germany, and Italy—saw a rebound in R&D expenditure growth, increasing from 5.3%, 7.3%, and 5.0% in the previous year to 6.9%, 8.7%, and 7.7%, respectively. In comparison, China's R&D expenditure growth rate remains relatively high among major countries, roughly on par with Germany's growth rate and higher than those of the US, Japan, the UK, France, and the ROK. Under the dual pressure of intensifying international competition and domestic economic slowdown, maintaining a high and sustained level of national investment in R&D activities faces significant challenges.

Figure 2-1 Growth rate of R&D expenditure of the world's top 10 R&D spending countries (2022–2023)

	US	China	Japan	Germany	ROK	UK	France	Canada	Israel	Italy
Growth rate in 2023	5.4%	8.4%	6.9%	8.7%	5.7%	4.3%	4.3%	2.8%	9.3%	7.7%
Change from the previous year / percentage point	↓ -5.0	↓ -1.7	↑ 1.6	↑ 1.4	↓ -4.6	↓ -0.6	↓ -1.9	↓ -6.2	↓ -10.1	↑ 2.8

R&D investment by leading enterprises continues to grow rapidly, with ICT products and services, health, and automotive manufacturing being high R&D-intensive sectors. Enterprises occupy a central position in the modern national innovation system, with industry-leading enterprises being key drivers of R&D investment.

In terms of the share of R&D expenditure execution, enterprises in major countries are the main source of total R&D expenditure. Enterprise R&D expenditure accounts for 78.4% of total R&D expenditure in the US, 77.7% in China, 79% in both Japan and the ROK, and approximately 68% in major European countries like the UK, France, and Germany. According to data from the world's top 2,000 companies by R&D expenditure, in 2024, global leading high-tech enterprises invested EUR 1,446.2 billion in R&D (approximately CNY 11.9 trillion), an increase of 6.3% over the previous year. The seven countries mentioned above account for 82.6% of the companies on the top 2,000 list and 88% of total R&D investment.

- **The US** has 674 companies in the world's top 2,000 by R&D expenditure, a decrease of 31 companies from the previous year, with R&D investment totaling EUR 680.8 billion. The top three sectors by number of listed companies are health (226 companies), ICT services (153 companies), and ICT products (115 companies) (Table 2-1).

- **China** has 525 companies in the world's top 2,000 by R&D expenditure, an increase of 7 companies from the previous year, with R&D investment totaling EUR 233.2 billion. The top three sectors by number of listed companies are ICT products (129 companies), industrials (including construction, engineering, transportation, minerals & materials, etc.) (85 companies), and ICT services (62 companies).

- **Japan** has 192 companies in the world's top 2,000 by R&D expenditure, an increase of 9 companies from the previous year, with R&D investment totaling EUR 112.4 billion. The top three sectors by number of listed companies are ICT products (43 companies), industrials (including construction, engineering, transportation, minerals & materials, etc.) (28 companies), and chemicals (27 companies).

- **Germany** has 109 companies in the world's top 2,000 by R&D expenditure, a decrease of 1 company from the previous year, with R&D investment totaling EUR 114.6 billion. The top three sectors by number of listed companies are industrials (including construction, engineering, transportation, minerals & materials, etc.) (22 companies), automobiles & parts (19 companies), and health (18 companies).

- **The UK** has 57 companies in the world's top 2,000 by R&D expenditure, an increase of 2 companies from the previous year, with R&D investment totaling EUR 38.7 billion. The top three sectors by number of listed companies are health (11 companies), financial (7 companies), and ICT services (6 companies).

- **France** has 53 companies in the world's top 2,000 by R&D expenditure, an increase of 1 company from the previous year, with R&D investment totaling EUR 46.4 billion. The top three sectors by number of listed companies are health (7 companies), ICT services (7 companies), and automobiles & parts (6 companies).

- **The ROK** has 41 companies in the world's top 2,000 by R&D expenditure, unchanged from the previous year, with R&D investment totaling EUR 45.2 billion. The top three sectors by number of listed companies are industrials (including construction, engineering, transportation, minerals & materials, etc.) (8 companies), automobiles & parts (7 companies), and health (7 companies).

Table 2-1
Distribution of enterprise R&D expenditure in major countries (2024)

Sectors		US	China	Japan	Germany	UK	France	ROK
Health	R&D expenditure / EUR 100 million	1,594.3	126.8	175.1	216.8	203.0	98.8	8.6
	Number of companies in the world's top 2,000 by R&D expenditure	226	60	22	18	11	7	7
ICT services	R&D expenditure / EUR 100 million	2,769.4	393.5	103.5	64.8	15.6	35.1	16.1
	Number of companies in the world's top 2,000 by R&D expenditure	153	62	7	5	6	7	3
ICT products	R&D expenditure / EUR 100 million	1,440.7	639.7	204.4	97.9	4.1	29.2	274.9
	Number of companies in the world's top 2,000 by R&D expenditure	115	129	43	9	4	5	6
Automobiles & Parts	R&D expenditure / EUR 100 million	367.2	299.6	348.3	594.1	15.2	143.8	57.2
	Number of companies in the world's top 2,000 by R&D expenditure	32	43	26	19	4	6	7
Industrials (including construction, engineering, transportation, minerals & materials, etc.)	R&D expenditure / EUR 100 million	86.2	235.8	73.3	47.9	9.5	13.0	35.2
	Number of companies in the world's top 2,000 by R&D expenditure	30	85	28	22	5	3	8
Chemicals	R&D expenditure / EUR 100 million	56.4	37.3	64.7	37.8	4.1	5.9	5.6
	Number of companies in the world's top 2,000 by R&D expenditure	19	25	27	8	3	2	1
Aerospace & Defence	R&D expenditure / EUR 100 million	109.3	8.5	0	6.9	13.5	66.6	1.1
	Number of companies in the world's top 2,000 by R&D expenditure	14	5	0	4	2	5	1
Financial	R&D expenditure / EUR 100 million	61.5	9.8	0	25.3	67.6	2.3	0
	Number of companies in the world's top 2,000 by R&D expenditure	12	7	0	4	7	1	0
Energy	R&D expenditure / EUR 100 million	44.4	87.6	4.3	19.8	14.4	31.6	8.2
	Number of companies in the world's top 2,000 by R&D expenditure	10	19	3	5	3	6	2
Construction & Materials	R&D expenditure / EUR 100 million	3.0	286.9	11.7	3.5	0	8.2	2.4
	Number of companies in the world's top 2,000 by R&D expenditure	3	33	8	2	0	2	2
Others	R&D expenditure / EUR 100 million	275.8	206.9	138.9	31.3	40.3	29.8	42.3
	Number of companies in the world's top 2,000 by R&D expenditure	60	57	28	13	12	9	4

Source: Compiled from the results of *The 2025 EU Industrial R&D Investment Scoreboard* by the European Commission.

II. The global STI output is highly concentrated, and some countries in the Global South are gaining notable momentum

The regional distribution of global scientific, technological, and high-tech product output remains highly concentrated overall, with emerging countries such as China, India, Malaysia, and Mexico showing a notable upward trend.

In terms of scientific paper output, the top 10 countries account for nearly 90% of the total number of scientific papers worldwide (Table 2-2). In 2024, global scientific paper output remained highly concentrated. The 10 countries, i.e. China, the US, the UK, India, Germany, Italy, Japan, Canada, France, and Australia, produced a total of 2.114 million scientific papers, accounting for 89% of the global total. China and the US have a significant lead in the number of scientific papers published. China published 839,000 scientific papers, representing 35.4% of the global total, while the US published 436,000 papers, representing 18.4% of the global total. The UK, India, and Germany ranked third to fifth, each with a share slightly above 5%. In terms of growth rate, the number of scientific papers worldwide increased by 4.5% in 2024. China recorded the highest growth rate of 14.7%, making it the only country that leads in both the number and growth rate of scientific papers (Table 2-3). Other countries with relatively rapid growth in scientific paper output include Morocco and Montenegro, with growth rates of 14.2% and 12.3%, respectively. Saudi Arabia and Singapore grew by around 8.5%, and Türkiye and Thailand posted growth rates close to 6%, while India, Indonesia, and Costa Rica each recorded growth rate of approximately 5%.

Table 2-2

Number of scientific papers published by major countries worldwide (2024) ^①

Country/Region	Number of scientific papers / 10,000 pieces	Global share	Increase from the previous year
China	83.9	35.4%	14.7%
US	43.6	18.4%	-0.2%
UK	15.0	6.3%	0.6%
India	13.2	5.5%	5.1%
Germany	12.9	5.4%	0.8%
Italy	9.7	4.1%	1.0%
Japan	8.7	3.6%	0.6%
Canada	8.4	3.5%	0.1%
France	8.0	3.4%	-0.3%
Australia	8.0	3.4%	1.8%
World	237.4		4.5%

Table 2-3

Countries with the fastest growth in scientific paper publication (2024)

Country/Region	Number of scientific papers / pieces	Increase from the previous year
China	839,332	14.7%
Morocco	6,819	14.2%
Montenegro	537	12.3%
Saudi Arabia	50,479	8.7%
Singapore	19,718	8.4%
Türkiye	52,128	5.9%
Thailand	15,181	5.8%
India	131,732	5.1%
Indonesia	9,449	4.8%
Costa Rica	1,001	4.8%
World	2,373,997	4.5%

^① Values in this book are calculated using unrounded statistical data. Results may therefore differ from those derived from rounded figures.

In terms of invention patents in force, five countries, i.e. China, Japan, the US, Germany, and the ROK, each held more than one million domestic invention patents in 2024, together accounting for nearly 80% of the global total. Among them, China and Japan each had over 3 million domestic invention patents in force, accounting for one-third and one-fifth of the global total, respectively, while the US accounted for slightly more than 10% (Table 2-4). They were followed by France, Italy, Switzerland, and the UK, which together accounted for approximately 10% of the global total. Sweden, Russia, and Canada each accounted for about 1% of the global share. Looking at changes over the past decade, among the major patent countries with more than 100,000 domestic invention patents in force, China posted the fastest growth, increasing by 439.3% from 2015 to 2024, followed by Italy, India, and Austria, which grew by 370.5%, 290.4%, and 251.9%, respectively. Germany, Switzerland, the UK, and Sweden also saw an increase of more than 120% in their total patents. Among countries with fewer than 100,000 domestic invention patents in force, Poland, Saudi Arabia, Ireland, and Spain led in growth, each with an increase of 320% or more. Türkiye, Singapore, Brazil, and Mexico also more than doubled their total patents.

Table 2-4

Domestic invention patents in force in major countries worldwide (2015, 2024)

Country	Domestic invention patents in force/pieces		Global share	Growth rate	Country	Domestic invention patents in force/pieces		Global share	Growth rate
	2015	2024				2015	2024		
China	981,641	5,293,831	33.4%	439.3%	Denmark	35,226	95,859	0.6%	172.1%
Japan	2,665,716	3,148,446	19.9%	18.1%	Finland	49,867	93,601	0.6%	87.7%
US	1,335,001	1,685,406	10.6%	26.2%	Spain	19,710	82,777	0.5%	320.0%
Germany	505,394	1,264,240	8.0%	150.1%	Australia	44,348	65,628	0.4%	48.0%
ROK	676,991	1,007,339	6.4%	48.8%	Ireland	12,012	51,009	0.3%	324.7%
France	332,834	591,325	3.7%	77.7%	Norway	20,484	43,437	0.3%	112.1%
Italy	88,303	415,504	2.6%	370.5%	Singapore	15,971	43,096	0.3%	169.8%
Switzerland	151,190	362,301	2.3%	139.6%	Iran	39,475	41,255	0.3%	4.5%
UK	132,085	315,931	2.0%	139.2%	Poland	2,603	27,844	0.2%	969.7%
Sweden	91,530	210,016	1.3%	129.5%	Luxembourg	8,730	25,825	0.2%	195.8%
Russia	153,515	182,935	1.2%	19.2%	Netherlands	18,383	23,738	0.1%	29.1%
Canada	109,976	151,471	1.0%	37.7%	Brazil	8,377	21,494	0.1%	156.6%
Austria	34,904	122,832	0.8%	251.9%	Türkiye	5,782	16,965	0.1%	193.4%
India	29,922	116,829	0.7%	290.4%	Saudi Arabia	2,802	16,914	0.1%	503.6%
Belgium	39,550	99,108	0.6%	150.6%	New Zealand	9,313	15,680	0.1%	68.4%
Israel	40,586	98,949	0.6%	143.8%	Mexico	5,688	12,200	0.1%	114.5%

In terms of high-tech product production, the five leading countries, i.e. China, Germany, the US, Singapore, and the ROK together accounted for half of the global export of high-tech products in 2024 (Table 2-5). China's high-tech product production capacity is significantly ahead, with exports reaching USD 856.76 billion in 2024, accounting for 23.2% of the global total. Germany, the US, Singapore, and the ROK had comparable export scales, each accounting for approximately 6% of the global total. Looking at changes over the past decade, six countries, i.e. Ireland, India, Poland, Belgium, the Czech Republic, and Malaysia, posted the fastest growth, more than doubling their high-tech product exports. In addition, five countries, i.e. Italy, Switzerland, Singapore, Thailand, and Mexico, recorded growth of more than 50%.

Table 2-5

Exports of high-tech products in major countries worldwide (2015, 2024)

Country	Export of high-tech products/USD 100 million		Global share	Growth rate
	2015	2024		
China	6,524.12	8,567.6	23.2%	31.3%
Germany	1,994.65	2,466.4	6.7%	23.6%
US	1,753.22	2,329.1	6.3%	32.8%
Singapore	1,387.53	2,235.9	6.0%	61.1%
ROK	1,470.47	2,162.0	5.8%	47.0%
Malaysia	644.71	1,347.9	3.6%	109.1%
Ireland	306.12	1,176.4	3.2%	284.3%
France	1,097.13	1,165.9	3.2%	6.3%
Netherlands	697.79	1,030.4	2.8%	47.7%
Japan	983.94	1,024.5	2.8%	4.1%
Mexico	602.23	945.2	2.6%	57.0%
Switzerland	537.97	895.2	2.4%	66.4%
UK	746.15	847.7	2.3%	13.6%
Thailand	388.18	613.5	1.7%	58.0%
Italy	300.93	601.6	1.6%	99.9%
India	145.89	541.4	1.5%	271.1%
Czech Republic	247.66	524.2	1.4%	111.7%
Belgium	225.53	513.3	1.4%	127.6%
Poland	165.02	401.1	1.1%	143.1%
Canada	282.43	360.0	1.0%	27.5%

III. Leading countries hold significant strengths in STI, yet the innovation gap remains evident

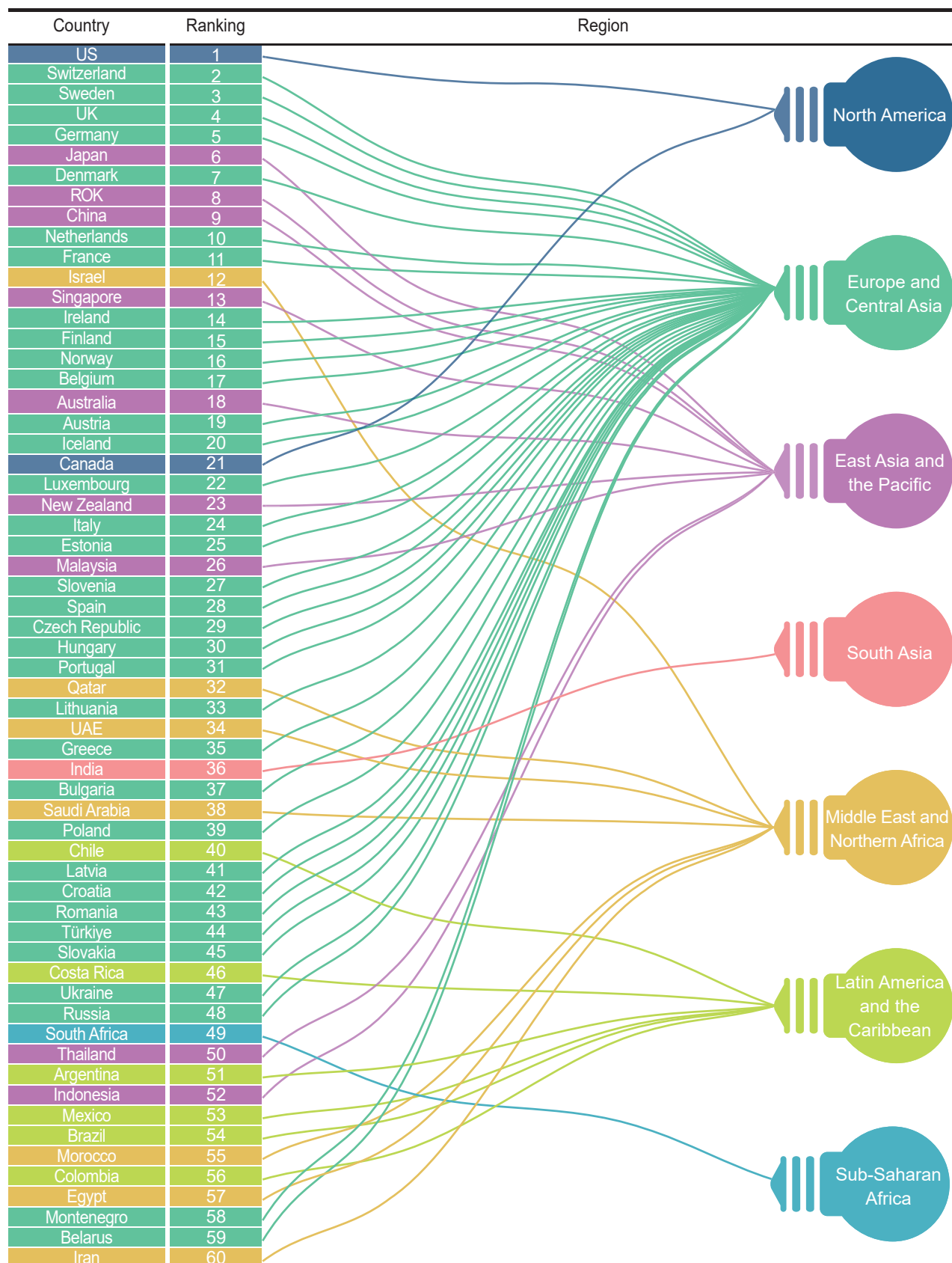
The National Innovation Index (NII) is a comprehensive index measuring a country's STI capacity. A comprehensive analysis of the historical NII evaluation results, combined with the results of major international studies on innovation capacity and competitiveness, reveals that the world's top 15 or so countries are relatively stable and are widely recognized as leading innovative countries. Our calculations show that the current global innovation landscape remains clearly structured, with relatively stable rankings for leading countries. North America has one country, the US, ranking first in the world. Asia has five countries: Japan (sixth), the ROK (eighth), China (ninth), Singapore (13th), and Israel (12th), a Middle Eastern country in West Asia. Europe occupies nine seats: Switzerland, Sweden, the UK, Germany, Denmark, the Netherlands, France, Ireland, and Finland. Among them, Switzerland, Sweden, the UK, and Germany are in the world's top five, ranking second to fifth; Denmark ranks seventh; the Netherlands and France rank 10th and 11th respectively; Ireland and Finland rank 14th and 15th respectively (Figure 2-2).

Among countries ranking 16th to 30th globally, European countries as a group stand out in performance. Norway and Belgium rank 16th and 17th respectively; Austria and Iceland rank 19th and 20th respectively. Luxembourg, Italy, Estonia, Slovenia, Spain, the Czech Republic, and Hungary rank 21st to 30th. Of all the countries in this range, only four are from other regions: Australia ranks 18th, Canada ranks 21st, New Zealand ranks 23rd, and Malaysia ranks 26th.

Among countries ranking 31st to 45th globally, the list mainly comprises countries from Central and Eastern Europe, Central Asia, and the Middle East. Portugal ranks 31st, Lithuania ranks 33rd, Greece ranks 35th, Bulgaria ranks 37th, Poland ranks 39th, and Latvia, Croatia, Romania, Türkiye, and Slovakia rank 41st to 45th. Qatar ranks 32nd, the UAE ranks 34th, and Saudi Arabia ranks 38th. India ranks 36th, and Chile ranks 40th.

Among countries ranking 46th to 60th globally, the list mainly comprises countries from Latin America, Eastern Europe, and Southeast Asia. Costa Rica ranks 46th, Argentina ranks 51st, Mexico and Brazil rank 53rd and 54th respectively, and Colombia ranks 56th. Ukraine and Russia rank 47th and 48th respectively, Montenegro ranks 58th, and Belarus ranks 59th. Thailand and Indonesia rank 50th and 52nd respectively. Morocco ranks 55th, Iran ranks 60th, Egypt ranks 57th, and South Africa ranks 49th.

Figure 2-2 Distribution of overall National Innovation Index rankings



From a cross-country perspective, the innovation gap remains substantial worldwide, with the majority of R&D activities and innovation outputs concentrated in the leading innovative countries. By calculating each country's global share of population, R&D expenditure, and GDP, it can be found that the top 15 countries in the overall NII ranking, though representing only 27.2% of the global population, account for 84.7% of global R&D expenditure and 63.3% of global GDP. The 45 countries ranking 16th to 60th, representing 39.9% of the global population, account for only 14.2% of global R&D expenditure and 28.8% of global GDP (Table 2-6).

Table 2-6

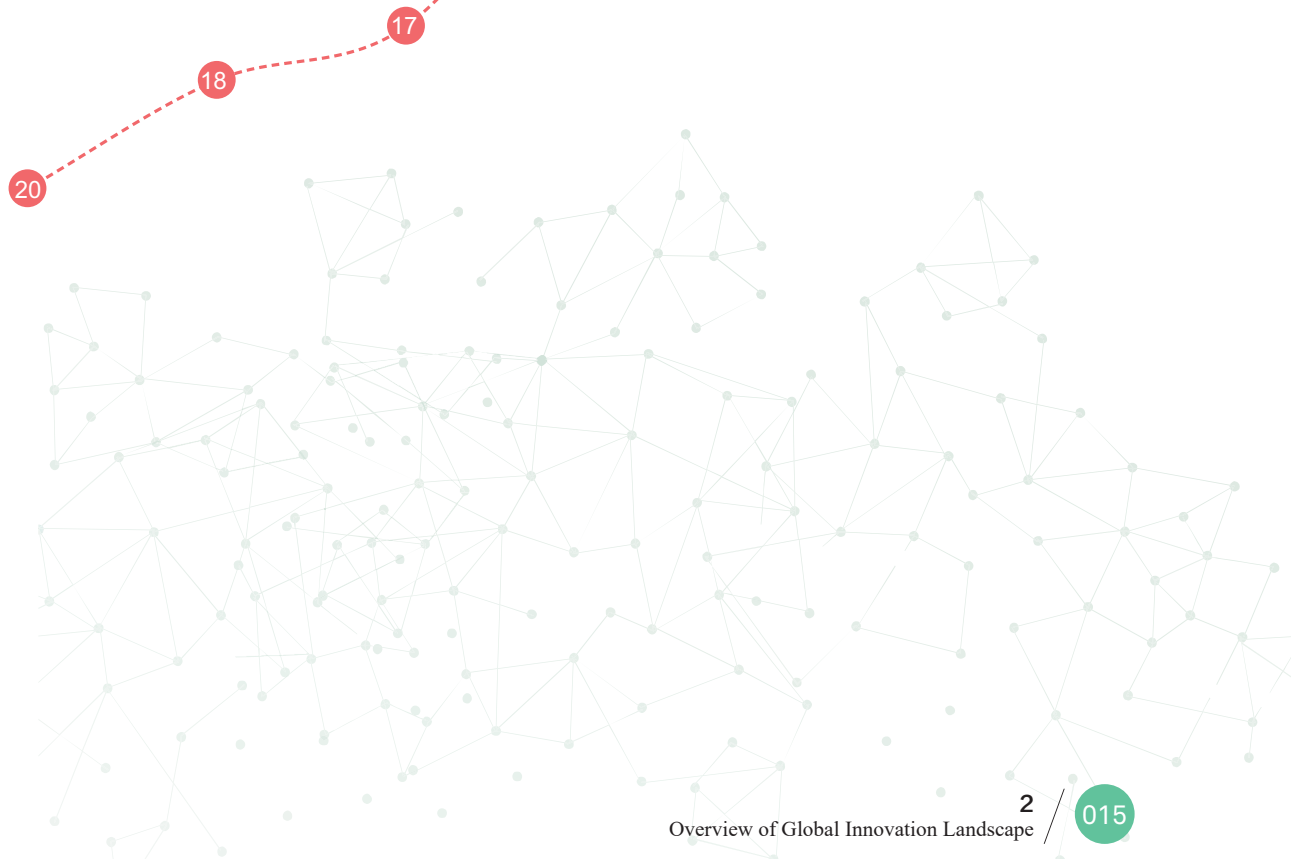
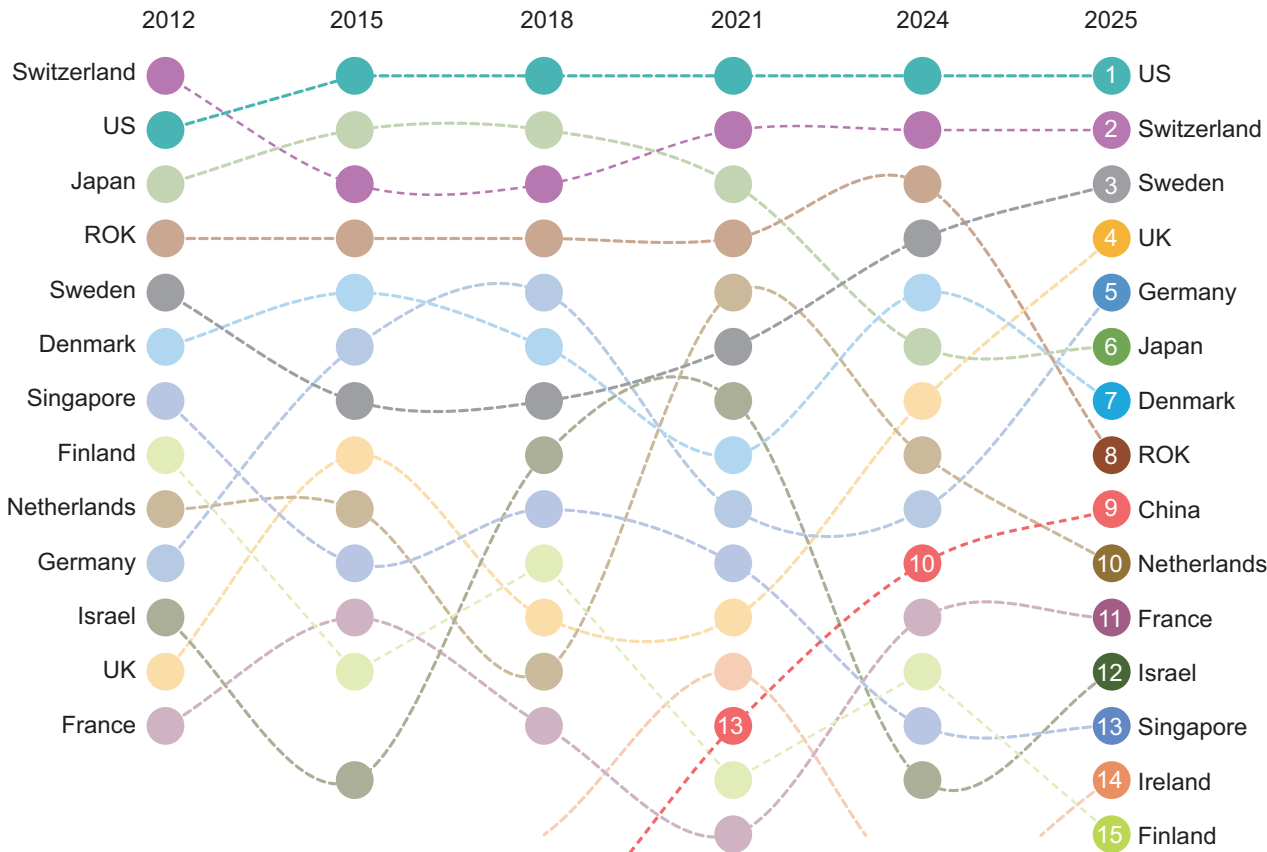
Position of leading countries on the global innovation landscape, in terms of major indicators

Top 15 countries on the overall ranking						
01	R&D/ USD 100 million	Population / 10,000 people	GDP/ USD 100 million	Share of total R&D expenditure	Share of total population	Share of total GDP
	21,104	221,277	704,648	84.7%	27.2%	63.3%

The 45 countries ranked 16th and below						
02	R&D/ USD 100 million	Population / 10,000 people	GDP/ USD 100 million	Share of total R&D expenditure	Share of total population	Share of total GDP
	3,531	324,712	320,792	14.2%	39.9%	28.8%

From a historical perspective, leading countries hold significant advantages in comprehensive STI capabilities, with their overall NII rankings remaining largely stable since 2012. Among the 15 countries, China has experienced the most substantial change in its overall ranking, jumping from the 20th place in 2012 to the ninth place in the current edition, up by 11 positions. Ireland has moved up five positions, from the 19th to the 14th place. The remaining 13 countries have remained stable, with only minor fluctuations in their rankings (Figure 2-3). The US, which ranked second in 2012, has held the top position since 2013. Switzerland has consistently remained in the top three, ranking second in 2025. The three European countries, i.e. Sweden, the UK, and Germany, have also lifted their overall rankings, ranking third to fifth in 2025. Denmark and the Netherlands have largely remained in the top ten. France's overall ranking has fluctuated between the 10th and the 15th place globally. Finland's overall ranking has fallen from around the 10th place in previous editions to the 15th place in the current edition. Japan and the ROK, the two leading countries in East Asia, have firmly held their positions in the world's top ten, with their overall rankings fluctuating within a range of five positions (or less) over the past decade, ranking sixth and eighth respectively in 2025. It is therefore evident that the leading countries hold a secure position on the global STI landscape.

Figure 2-3 Annual rankings of National Innovation Index



IV. Asia, North America and Europe remain the three pillars on the global innovation landscape, with countries in the Middle East and Latin America emerging as new forces driving the diversification of global innovation

Judging by countries' overall rankings and performance on core indicators, the regional pattern of world innovation remains largely stable. The global innovation landscape continues to be structured around the three pillars of Asia, North America, and Europe (Figure 2-4).

North America undoubtedly remains the world's strongest innovation pole. For the purpose of this report, the US and Canada have been selected for analysis. Together, the two countries account for 4.6% of the global population, 28.2% of global GDP, and 42% of global R&D expenditure, holding significant R&D strengths. The US is competitive across all dimensions, continuing to top the overall NII ranking. Among the five first-level indicators, it ranks first in innovation resources, knowledge creation, and enterprise innovation, 11th in innovation performance, and seventh in innovation governance. Canada ranks 21st overall, and stands in the top 20 in innovation resources, with enterprise innovation, and innovation governance, ranking 19th, 17th and 19th place respectively.

Europe and Central Asia have demonstrated strong overall performance. For the purpose of this report, 34 countries, including Switzerland, Germany, and France, have been selected for analysis. Together, these 34 countries account for 9.9% of the global population, 25.4% of global GDP, and 24.7% of global R&D expenditure. Nine countries from this region have made into the world's top 15. Among them, Switzerland and Sweden rank second and third overall, respectively; the UK and Germany rank fourth and fifth, respectively; Denmark and the Netherlands rank seventh and 10th, respectively; France, Ireland, and Finland rank 11th, 14th, and 15th, respectively. In Eastern Europe, Estonia, Slovenia, and Hungary are relatively ahead in overall rankings, all making their places into the world's top 30.

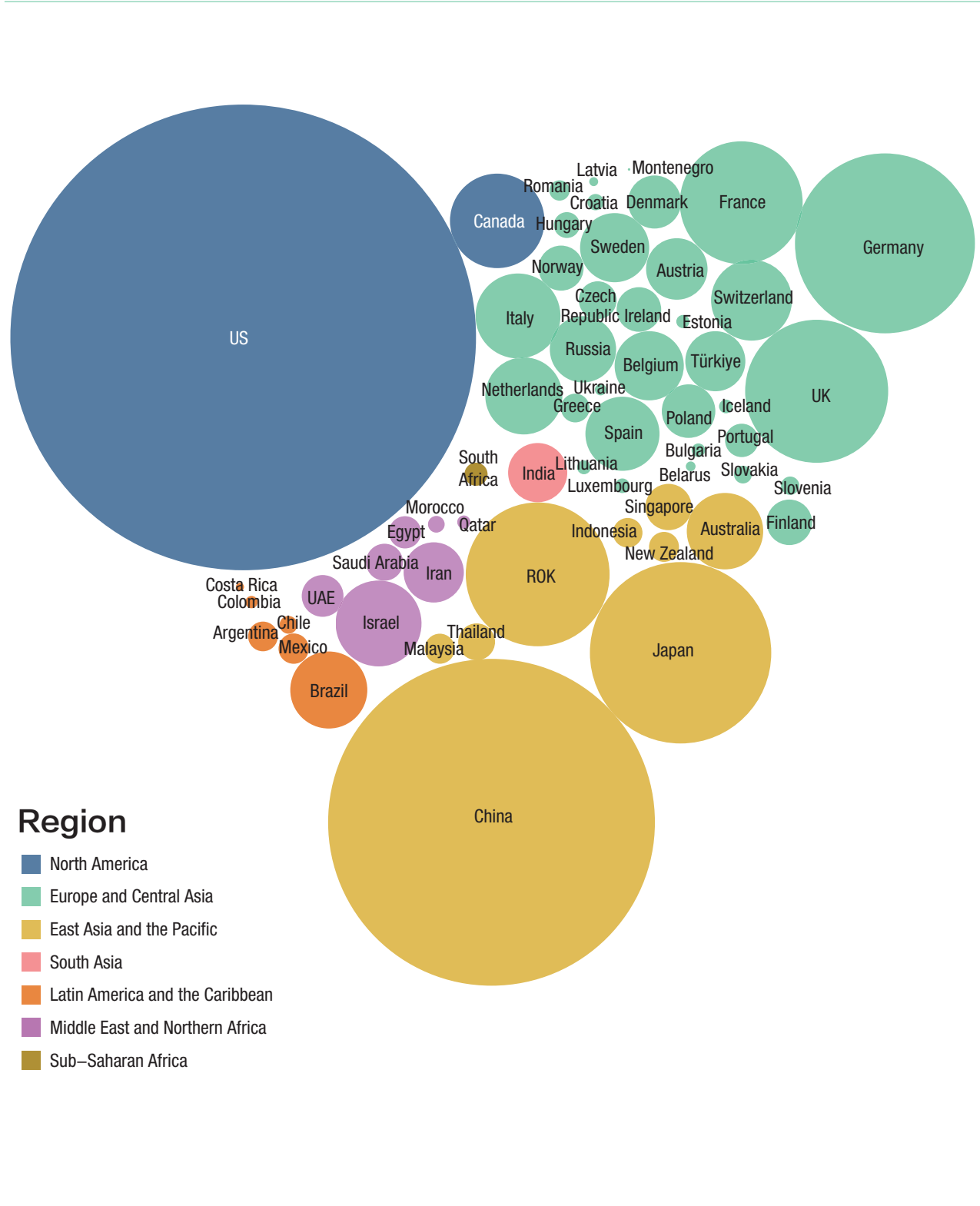
Major countries in East Asia and the Pacific are also performing well. For the purpose of this report, nine countries have been selected for analysis: Japan, the ROK, China, Singapore, Australia, New Zealand, Indonesia, Malaysia, and Thailand. Together, these nine countries account

for 24.7% of the global population, 26.6% of global GDP, and 32.1% of global R&D expenditure. The ROK and Japan rank third and fourth respectively in innovation resources, and fourth and second respectively in enterprise innovation. China ranks ninth overall, a notable highlight of innovation development in Asia and even the world. Singapore and Australia rank 13th and 18th overall, respectively. Malaysia has also delivered a strong performance, ranking 26th overall and 19th in innovation performance.

In South Asia, India represents 17.7% of the global population and 3.5% of global GDP, while its total R&D expenditure accounts for approximately 0.7% of the global total, remaining largely stable. India ranks 36th overall, 31st in innovation performance, 27th in enterprise innovation, 39th in innovation governance, and 44th and 49th respectively in innovation resources and knowledge creation. In recent years, its economic and social development has entered a fast track, and its future prospects are widely seen as promising.

In Latin America and the Caribbean, six countries have been selected for analysis: Mexico, Argentina, Brazil, Chile, Colombia, and Costa Rica. Together, these six countries account for 5.7% of the global population, 5.0% of global GDP, and 1.5% of global R&D expenditure. Chile and Costa Rica rank 40th and 46th overall, respectively. Argentina, Mexico, Brazil, and Colombia rank 51st, 53rd, 54th, and 56th overall, respectively.

In the Middle East and Africa, eight countries have been selected for analysis: Egypt, Iran, Israel, Morocco, Qatar, Saudi Arabia, the UAE, and South Africa. Together, these eight countries account for 4.5% of the global population, 3.5% of global GDP, and 3% of global R&D expenditure. Israel ranks 12th overall, while Qatar and the UAE rank 32nd and 34th, respectively. Saudi Arabia ranks 38th, South Africa ranks 49th, and Morocco, Egypt, and Iran rank between 55th and 60th.



Note: The size of the bubble is proportionate to the scale of R&D expenditure. Regional classification of countries follows the World Bank's classification standards.

V. Innovation development is closely linked to economic strength and national will, and countries such as the US, Japan, the ROK, and China have demonstrated strong innovation performance

A country's NII score is closely linked to its stage of economic development. International institutions such as the World Bank and the International Monetary Fund (IMF) generally use GDP per capita as the main indicator for the classification of economies by their development stage. As can be seen from Figure 2-5, there is a relatively significant positive correlation between countries' NII rankings and GDP per capita. In other words, countries with higher GDP per capita generally score higher on the NII. Most countries are located near the trend line in the figure, which represents the typical development path for nations. Overall, among the 60 countries, the innovation capacity of high-income countries is significantly better than that of middle-income countries. The 43 high-income countries have higher overall rankings. Among the 17 middle-income countries, only China, Malaysia, and India are able to rank among the top 40, while the other 14 middle-income countries all rank after the 40th place. This shows that economic strength is an important foundation for a country to develop its innovation capability.

There are 18 high-income countries with a GDP per capita above USD 50,000, and their overall NII rankings are basically among the world's top 20. Six countries, i.e. Switzerland, the US, Denmark, the Netherlands, Sweden, and Germany, are among the top 10 in overall global rankings. Nine countries, i.e. Ireland, Norway, Singapore, Iceland, Australia, Austria, Belgium, Finland, and Israel, rank between 10th and 20th overall. Canada and Luxembourg rank 21st and 22nd. Only Qatar, a resource-dependent country, ranks lowest in this group at the 32nd place.

There are 12 high-income countries with a GDP per capita between USD 30,000 and USD 50,000, and their overall NII rankings are generally between 20th and 30th. The UK, Japan, and the ROK rank among the world's top ten, while France ranks 11th. Six countries, i.e. New Zealand, Italy, Spain, Slovenia, the Czech Republic, and Estonia, rank between 20th and 30th. The UAE and Saudi Arabia rank in the middle, at 34th and 38th respectively.

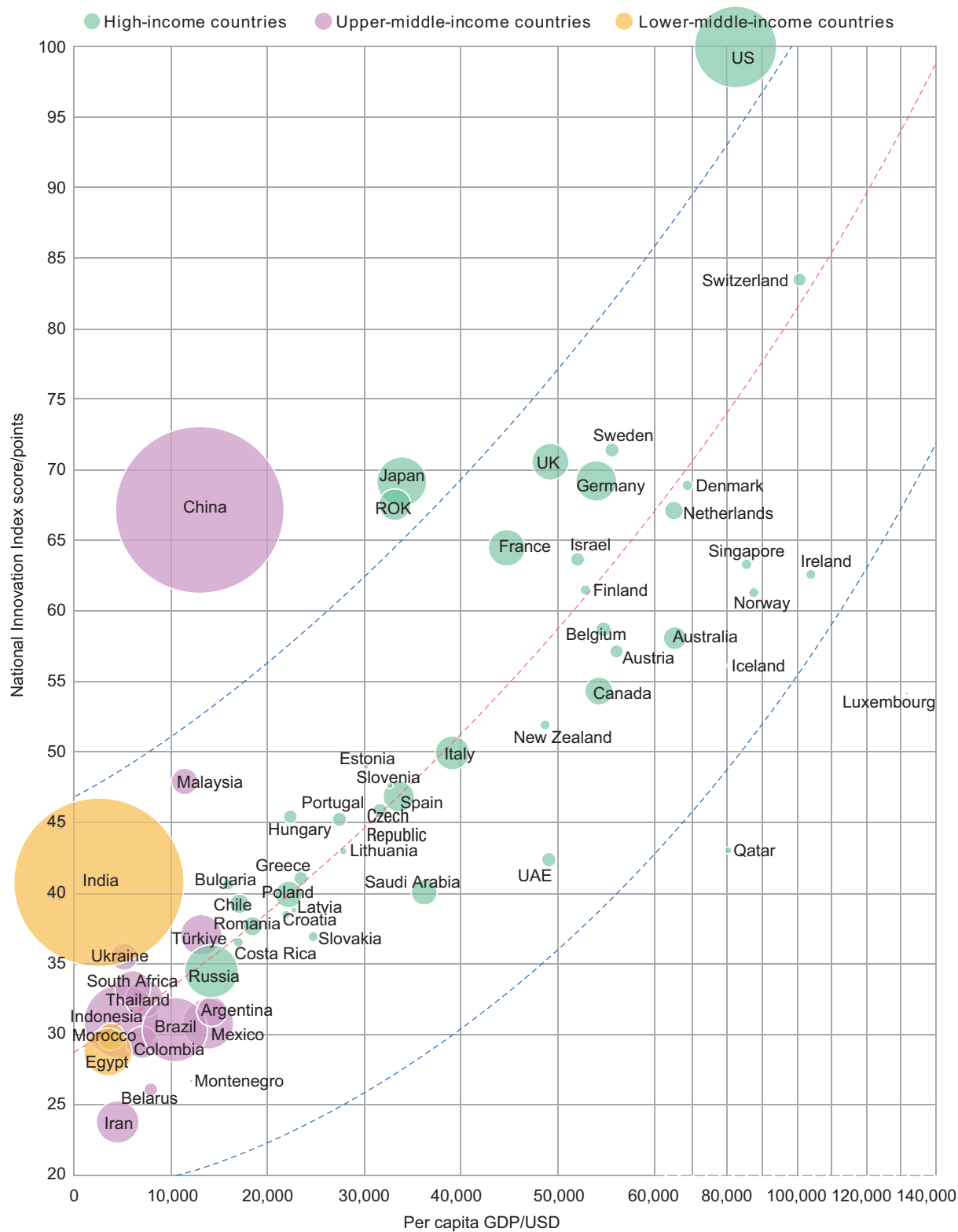
Among the 13 high-income countries with a GDP per capita below

USD 30,000, their overall NII rankings are generally between 30th and 45th in the world. Lithuania, Portugal, Greece, Hungary, Poland, Chile, and Bulgaria rank between 30th and 40th; Slovakia, Latvia, Croatia, and Romania rank between 41st and 45th; Costa Rica and Russia rank 46th and 48th respectively.

The overall NII rankings of the 17 middle-income countries are generally after the 50th place globally. Among them, three countries, i.e. China, Malaysia, and India, stand out with remarkable innovation performance. They have scored higher on the NII than their level of economic development, ranking ninth, 26th and 36th in the world, respectively. Türkiye, Ukraine, and South Africa have made into the world's top 50, ranking 44th, 47th and 49th respectively. The remaining 11 countries, i.e. Thailand, Argentina, Indonesia, Mexico, Brazil, Morocco, Colombia, Egypt, Montenegro, Belarus, and Iran, rank sequentially from the 50th to the 60th place.

Compared to their level of economic development, the US, Japan, the ROK, China, as well as Malaysia and India, stand out. The US has a GDP per capita of USD 82,000, which is lower than that of Luxembourg, Ireland, Switzerland, Norway, and Singapore, yet its comprehensive innovation strength far exceeds that of all other countries in the world. Japan and the ROK both have a GDP per capita of approximately USD 33,000, ranking around the 25th place globally in terms of GDP per capita, yet their overall NII rankings have long been firmly in the world's top 10. China is the only middle-income country to make into the world's top 10, with a GDP per capita of USD 13,000 and an overall NII ranking of ninth, which is comparable to the innovation capacity of countries with a GDP per capita of around USD 50,000. Malaysia has a GDP per capita of USD 11,000 and an overall NII ranking of 26th, comparable to the innovation capacity of countries with a GDP per capita of around USD 30,000. India has a GDP per capita of USD 2,530 and an overall NII ranking of 36th, comparable to the innovation capacity of countries with a GDP per capita of around USD 20,000.

Figure 2-5 Per capita GDP and scores of countries on National Innovation Index



Note: The size of the circle in the figure is proportionate to the size of population.

The improvement of innovation capability is also closely linked to a country's innovation strategy and willpower. A common feature shared by countries with strong innovation performance, i.e. the US, Japan, the ROK, and China, is that their governments all attach great importance to the role of STI strategies in national development. The US pursues a strategy to ensure global leadership across all fields of science and technology, positioning innovation as a core pillar for sustaining economic development and maintaining global preeminence. Japan places greater emphasis on its development strategy of building a technology-oriented nation and an intellectual property-oriented nation, regarding STI as a fundamental guarantee for ensuring national economic development and social security. The ROK maintains a high level of R&D investment, supports large conglomerates in seeking breakthroughs in specific areas, and relies on the progress in science and technology to enhance national competitiveness. The Chinese government places innovation at the center of its national development strategy, coordinating efforts to boost China's strength in education, science and technology, and human resources while enhancing the overall performance of the national innovation system. It is also worth noting that in recent years, Malaysia has embarked on the path toward green and digital transformation by introducing the *National Semiconductor Strategy* and the *Artificial Intelligence Nation Framework*, and gained strong momentum in STI, the digital economy, and green transition through targeted policies and industrial planning. India's innovation development strategy centers on "inclusive innovation" and "technological self-reliance", driving the country's transformation from a major service economy to an innovation-driven economy through five pathways: policy guidance, digital infrastructure, industrial upgrading, international cooperation, and educational reform.

VI. Europe's share of R&D expenditure has declined notably, while the eastward shift of the global STI output center has become more pronounced

As revealed by the changes in key NII indicators, the global STI center is gradually shifting eastward, with Asian countries rising in status on the global innovation landscape. In terms of STI funding and human resource input, North America's position remains relatively stable, Europe's share has notably declined, and Asia's share has risen significantly. In terms of scientific and technological output, North America and Europe have seen substantial declines in their shares, while Asia has moved up by a visible margin.

In terms of the regional distribution of global R&D expenditure, the share of East and South Asian countries in the Asian region increased from 27.2% in 2010 to 30.0% in 2023, up by 2.8 percentage points. Among them, China's share of global R&D expenditure increased from 8.5% in 2010 to 19.1% in 2023, up by 10.6 percentage points, making it a key driver in the eastward shift of the global STI center. The share of North American countries increased from 35.6% in 2010 to 40.4% in 2023. Among them, the US maintained its share at around 36% from 2015 to 2021, rising thereafter due to increased funding and exchange rate fluctuations. European countries have seen a notable decline in their shares, dropping from 29.5% in 2010 to 22.6% in 2023, down by 6.9 percentage points. Germany, France, and the UK together account for over half of Europe's R&D expenditure.

In terms of the regional distribution of global R&D personnel, the share of East and South Asian

countries in the Asian region has seen a continuous rise, increasing from 37.8% in 2010 to 50.0% in 2023, up by 12.2 percentage points. Among them, China's R&D personnel accounts for nearly 40% of the global total, exceeding the combined total of the US, Germany, France, the UK, Japan, the ROK, Australia, and Canada. The share of North American countries was 24.1% in 2010 and fell to 16.1% in 2023, with the US accounting for approximately 14.5% of the global total. The share of European countries declined significantly, from 30.5% in 2010 to 24.6% in 2023, down by 5.9 percentage points.

Shifting priorities in the input of STI resources have resulted in a corresponding shift in the output of innovation activities. In terms of the regional distribution of global scientific papers, the share of East and South Asian countries in the Asian region continuously climbed from 23.2% in 2010 to 46.7% in 2023, up by 23.5 percentage points. The share of North American countries dropped from 32.9% in 2010 to 22.9% in 2023, down by 10 percentage points. The share of European countries dropped from 46.9% in 2010 to 42.1% in 2023, down by 4.8 percentage points.

In terms of invention patents in force, the share of East and South Asian countries in the Asian region rose from 58.5% in 2010 to 70.9% in 2023, up by 12.4 percentage points. The share of European countries has remained largely stable at around 10%. The share of North American countries dropped from 31.6% in 2010 to 17.5% in 2023, down by 14.1 percentage points (Figure 2-6).

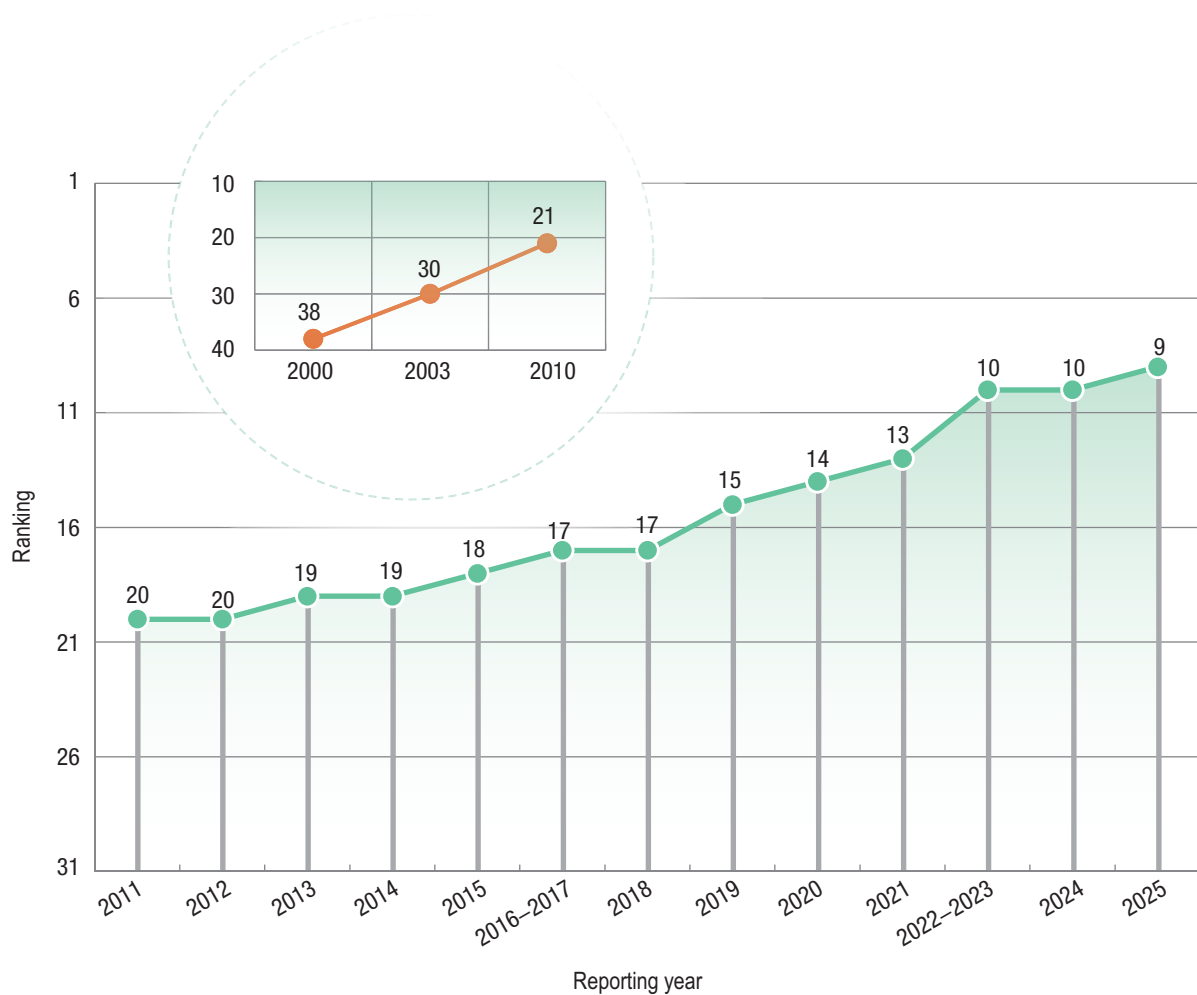
Figure 2-6 Changes in the share of the world's major regions in STI input and output



VII. China's position on the global innovation landscape has further improved

China has made the most significant progress in STI development among all countries over the past decade, establishing itself as a major force on the global innovation landscape. In terms of NII ranking, China remained below the 30th place before 2003. After breaking into the top 20 in 2011, its ranking rose steadily, jumping into the world's top 15 by 2019. China ranked 10th in both 2023 and 2024, and further improved to the ninth place in 2025, demonstrating a consistent upward trajectory within the leading group of innovative nations. (Figure 2-7).

Figure 2-7 China's National Innovation Index ranking in the world



In recent years, China has seen varying degrees of improvement across the five first-tier NII indicators, yet a significant gap remains compared with top-ranking countries. In 2024, China's scores on innovation resources, knowledge creation, enterprise innovation, innovation performance, and innovation governance stood at 53.1, 42.8, 47.7, 35.4, and 86.1, ranking fifth, 10th, ninth, 23rd, and 18th, respectively. As shown in Figure 2-8, China has already reached levels comparable to leading innovative countries in innovation resources and knowledge creation, though further efforts are needed in enterprise innovation and innovation governance. The gap in innovation performance, however, remains relatively wide.

Figure 2-8 China and the top five countries on the National Innovation Index ranking



Looking at the international rankings for individual indicators, China is already a global leader with clear advantages on some indicators, but also lagging behind on others for an extended period. Among the 43 basic indicators, China has made into the global top five on 11 indicators, including eight in the top three. However, there are also 13 indicators where China ranks below 30th. Additionally, China has scored less than 60 points on 30 indicators. Indicators where China lags in either ranking or score largely reflect weak links in its innovation development and may constrain future NII progress. How to sustain existing innovation strengths while addressing and reversing weak links represents a critical challenge for China as it pursues innovation-driven high-quality development (Table 2-7).

Table 2-7

China's main leading and lagging indicators

Leading indicators	Ranking	Lagging indicators	Ranking
Share of global R&D expenditure	2	Proportion of basic research expenditure in total R&D expenditure	47
Number of the world's first-tier research institutions	2	Proportion of enterprise basic research expenditure in national basic research expenditure	34
Proportion of STEM graduates in all college graduates	1	R&D personnel per 10,000 employed individuals	35
Number of highly cited scientists	2	Gross enrollment ratio in higher education	42
Average score of the top three domestic universities in the world university rankings top 500	4	Proportion of international students in total higher education enrollment	55
Number of students enrolled in postgraduate education	2	Number of S&T papers per USD 1 million of R&D expenditure	49
Invention patents in force per 10,000 employed individuals	7	Proportion of highly cited papers in all domestic papers	39
Number of industrial design applications per USD 100 million of industrial value-added	1	Labor productivity	48
Triadic patents as a share of the world's total	3	Economic output per unit of energy consumption	51
Economic growth rate	4	Economic output per unit of CO ₂ emission	52
Number of high-growth technology companies	2	Rule-of-law environment	47
Proportion of high-tech products in total manufacturing exports	9	Proportion of international co-authored papers in all domestic papers	60
Number of technical (sub) committees of the International Organization for Standardization	5	Ratio of international investment to GDP	51
Entrepreneurial culture	8		



3

Innovation Resources

The distribution of global innovation resources is highly uneven

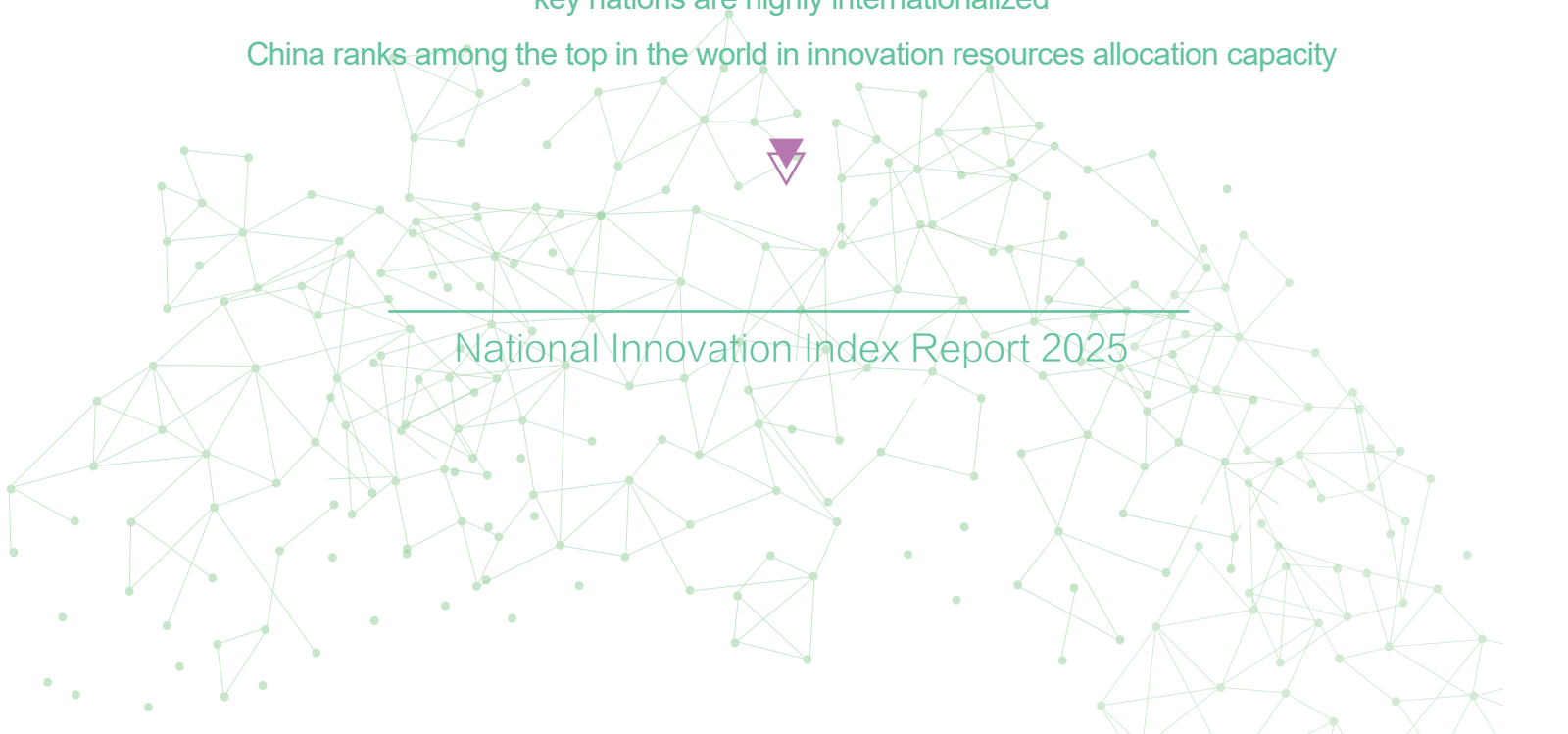
R&D expenditure is highly concentrated, with a clear advantage for leading countries in investment

High-income countries have a high density of talent, while middle-income countries place great emphasis on talent cultivation

Major innovative countries are home to top-tier research institutions, while emerging countries are making their mark

Many countries have achieved universal access to higher education, and several smaller but key nations are highly internationalized

China ranks among the top in the world in innovation resources allocation capacity



National Innovation Index Report 2025

Innovation resources are the cornerstone of a country's sustained innovation. The factor concerns not only the society-wide investment in innovation activities but also the allocation structure of innovation resources, the development of the talent pool, and the cultivation of future talent. The innovation resources sub-index measures a country's capacity to allocate innovation resources with 12 indicators: R&D expenditure as a percentage of GDP; share of global R&D expenditure; proportion of basic research expenditure in total R&D expenditure; proportion of enterprise basic research expenditure in national basic research expenditure; number of the world's first-tier research institutions; proportion of STEM graduates in all college graduates; R&D personnel per 10,000 employed individuals; number of highly cited scientists; gross enrollment ratio in higher education; average score of the top three domestic universities in the world university rankings top 500; number of students enrolled in postgraduate education; and proportion of international students in total higher education enrollment.

I. The distribution of global innovation resources is highly uneven

In the ranking of the innovation resources sub-index, high-level innovation resources are concentrated in high-income countries, highlighting a notably uneven distribution worldwide. The US leads by a significant margin, standing alone in the top tier. A total of 16 countries fall into the advantage tier with scores between 40 and 60 (excluding 60). Among them, Germany and the ROK, with scores exceeding 55, rank second and third respectively. Japan, China, the UK, Israel, and Switzerland all score above 50, ranking fourth to eighth. China is the only middle-income country to make into the top 10. Innovative countries such as Sweden, France, the Netherlands, and Singapore are also in this group. Most countries (27) have scores between 20 and 40, including high-income countries like Canada and Italy, as well as middle-income countries such as Türkiye and Argentina. Russia, India, the UAE and Iran, four BRICS countries, also fall within this range. 16 countries, including Qatar, Latvia, and Thailand, have scores below 20, with five BRICS countries—Saudi Arabia, South Africa, Brazil, Egypt, and Indonesia—also in this group (Figure 3-1).

II. R&D expenditure is highly concentrated, with a clear advantage for leading countries in investment

Innovative countries maintain a high intensity of R&D expenditure. Israel (6.35%) and the ROK (4.96%) are the only two countries globally where R&D spending exceeds 4% of GDP, giving them a clear leading advantage. Nine countries, including Sweden, the US, Japan, Switzerland, and Germany, have ratios between 3% and 3.7%, together forming the leading tier. Six countries, including the UK, Iceland, China, the Netherlands, France, and Slovenia, fall between 2% and 2.7%. Among them, China is the only middle-income country to enter this tier. A few middle-income countries, such as Türkiye, Thailand, Brazil and Egypt, have ratios between 1% and 2%, while the vast majority of middle-income countries fall below 1% (Figure 3-2).

Figure 3-1 Global rankings and scores of countries under the sub-index of innovation resources

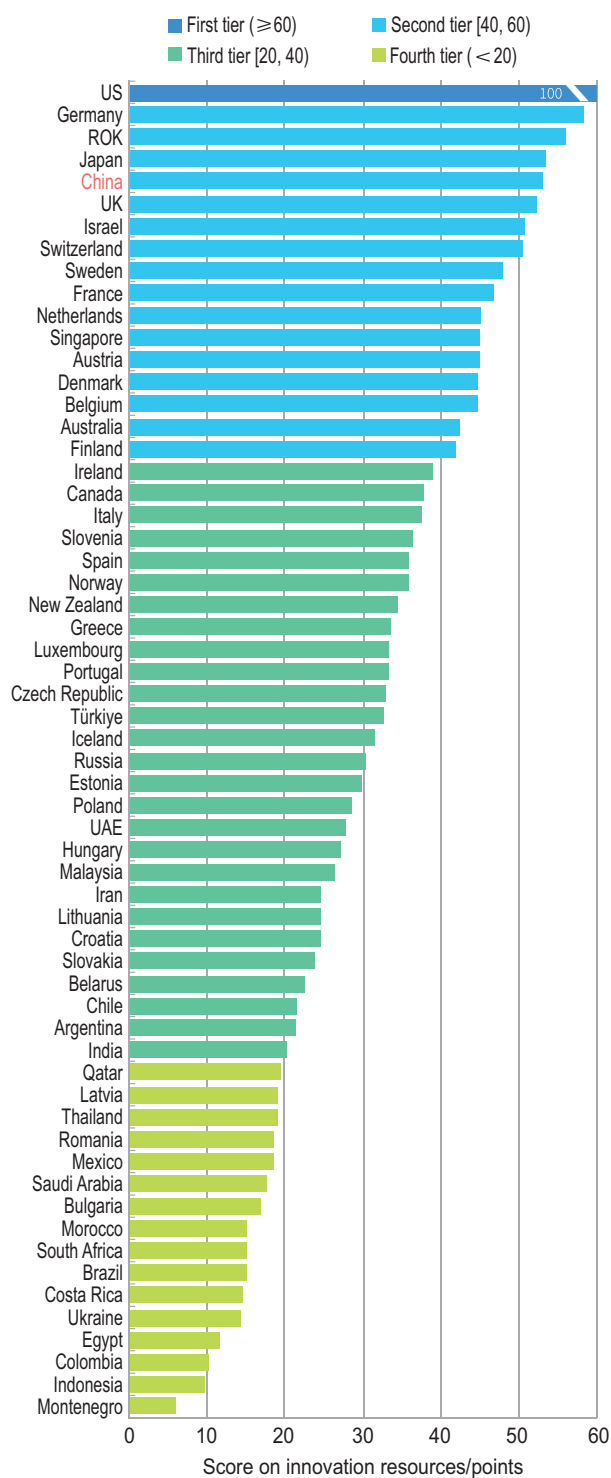
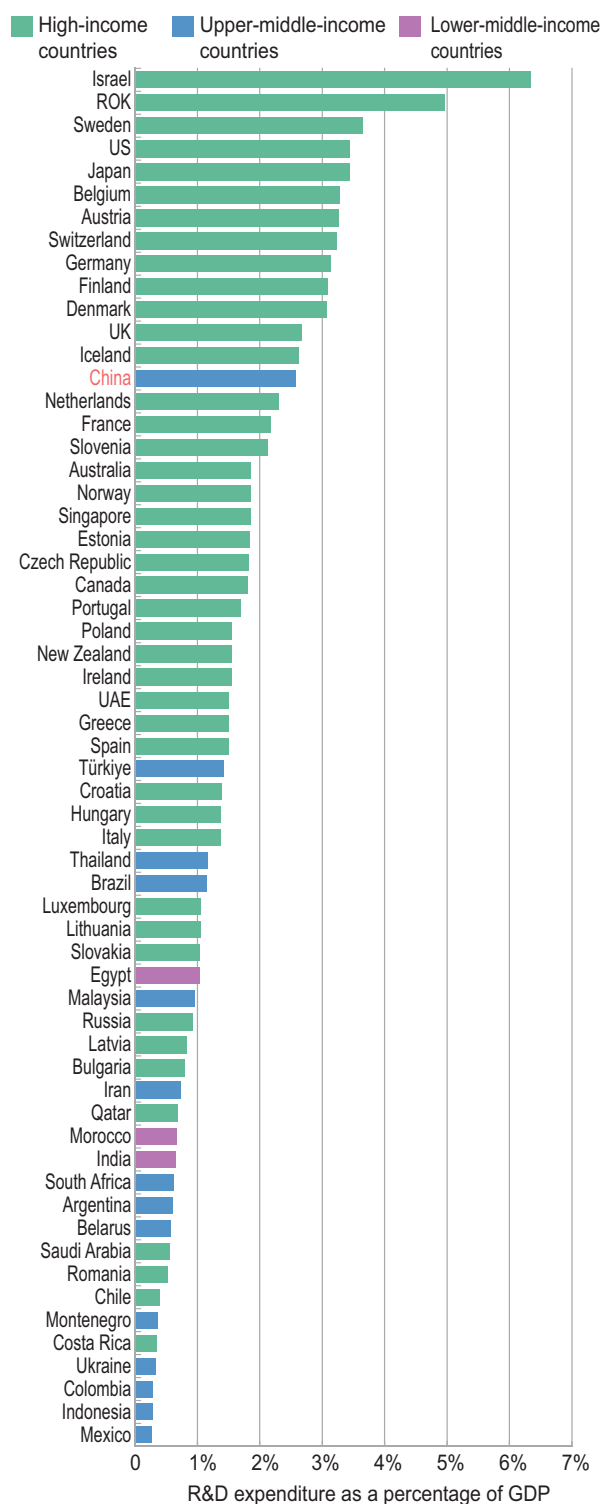
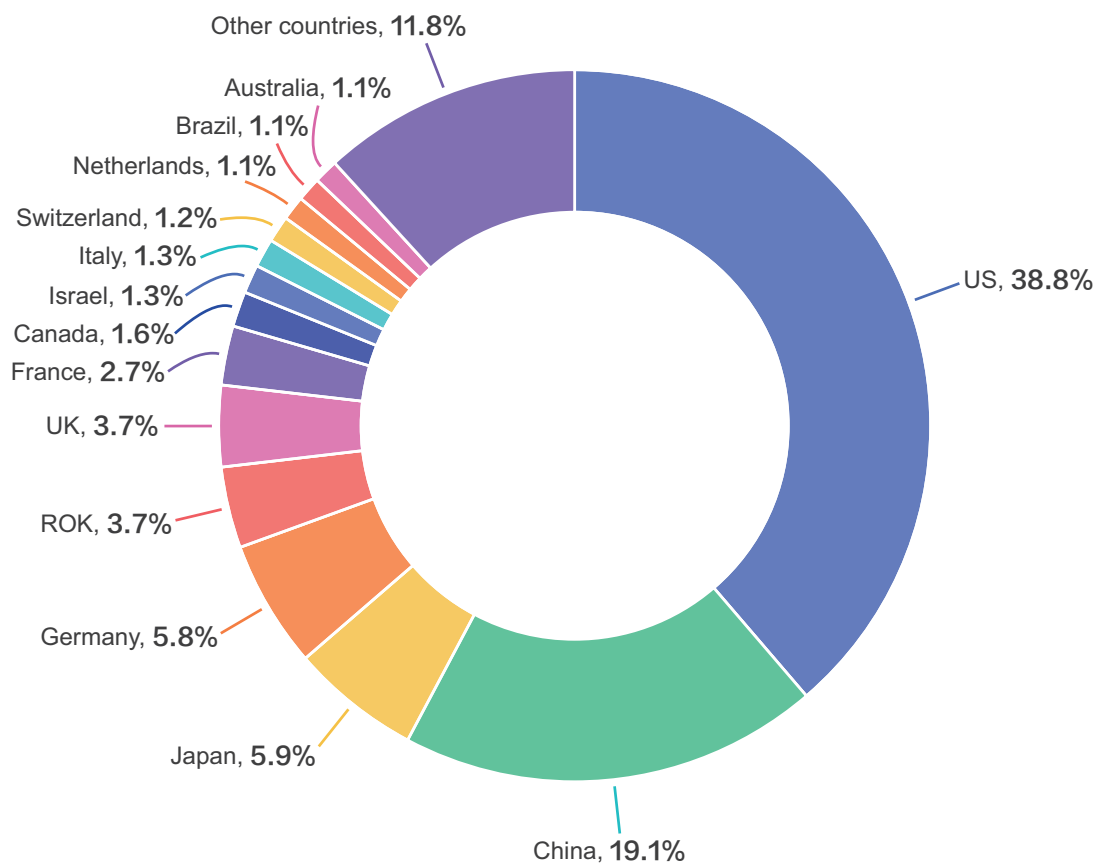


Figure 3-2 R&D expenditure as a percentage of GDP



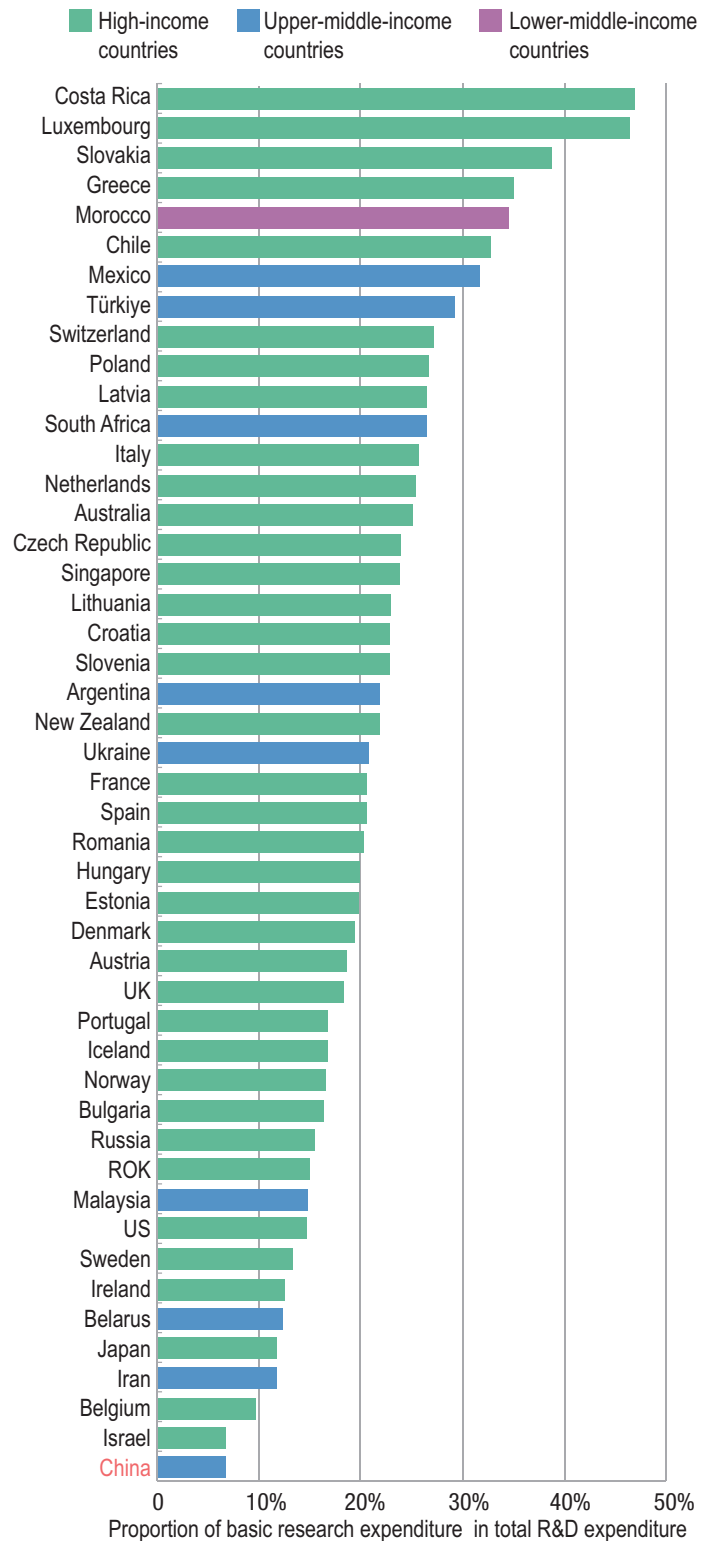
Global R&D expenditure is highly concentrated, with a few countries dominating. The R&D expenditure in the US accounts for 38.8% of the total of the 60 countries, ranking first. China accounts for 19.1%, ranking second. Japan and Germany each account for close to 6%, the ROK and the UK each account for over 3.5%, and France accounts for over 2.5%. Together, these seven countries account for nearly 80% of the total. Seven countries, including Canada, Israel, Italy, Switzerland, the Netherlands, Brazil and Australia, each account for 1% to 2%, while the remaining countries each account for less than 1% (Figure 3-3).

Figure 3-3 Share of global R&D expenditure



The proportion of basic research expenditure varies significantly across countries, with some smaller nations standing out. This is primarily because smaller nations have limited R&D investment, relatively weak enterprise R&D capabilities, and often focus on basic science, relying heavily on international scientific collaboration. For example, Costa Rica and Luxembourg have the highest proportions of basic research expenditure in total R&D expenditure, both exceeding 46%. Slovakia, Greece, Morocco, Chile and Mexico have proportions between 30% and 40%. Most European countries have proportions above 15%, with Switzerland, Poland, Latvia, Italy and the Netherlands all exceeding 25%. In contrast, the ROK, the US and Japan have relatively low proportions, at 14.9%, 14.5%, and 11.8%, respectively. Middle-income countries show wide variation. Morocco, Mexico, Türkiye and South Africa have relatively high proportions, all above 25%; Argentina and Ukraine are at around 21%; Malaysia, Belarus and Iran have proportions between 10% and 15%; and China has a proportion of 6.8% (Figure 3-4).

Figure 3-4 Proportion of basic research expenditure in total R&D expenditure



The extent of enterprise participation in basic research varies across countries, and in some countries, the dominant role of enterprises is highly visible.

Ireland, the ROK, and Singapore are the three countries where the proportion of enterprise basic research expenditure in national basic research expenditure exceeds 50%, at 60.3%, 57.6%, and 53.1%, respectively. Japan also has a relatively high proportion at 46.1%. Six countries, i.e. Israel, Türkiye, Belgium, the US, Greece, and the Netherlands, each have proportions exceeding 30%. 10 countries, including Sweden, Switzerland, France and the UK, have proportions exceeding 20%. Nine countries, including Romania, Denmark, South Africa and Russia, have proportions exceeding 10%. Thirteen countries, including China, have proportions below 10% (Figure 3-5).

III. High-income countries have a high density of talent, while middle-income countries place great emphasis on talent cultivation

Some middle-income countries place great emphasis on cultivating their own STEM talent, while the proportion of STEM graduates in all college graduates is less than one-third in most high-income countries. China has the highest proportion, at 46.4%, followed by Malaysia, which has also exceeded 40%. Belarus, the UAE, Singapore, Germany and Iran have all surpassed 35%, while Thailand, Russia, Japan, the ROK and Austria have each exceeded 30%. Most other countries fall within the 15% to 30% range, including the US at 21.8%, the UK at 22.8%, and France at 24.5% (Figure 3-6).

Figure 3-5 Proportion of enterprise basic research expenditure in national basic research expenditure

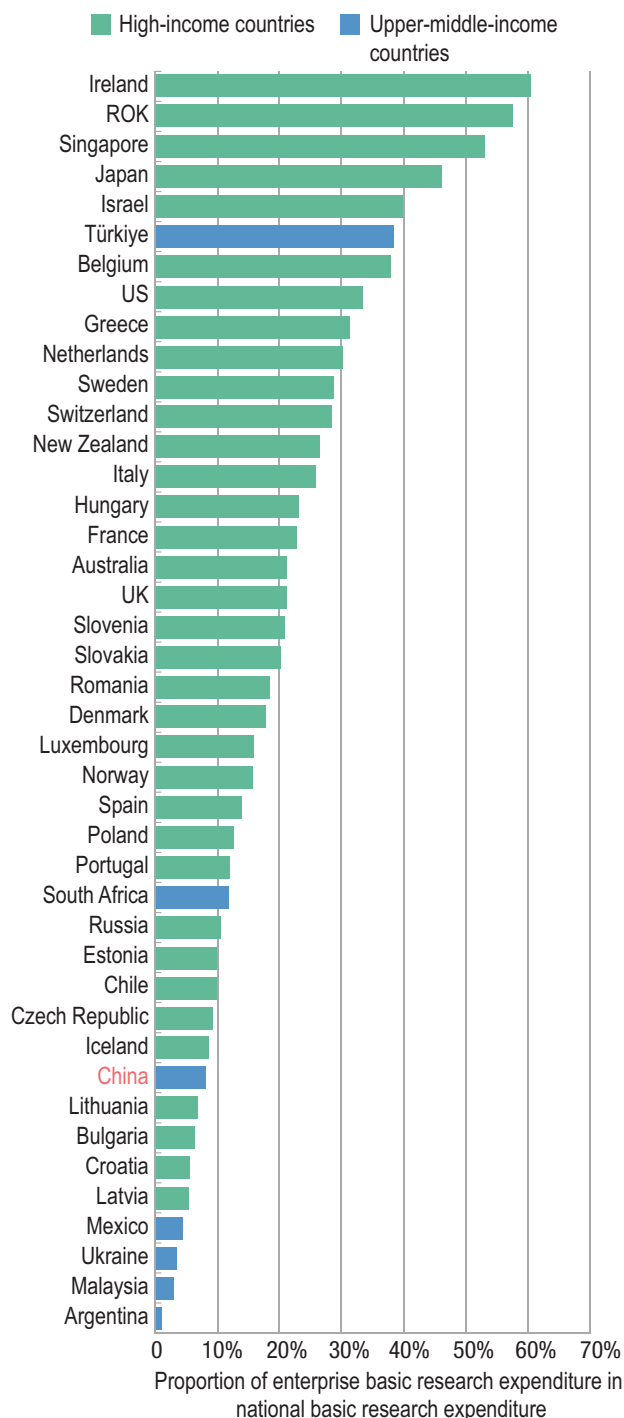
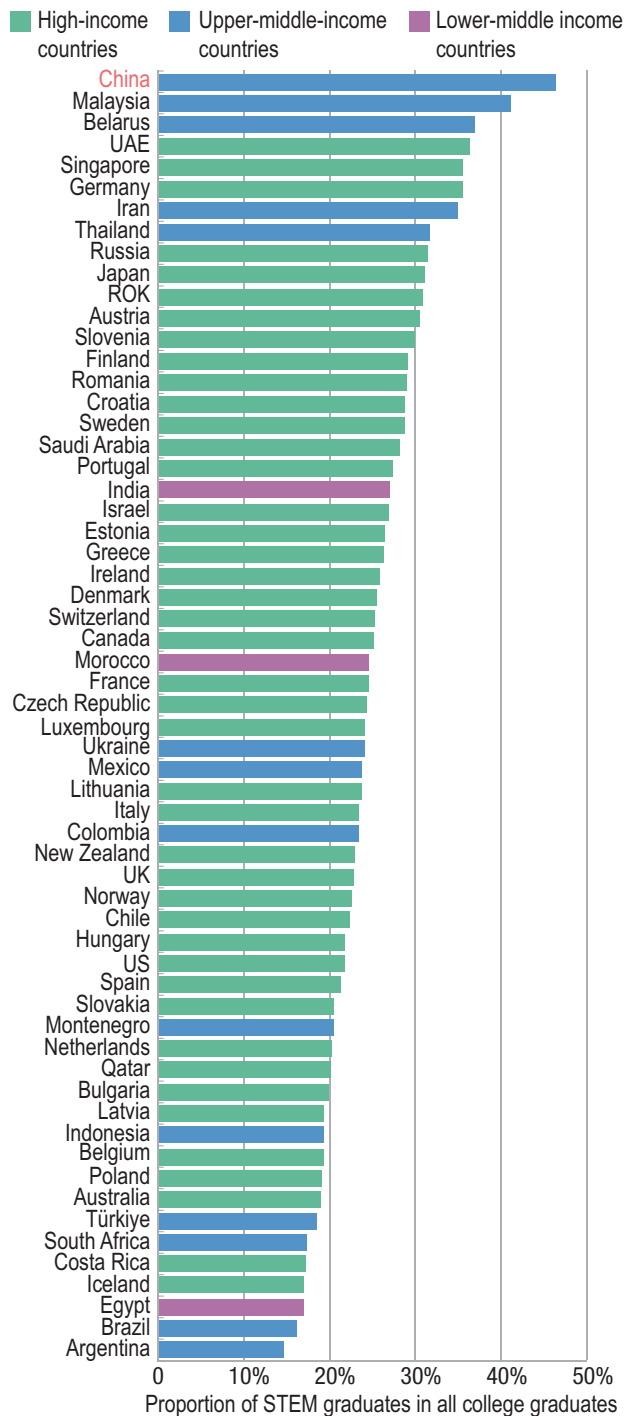


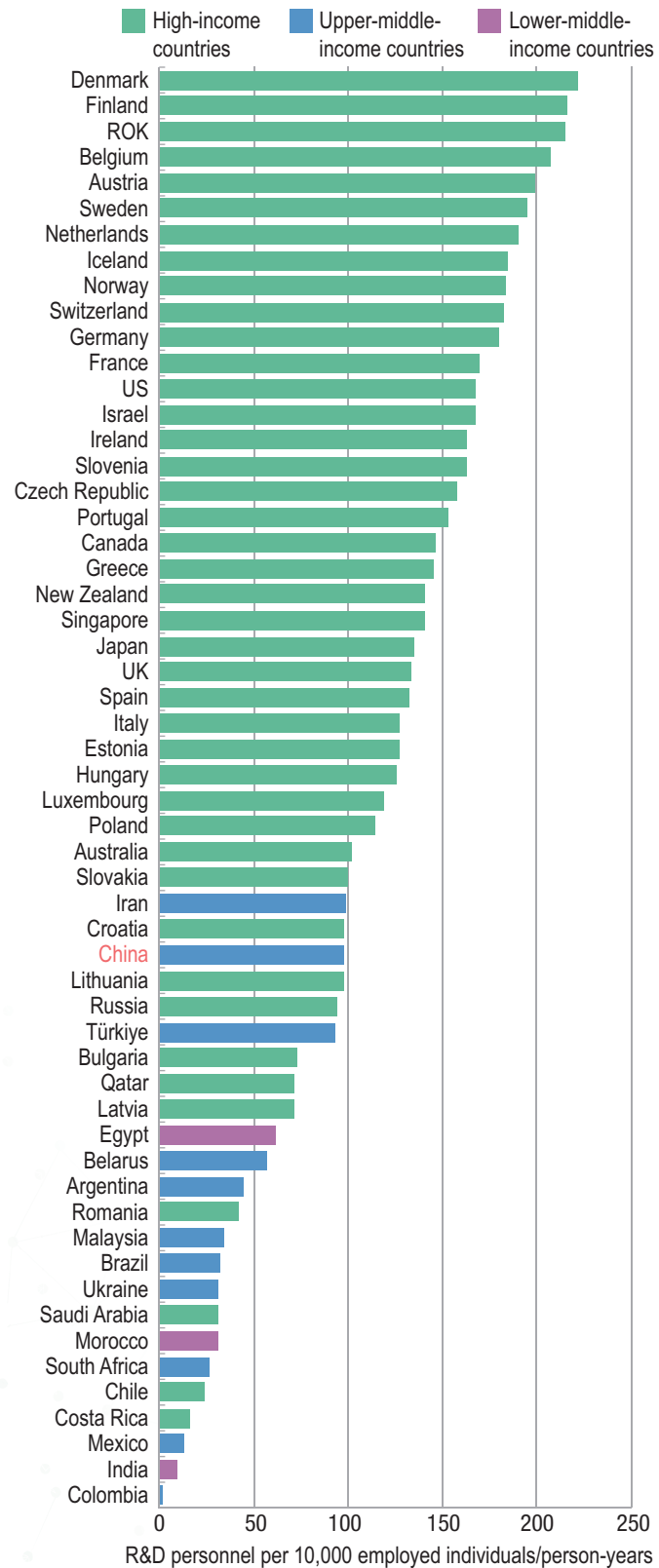
Figure 3-6 Proportion of STEM graduates in all college graduates



High-income countries have a high intensity of R&D personnel input, with smaller yet key European countries standing out in performance.

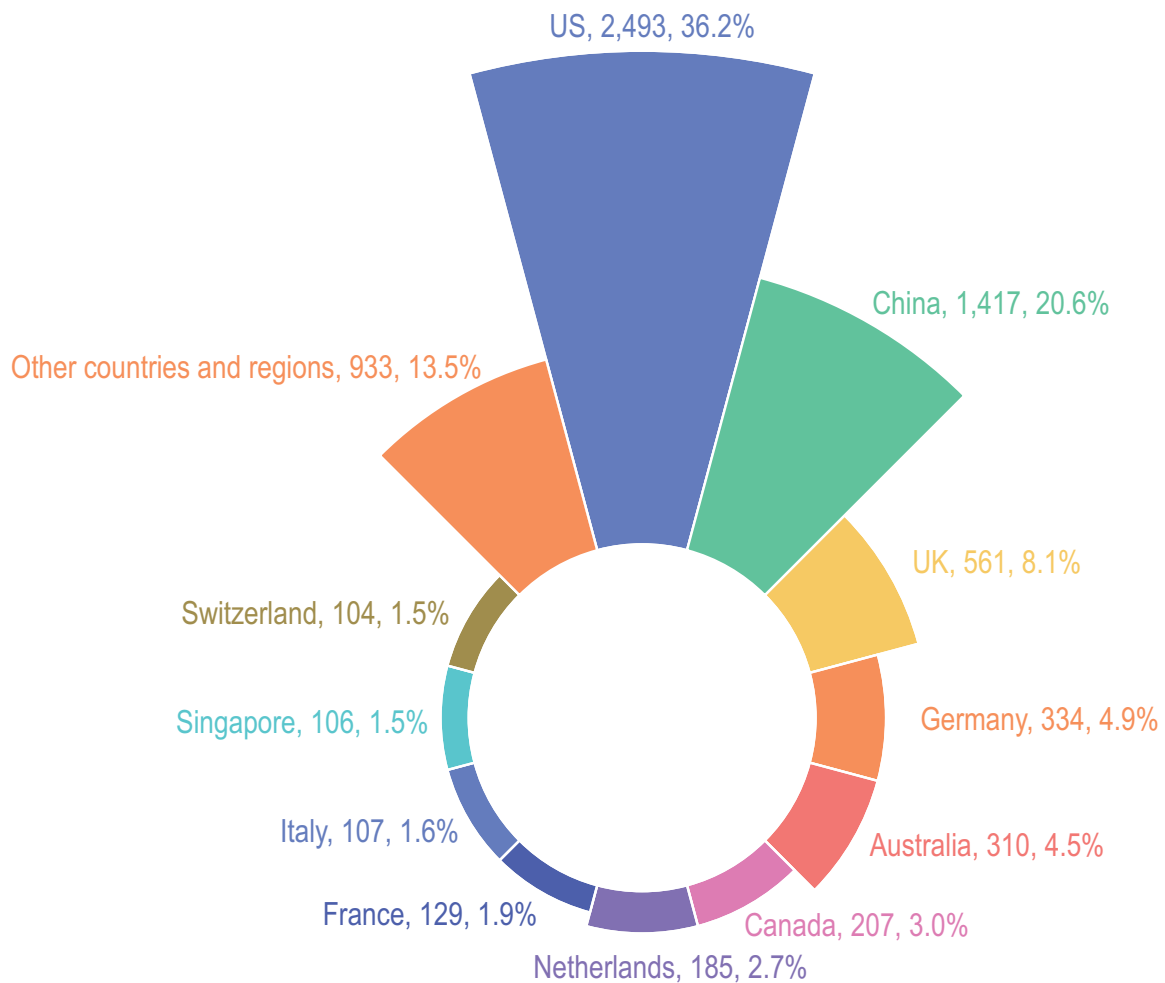
Denmark has the highest number of R&D personnel per 10,000 employed individuals, at 221.2 person-years. Finland, the ROK and Belgium have also surpassed 200 person-years. Fourteen countries fall within the range of 150 to 200 person-years. Among them, Austria and Sweden have each surpassed 190 person-years; the Netherlands, Iceland, Norway, and Switzerland have each surpassed 180 person-years; Germany is close to 180 person-years; and France, the US and Israel have all surpassed 165 person-years. 13 countries, including Canada, Greece, Japan, the UK and Australia, are in the 100 to 150 person-years range. All middle-income countries are below 100 person-years, with Iran, China, and Türkiye relatively higher at over 90 person-years. Egypt and Belarus are around 60 person-years, while countries such as Argentina, Romania, Malaysia and Brazil are all below 50 person-years (Figure 3-7).

Figure 3-7 R&D personnel per 10,000 employed individuals



Top talents are concentrated in major innovative countries, with the US and China holding a visible leading advantage. Among the 6,886 highly cited scientists worldwide, the US possesses a dominant lead with 2,493, accounting for 36.2% of the global total. China ranks second with 1,417 scientists, accounting for approximately one-fifth of the global total. Together, the US and China account for over 55%. The UK ranks third with 561 scientists. Germany and Australia both have over 300 scientists, while Canada and the Netherlands have 207 and 185 scientists, respectively. France, Italy, Singapore and Switzerland each have over 100 scientists, while Spain, Belgium, Japan and the ROK each have over 75 scientists. The remaining 45 countries each have fewer than 60 highly cited scientists, with most middle-income countries having single-digit numbers or zero (Figure 3-8).

Figure 3-8 Number of highly cited scientists



IV. Major innovative countries are home to top-tier research institutions, while emerging countries are making their mark

Major innovative countries are home to the world's first-tier research institutions. The US, China, Germany, the UK, France, Spain and Japan together account for over 60% of the total.

Among the 1,000 top-tier research institutions, comprising the top 500 government-funded research institutions and the top 500 non-profit institutions in the Nature Index, a total of 935 institutions from 60 countries have made it onto the list. The US has a commanding lead with 213 first-tier research institutions, accounting for over one-fifth of all the first-tier institutions in the 60 countries. China trails closely behind with 149 institutions. Germany, the UK, France, Spain and Japan each have between 40 to 50 institutions. Together, these seven countries account for 62.4% of the total number among the 60 countries. Australia, India and Italy each have 30 to 40 institutions, while eight countries, including Canada and the Netherlands, each have 10 to 30 institutions. Other countries each have fewer than 10 world's first-tier research institutions. All middle-income countries except China, India and Brazil fall into this tier (Figure 3-9).

Top universities are highly concentrated in English-speaking countries, with some middle-income countries standing out in performance.

According to the QS World University Rankings, among the 60 countries, 52 countries have universities that made into the top 500. The US and the UK have the highest average scores of the top three domestic universities in the world university rankings top 500, at 97.6 and 97.4 points, respectively. Australia, China and Canada have scored 80 to 90 points. Switzerland, France, the ROK, Japan and Germany have scores between 70 and 80 points. 11 high-income countries, including the Netherlands and Singapore, and four middle-income countries, including Argentina, Malaysia, Mexico and India, have scored 50 to 70 points. 21 countries, including Finland, Brazil and Russia, have scored 30 to 50 points (Figure 3-10).

Figure 3-9 Number of the world's first-tier research institutions

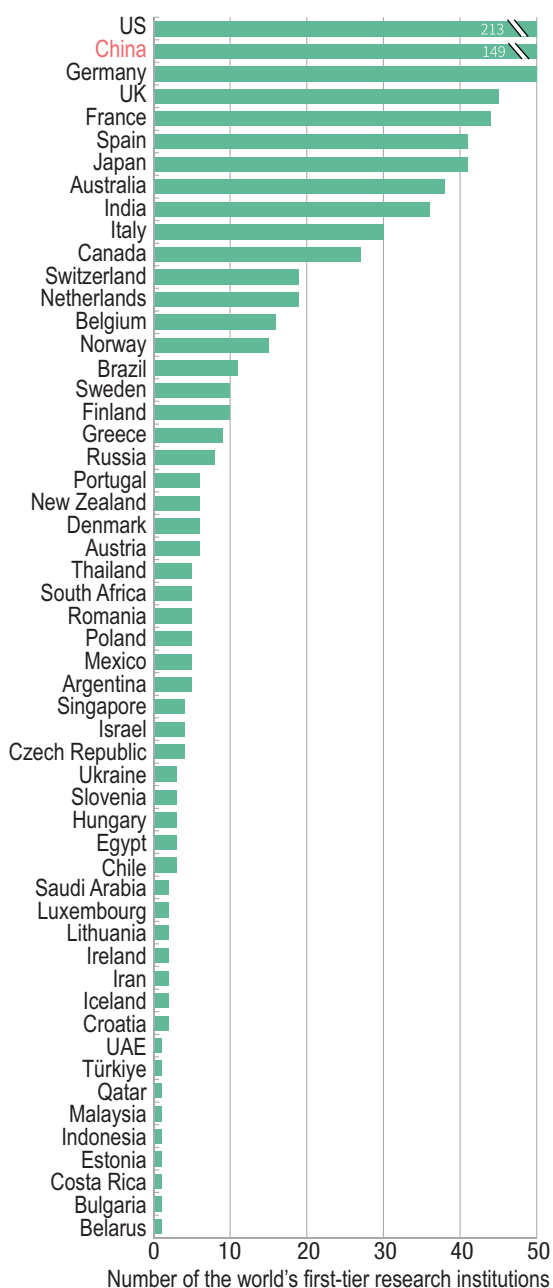
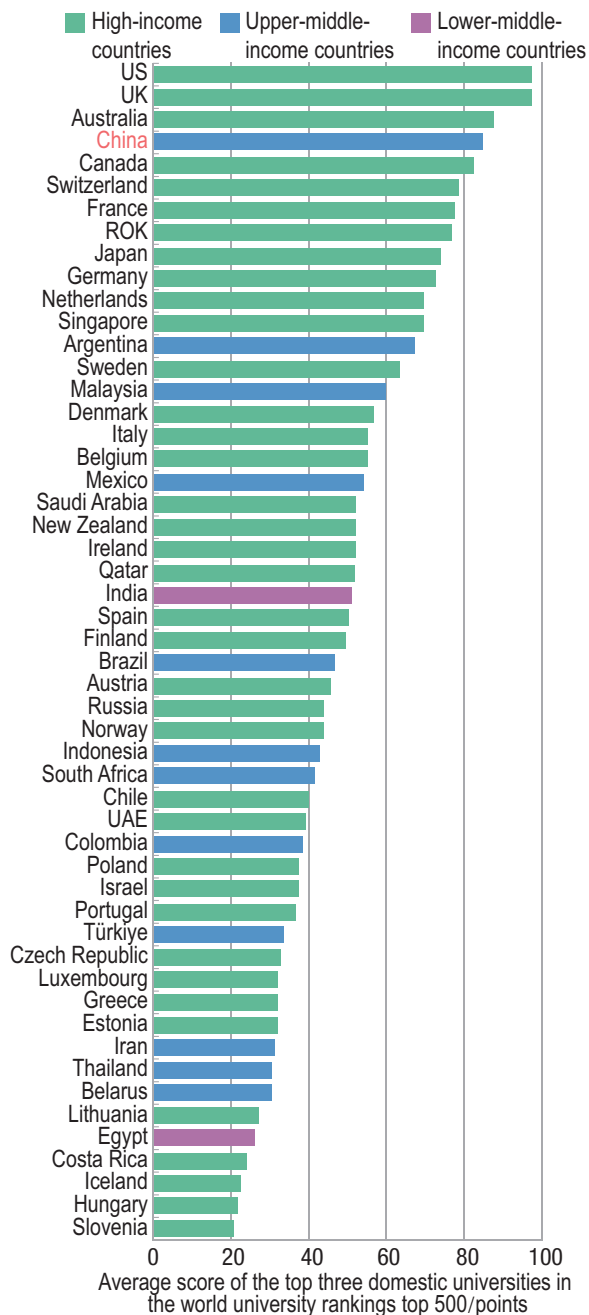


Figure 3-10 Average score of the top three domestic universities in the world university rankings top 500

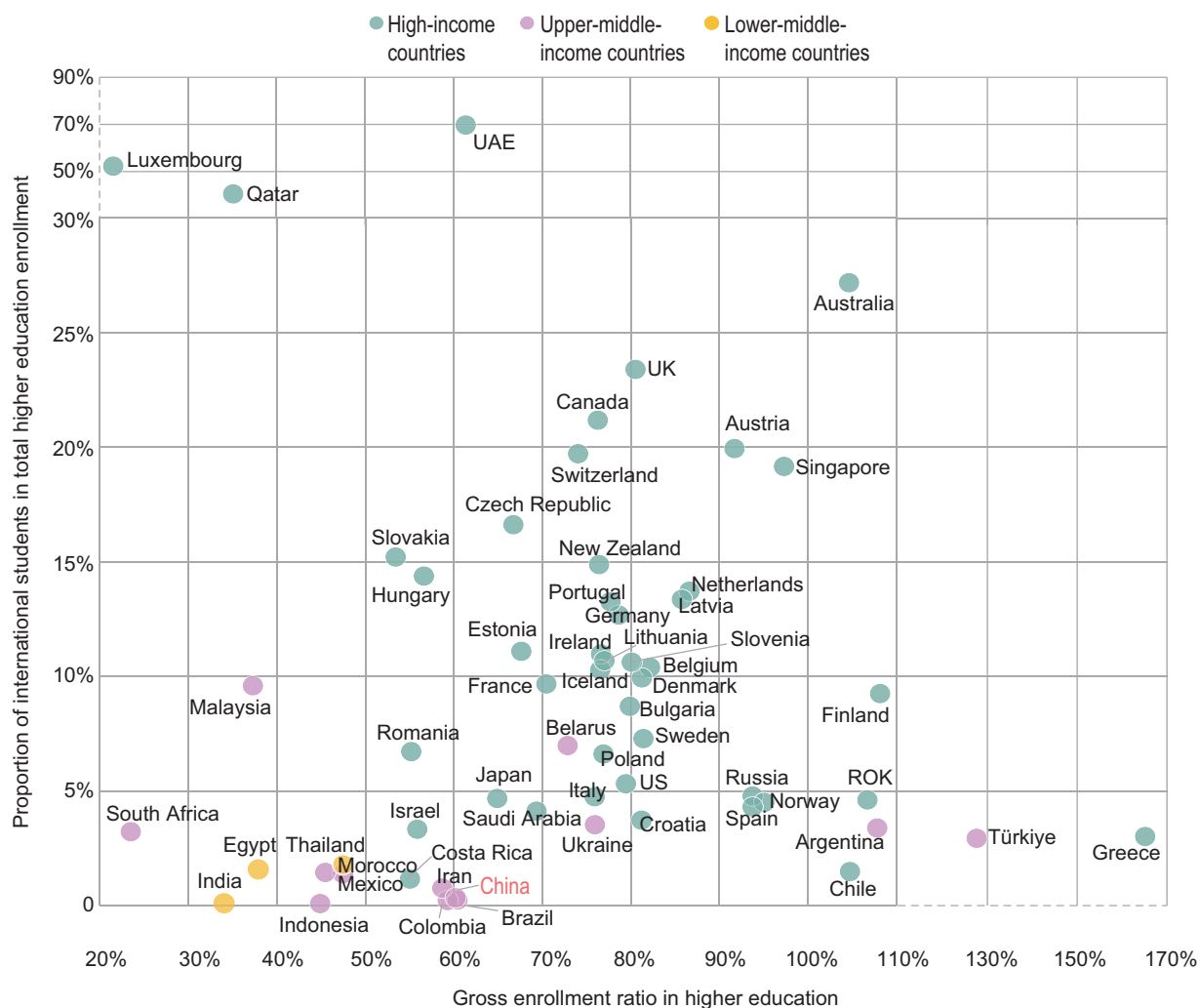


V. Many countries have achieved universal access to higher education, and several smaller but key nations are highly internationalized

Gross enrollment rates in higher education vary significantly, and most countries have secured universal access. Greece has the highest gross enrollment ratio in higher education, reaching 165.1%. Six countries, i.e. Türkiye, Finland, Argentina, the ROK, Chile and Australia, have also surpassed 100%. Five countries, i.e. Singapore, Norway, Spain, Russia and Austria, have rates between 90% and 100%. These countries are all characterized by a high level of universal higher education. 23 countries, including the Netherlands, Belgium, Portugal and Italy, have rates between 70% and 90%, and major science and technology nations such as the UK, the US, Germany and France are also in this range. 14 countries, including Saudi Arabia, the Czech Republic, Japan, Brazil and China, have also entered the phase of universal higher education, while the remaining 10 countries are still in the mass education phase (Figure 3-11).

The proportion of international students in total higher education enrollment is relatively low in large countries such as the US, China, Japan and the ROK, while key smaller nations and English-speaking countries have a high degree of openness. The UAE, Luxembourg and Qatar are the most internationalized in higher education, with international students accounting for 69.7%, 52.3% and 40.5% of total higher education enrollment, respectively. Three English-speaking countries, i.e. Australia, the UK and Canada, are at relatively high levels, ranging from 20% to 30%. Austria, Switzerland, Singapore, the Czech Republic and Slovakia have rates between 15% and 20%. New Zealand and 11 European countries, including Hungary, the Netherlands and Germany, have rates between 10% and 15%. All other countries have rates below 10%, among which France, the US, Japan and the ROK have rates above 4.5%, while six countries, including China, Brazil and India, have rates below 1% (Figure 3-11).

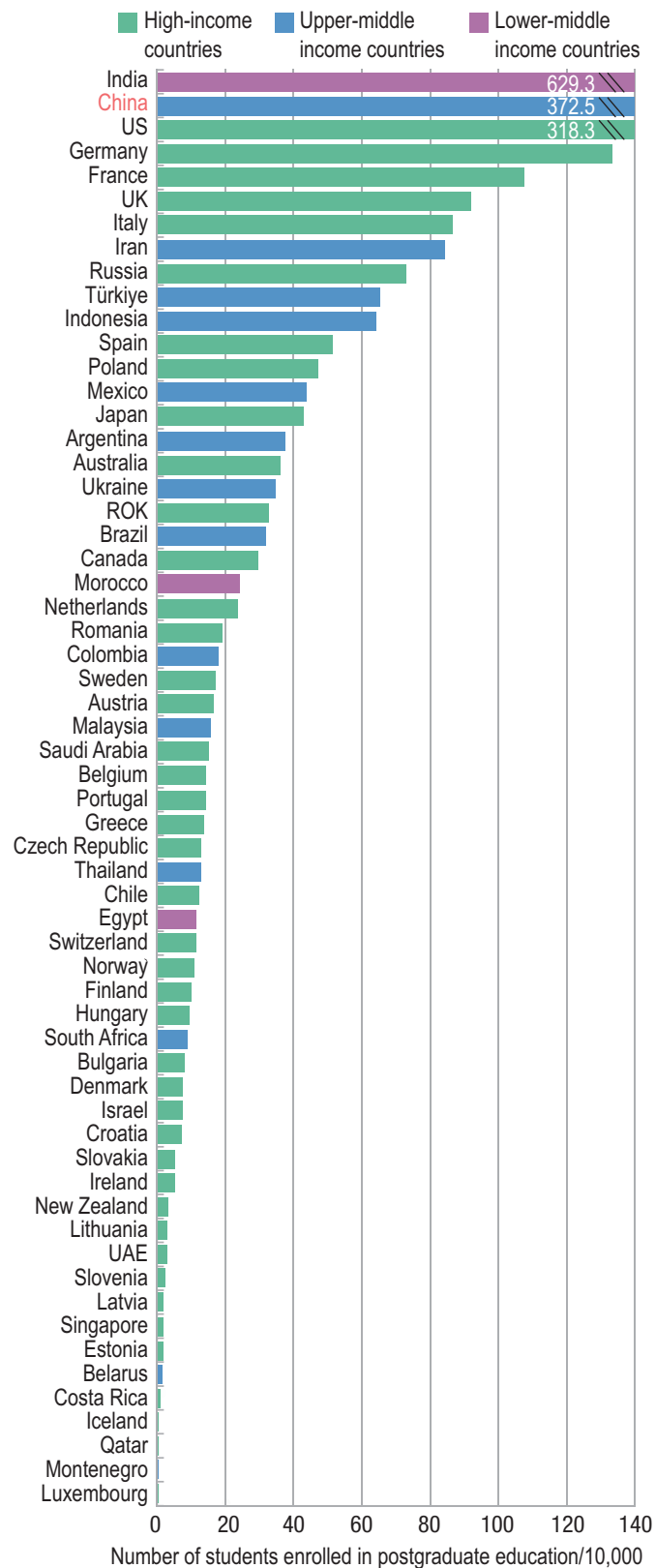
Figure 3-11 Gross enrollment ratio in higher education and proportion of international students in total higher education enrollment



The scale of postgraduate education varies significantly across countries, with India, China and the US holding a large reserve of future talent.

India has the largest number of students enrolled in postgraduate education, reaching 6.293 million. China and the US rank second and third, with 3.725 million and 3.183 million, respectively. Germany and France have between 1.00 million and 1.35 million students, the UK has 920,000, Italy and Iran have around 850,000 each, and Russia, Türkiye, Indonesia and Spain have between 500,000 and 750,000 each. 27 countries, including Poland, Mexico, Japan, Argentina, the ROK, Brazil and Canada, have between 100,000 and 500,000 students each, while the remaining 21 countries each have fewer than 100,000 students (Figure 3-12).

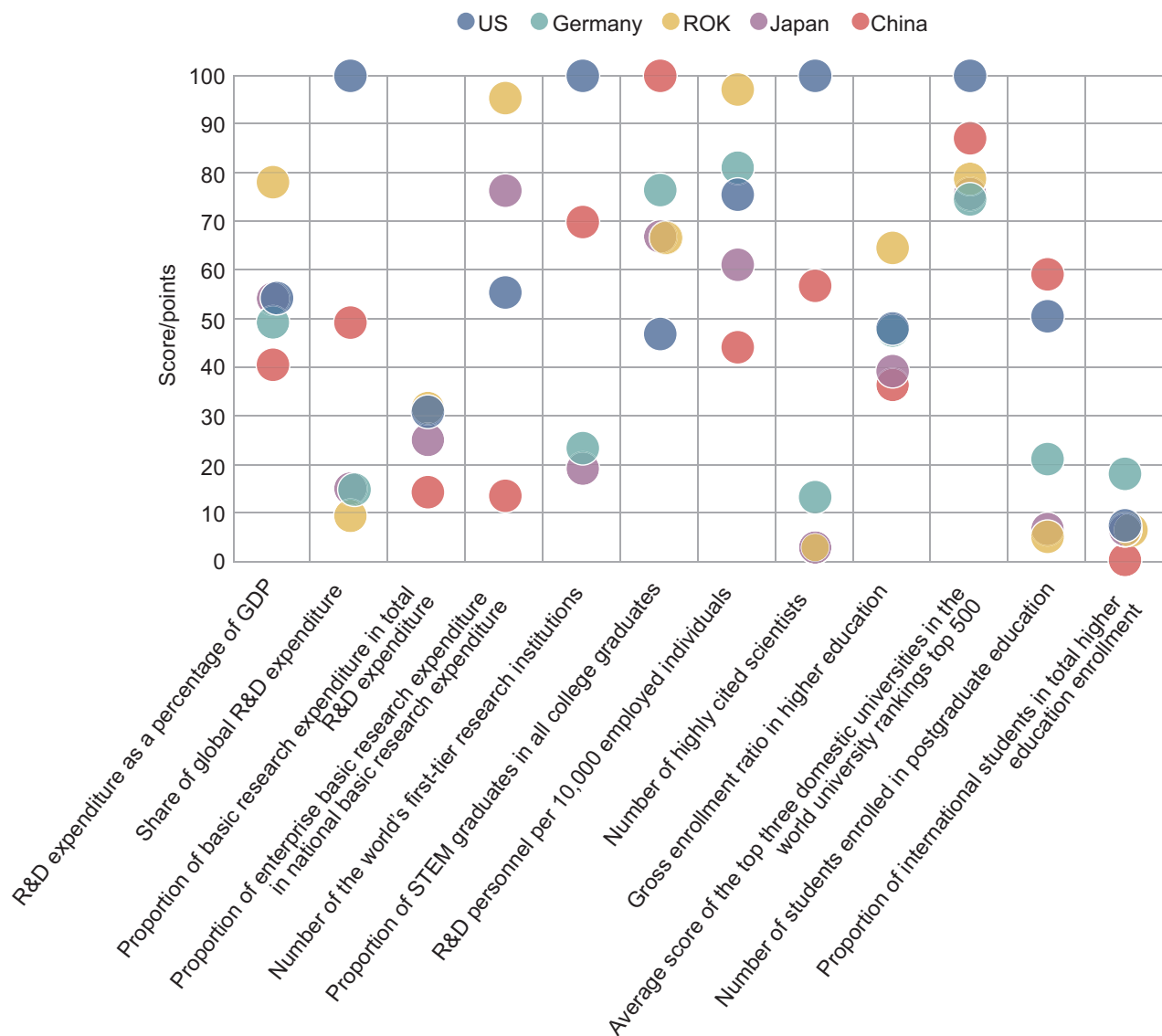
Figure 3-12 Number of students enrolled in postgraduate education



VI. China ranks among the top in the world in innovation resources allocation capacity

China has scored 53.1 points on the innovation resources sub-index, ranking fifth in the world. While there remains a significant gap compared to the US, which ranks first, the gap with Germany, the ROK and Japan, ranking second to fourth, is relatively smaller. China holds a score advantage of 0.7 points over the UK (Figure 3-13).

Figure 3-13 Scores of China and the top four countries on the innovation resources sub-index



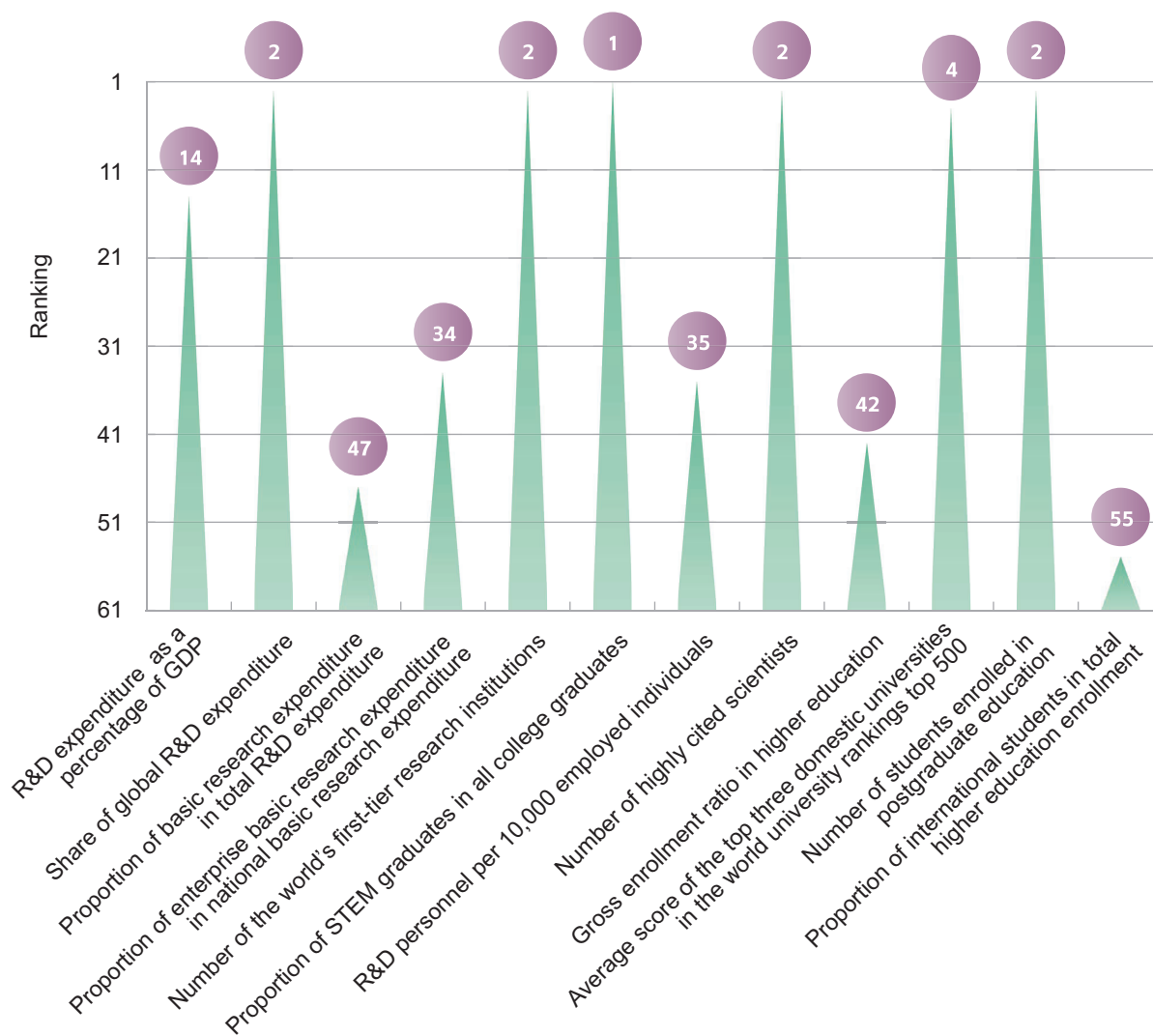
China has absolute advantages in six indicators, most of which are scale indicators: share of global R&D expenditure, number of the world's first-tier research institutions, proportion of STEM graduates in all college graduates, number of highly cited scientists, average score of the top three domestic universities

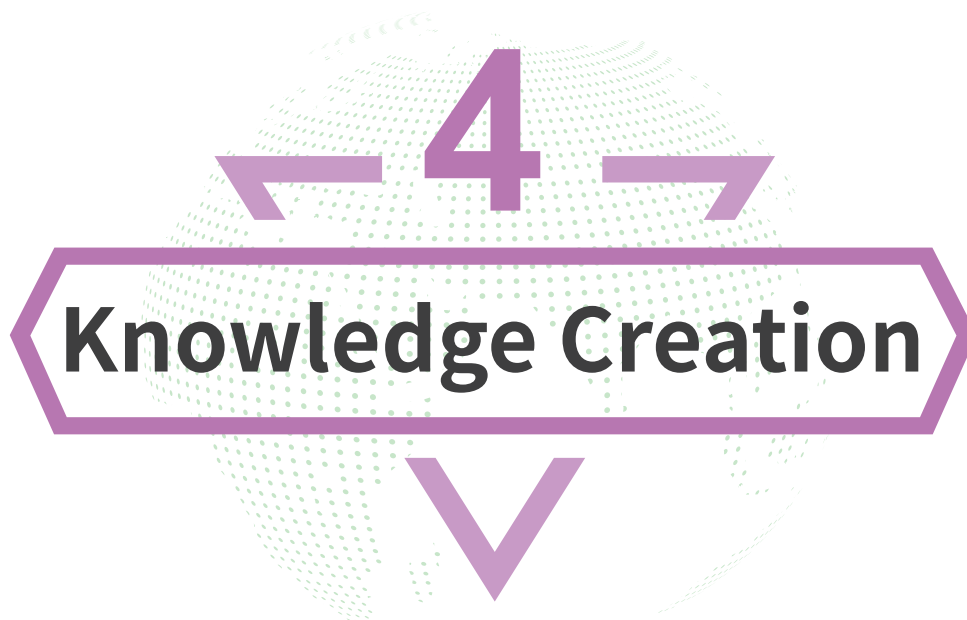
in the world university rankings top 500, and number of students enrolled in postgraduate education. Specifically, China's universities and research institutes have strong research capabilities. With 149 world's first-tier research institutions, China is second only to the US. Its top three universities in the world university rankings top 500, i.e. Peking University, Tsinghua University and Fudan University, have an average score of 85.1 points, trailing only the US, the UK and Australia. China has made substantial investment in R&D, and its share of global R&D expenditure is close to one-fifth, second only to the US. Its pool of top-tier and future talent is also expanding: the number of highly cited scientists has reached 1,417, second only to the US; the proportion of STEM graduates in all college graduates is as high as 46.4%, ranking first in the world; and the number of students enrolled in postgraduate education has reached 3.725 million, ranking second in the world (Figure 3-14).

Indicators in which China has a relative advantage or is at an intermediate level include three relative indicators: R&D expenditure as a percentage of GDP, proportion of enterprise basic research expenditure in national basic research expenditure, and R&D personnel per 10,000 employed individuals. Specifically, R&D expenditure as a percentage of GDP stands at 2.58%, ranking 14th. The proportion of enterprise basic research expenditure in national basic research expenditure is 8.2%, ranking 34th. The number of R&D personnel per 10,000 employed individuals is 97.8 person-years, ranking 35th (Figure 3-14). China has considerable room for improvement in the intensity of its R&D expenditure and R&D personnel, as well as in its enterprise basic research capabilities.

In the following three indicators, China is at a relative disadvantage: proportion of basic research expenditure in total R&D expenditure, gross enrollment ratio in higher education, and proportion of international students in total higher education enrollment. Specifically, the proportion of basic research expenditure in total R&D expenditure is only 6.8%, ranking 47th. Although higher education has entered the phase of universal access in China, its gross enrollment ratio in higher education is 60.2%, ranking 42nd. The proportion of international students in total higher education enrollment is only 0.3%, ranking 55th (Figure 3-14). China needs to further optimize the structure of its R&D expenditure, increase investment in basic research, further improve the level of higher education, and boost the global appeal of its higher education system.

Figure 3-14 China's global rankings on the indicators of the innovation resources sub-index





4 Knowledge Creation

Leading countries in knowledge creation have a clear advantage

Major innovative countries each have their own strengths in the quantity and quality of knowledge creation

High-income countries have a significant advantage in patents, while Asian countries stand out in industrial design

China ranks among the top in knowledge creation capability and leads the world in intellectual property output



National Innovation Index Report 2025

The level of knowledge creation is directly embodied a country's innovation capacity, reflecting its scientific research output capability and overall scientific and technological strength. The knowledge creation sub-index measures a country's knowledge output and knowledge influence with six indicators: number of S&T papers per USD 1 million of R&D expenditure; invention patents in force per 10,000 employed individuals; number of industrial design applications per USD 100 million of industrial value-added; number of S&T paper citations per USD 1 million of R&D expenditure in academic departments; proportion of highly cited papers in all domestic papers; and number of major international S&T awards won.

I. Leading countries in knowledge creation have a clear advantage

Innovative countries maintain a high level of knowledge creation, with a stark contrast between high-income and middle-income countries. In the ranking of the knowledge creation sub-index, the US ranks first, significantly ahead of all other countries (Figure 4-1). Japan ranks second with a score of 63.2 points, while Switzerland and the UK rank third and fourth with scores of 55.8 and 54.4 points, respectively. The remaining countries have all scored below 50 points. Nine countries, i.e. the ROK, Denmark, France, Italy, Germany, China, Austria, the Netherlands and Sweden, are in the range of 40 to 50 points. Other high-income countries, such as Singapore, Australia, New Zealand, Iceland, Luxembourg and Ireland, are mostly in the range of 20 to 40 points, while middle-income countries such as Türkiye, Argentina and Thailand are mostly below 20 points. Overall, high-income countries perform better in knowledge creation and maintain a clear lead. Among the top 25 countries, China is the only middle-income country; apart from China, the remaining 16 middle-income countries have all scored below 40 points.

II. Major innovative countries each have their own strengths in the quantity and quality of knowledge creation

Some middle-income countries have relatively high efficiency in paper output. Among the top 10 countries in terms of number of S&T papers per USD 1 million of R&D expenditure, only three are high-income countries, i.e. Chile, Saudi Arabia and Romania, while the rest are all middle-income countries. Montenegro ranks first with 17.5 papers per

USD 1 million of R&D expenditure, notably higher than Colombia in the second place (12.7 papers) and Chile in the third place (9.3 papers) (Figure 4-2). Ukraine, India, South Africa, Morocco, Saudi Arabia, Romania and Egypt rank fourth to 10th, respectively. Major innovative countries such as France, Germany, the ROK, Japan and the US have produced 0.5 to 1.2 papers per USD 1 million of R&D expenditure, which is relatively low compared to middle-income countries. A possible reason for this phenomenon is that high-income countries invest a large amount of R&D expenditure in activities such as laboratory construction and technology transfer, which increases the cost per scientific paper.

High-income countries have a clear advantage in paper quality and influence. Singapore has the highest proportion of highly cited papers in all domestic papers, at 3.0%. Denmark and the UAE rank second and third, with proportions of 2.5% and 2.4%, respectively. In most high-income countries, including Switzerland, Estonia, Iceland and Belgium, the proportion of highly cited papers in all domestic papers is between 1.5% and 2.5%. There is a significant gap between the 17 middle-income countries as a whole and high-income countries, with only Malaysia, Egypt and South Africa exceeding 1.5%. The proportions of major European countries such as the UK, Germany and France are in the range of 1.5% to 2.0%, while the proportions of the US, Japan and the ROK are in the range of 1.0% to 1.5%.

Figure 4-1 Global rankings and scores of countries on the knowledge creation sub-index

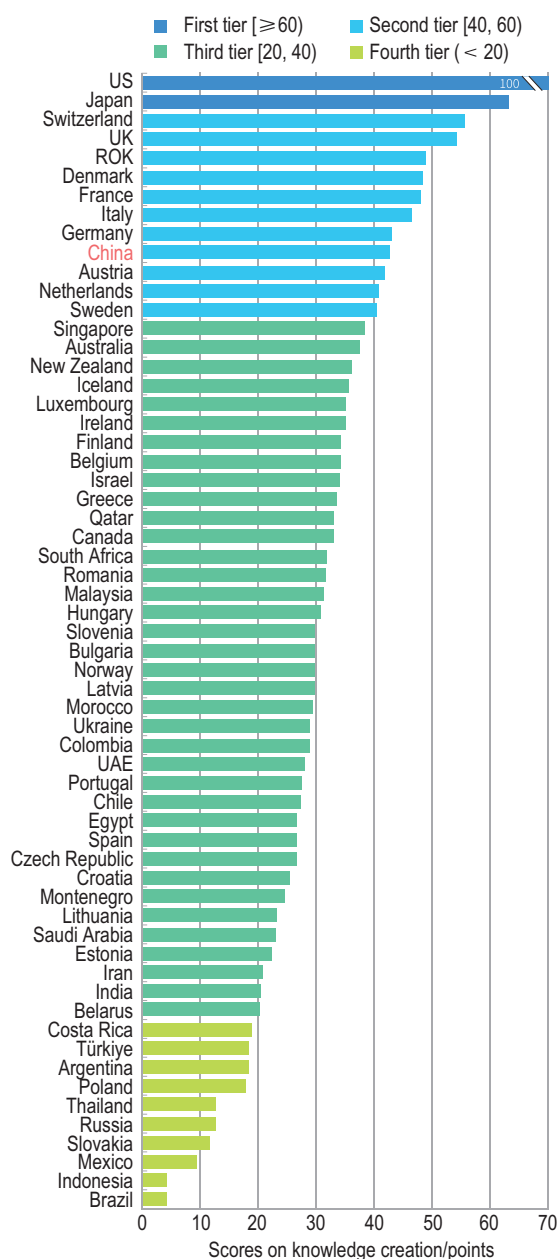
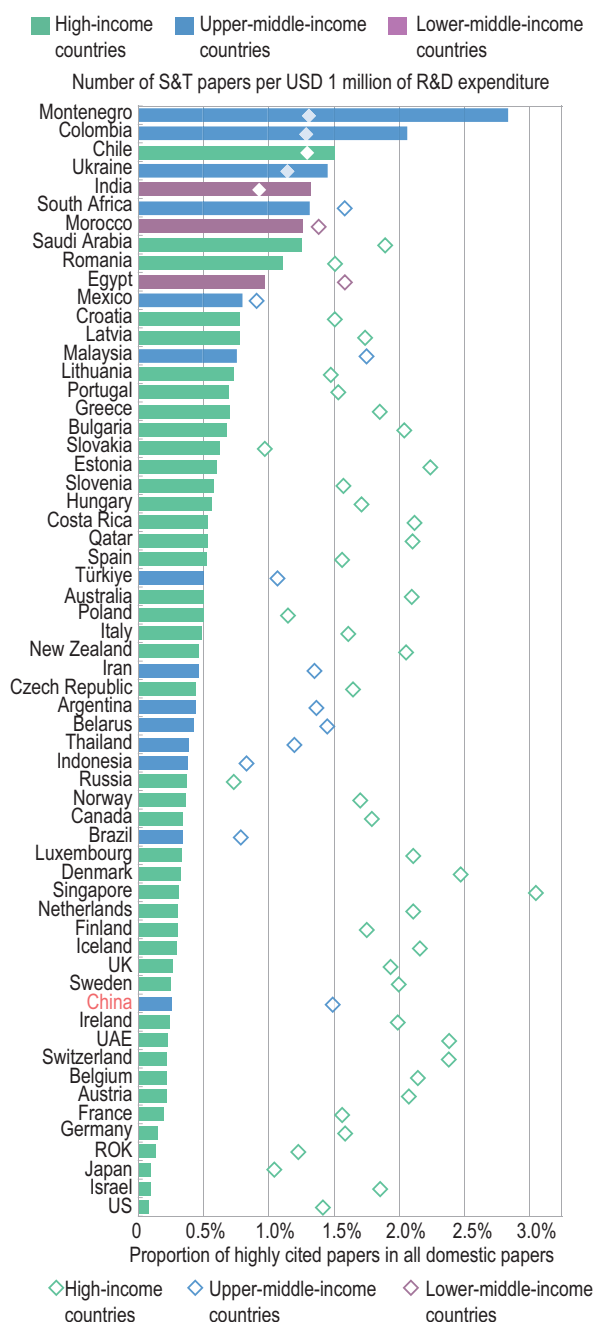
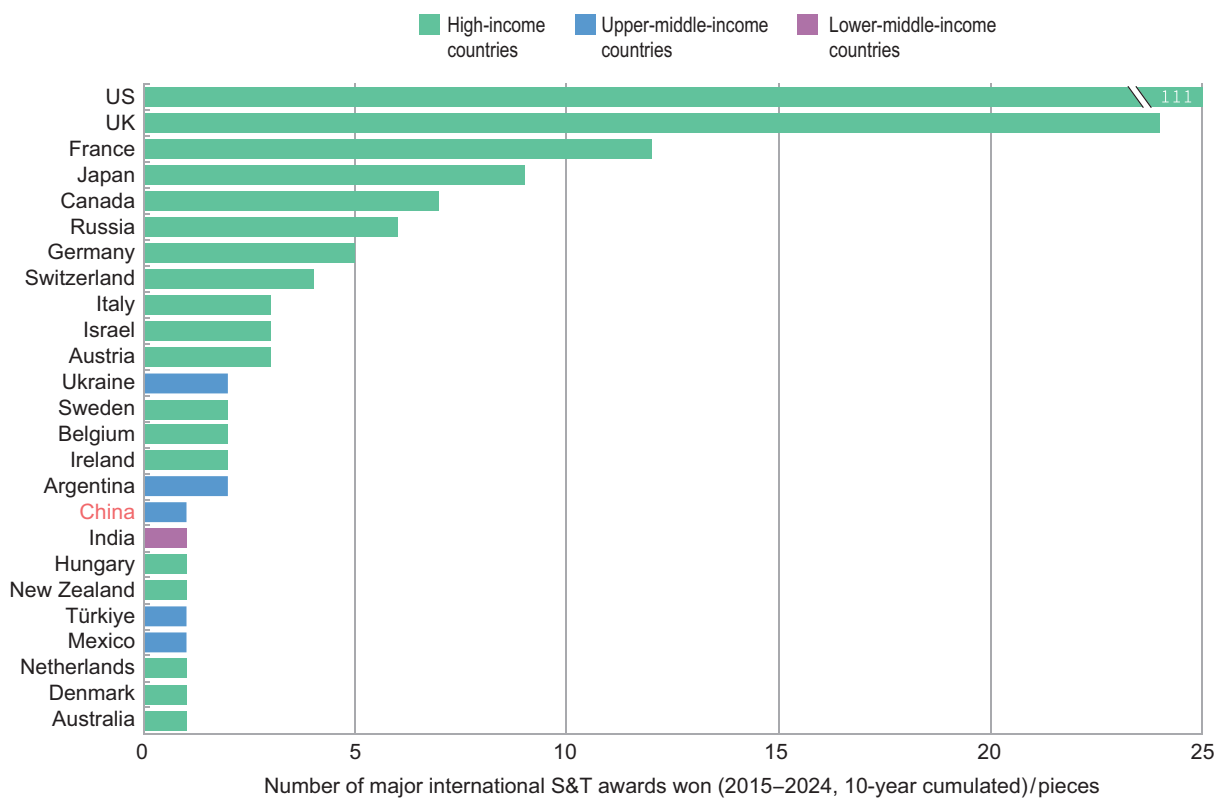


Figure 4-2 Number of S&T papers output and academic influence



In terms of S&T awards, the US is the primary source of major and top-tier S&T achievements, while the UK, France and Japan also stand out in performance. According to statistics on 12 major international S&T awards over the 10-year period from 2015 to 2024, researchers from 25 out of the 60 countries have won relevant awards. Among them, the US is notably ahead with 111 awards (Figure 4-3). The UK, France, and Japan also perform well, with 24, 12 and 9 major S&T awards, respectively. High-income countries such as Canada, Russia, Germany and Switzerland have also won awards multiple times. Among middle-income countries, only Ukraine and Argentina have won more than one award over the 10-year period, while nine countries, i.e. China, the Netherlands, Australia, New Zealand, Hungary, India, Türkiye, Mexico and Denmark, have won only one award over the 10 years. International awards are highly concentrated in high-income countries represented by the US. The core reason is that these countries, with their strong economic capital and long-term investment in scientific research and culture, have built world-leading innovation systems and attracted a large pool of talent.

Figure 4-3 Number of major international S&T awards won

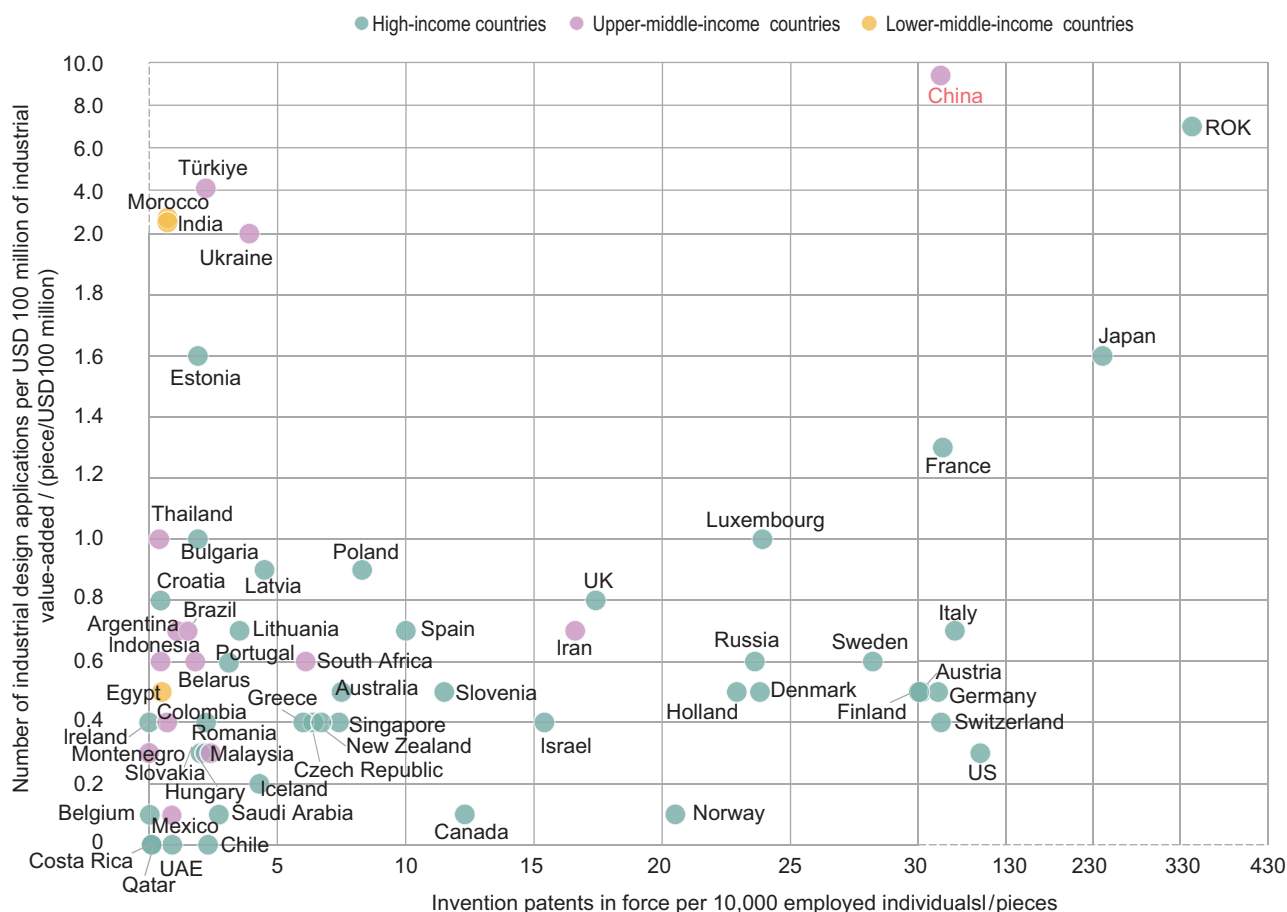


III. High-income countries have a significant advantage in patents, while Asian countries stand out in industrial design

The invention patents accumulated over the years represent the technological strength of major innovative countries, particularly for the US, Japan and the ROK. The ROK leads with the highest invention patents in force per 10,000 employed individuals at 343.2 pieces. Japan and the US also stand out, with 240.8 and 100.7 pieces, respectively. China and Germany follow with 55.2 and 52.5 pieces, respectively, trailing closely behind Italy (71.7 pieces), France (57.9 pieces) and Switzerland (55.5 pieces). European countries such as Austria, Finland, Sweden, Luxembourg, Denmark, Russia, the Netherlands and Norway follow closely behind, with 20 to 33 invention patents in force per 10,000 employed individuals. Middle-income countries rank substantially lower, with the vast majority, including Belarus, Brazil, Mexico, India and Colombia, reporting fewer than 2 pieces (Figure 4-4).

In terms of industrial design, Asian countries have the most impressive performance. China, the ROK and Türkiye rank in the top three, with 9.4, 7.0 and 4.1 pieces of industrial design applications per USD 100 million of industrial value-added, respectively. India, Japan and Thailand rank fifth, eighth and 10th, with 2.5, 1.6 and 1.0 pieces, respectively. Latin American and Middle Eastern countries generally rank lower, and countries such as Colombia, Mexico, the UAE and Qatar all have fewer than 0.5 pieces. This is because Asian governments intervene strongly in industrial design, with many enacting laws related to industrial revitalization, thereby boosting patent output in this field (Figure 4-4).

Figure 4-4 Intellectual property output



IV. China ranks among the top in knowledge creation capability and leads the world in intellectual property output

China tops middle-income countries in knowledge creation, but still trails behind some countries. With a score of 42.8 points on the knowledge creation sub-index, China ranks 10th globally. The gap with Germany (ranking ninth) is relatively modest, whereas the gap with countries ranking fifth to eighth, i.e. the ROK, Denmark, France and Italy, remains sizable.

China's advantages are mainly reflected in intellectual property output. The two indicators related to intellectual property reflect the output efficiency of two types of intellectual property: invention patents and industrial designs. China leads the world in the number of industrial design applications per USD 100 million of industrial value-added. With an average of 9.4 pieces, China holds a clear first-place advantage. In terms of invention patents in force per 10,000 employed individuals, China ranks seventh with 55.2

patents, after Italy, France and Switzerland.

In terms of the efficiency and influence of paper output, China does not have a clear advantage or is at a relative disadvantage (Figure 4-5). Specifically, the number of S&T papers per USD 1 million of R&D expenditure is 1.6, ranking 49th. The number of S&T paper citations per USD 1 million of R&D expenditure in academic departments is 71.2, ranking 21st. The proportion of highly cited papers in all domestic papers is 1.5%, ranking 39th. The efficiency and quality of paper output need further improvement (Figure 4-6). China has won only 1 major international S&T award, a significant gap compared to the US, the UK, France, Japan and others. To achieve further advancement in knowledge creation, China needs to focus on high-level papers, expand the international influence of high-quality papers, and produce more major and top-tier S&T achievements.

Figure 4-5 Scores of China and the top five countries on the knowledge creation sub-index

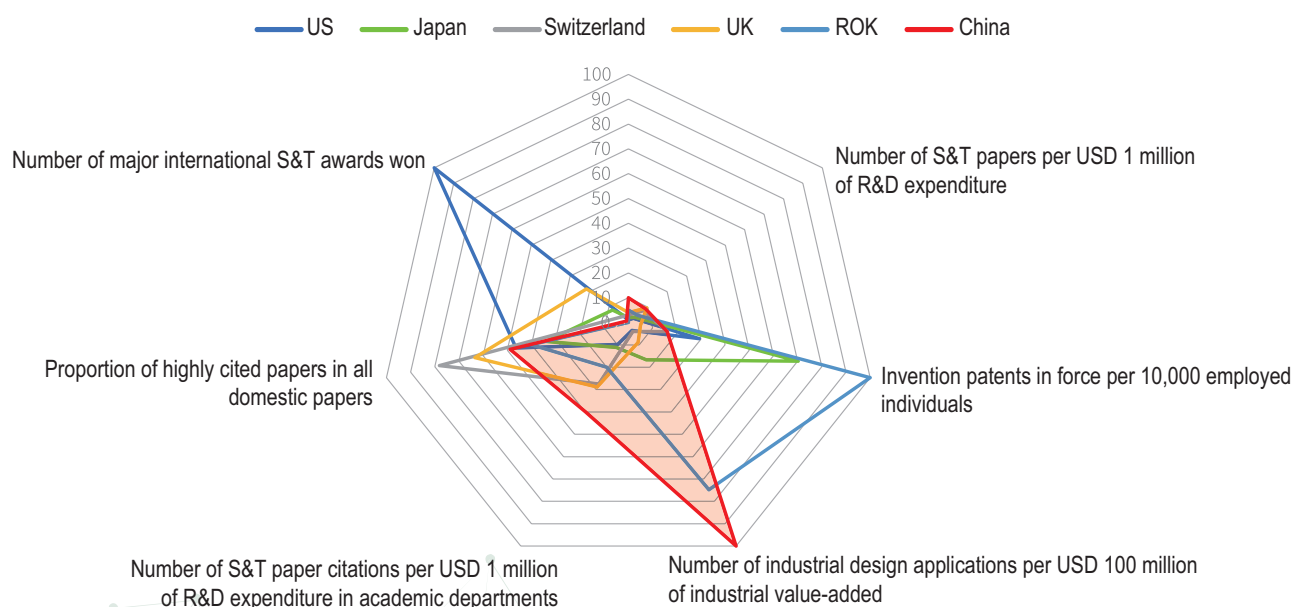
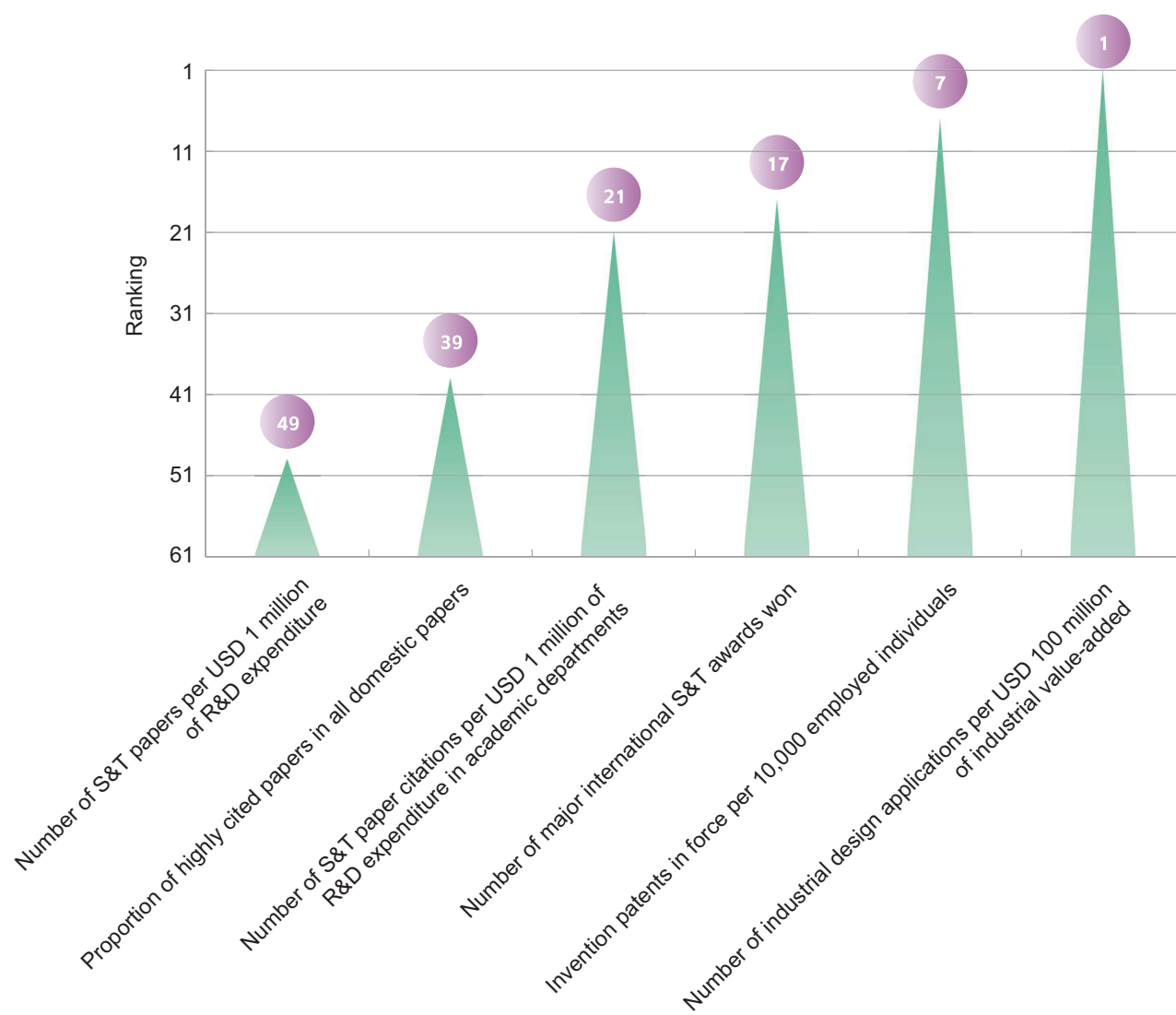


Figure 4-6 China's global rankings on the indicators of the knowledge creation sub-index





5

Enterprise Innovation

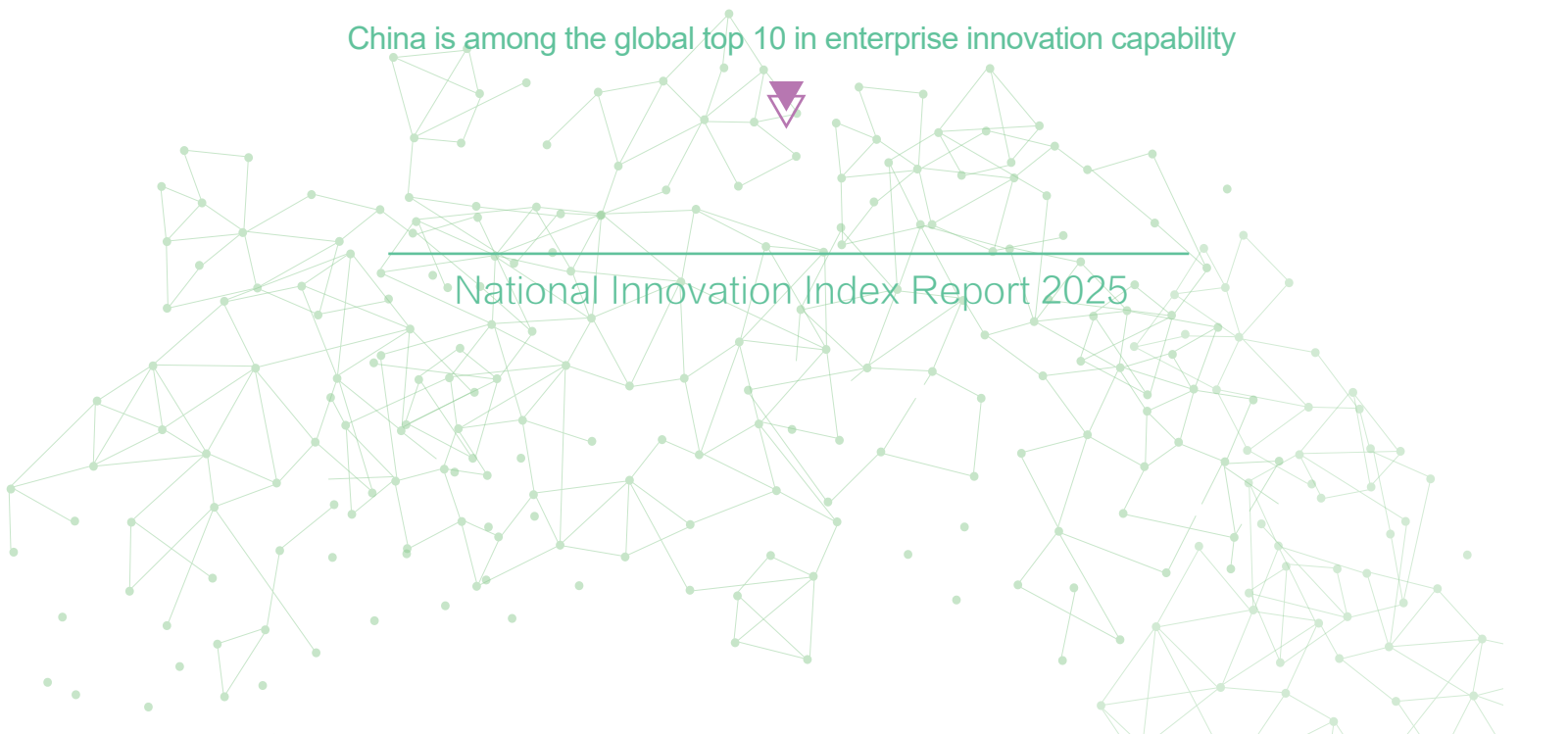
Developed countries have a clear advantage in enterprise innovation capability, with Asia and Europe on a par among global leaders

The US and Israel have a clear advantage in the intensity of corporate R&D investment

Patent creation is concentrated in a few countries

Intellectual property exports contribute relatively little to service exports in most countries

China is among the global top 10 in enterprise innovation capability



National Innovation Index Report 2025

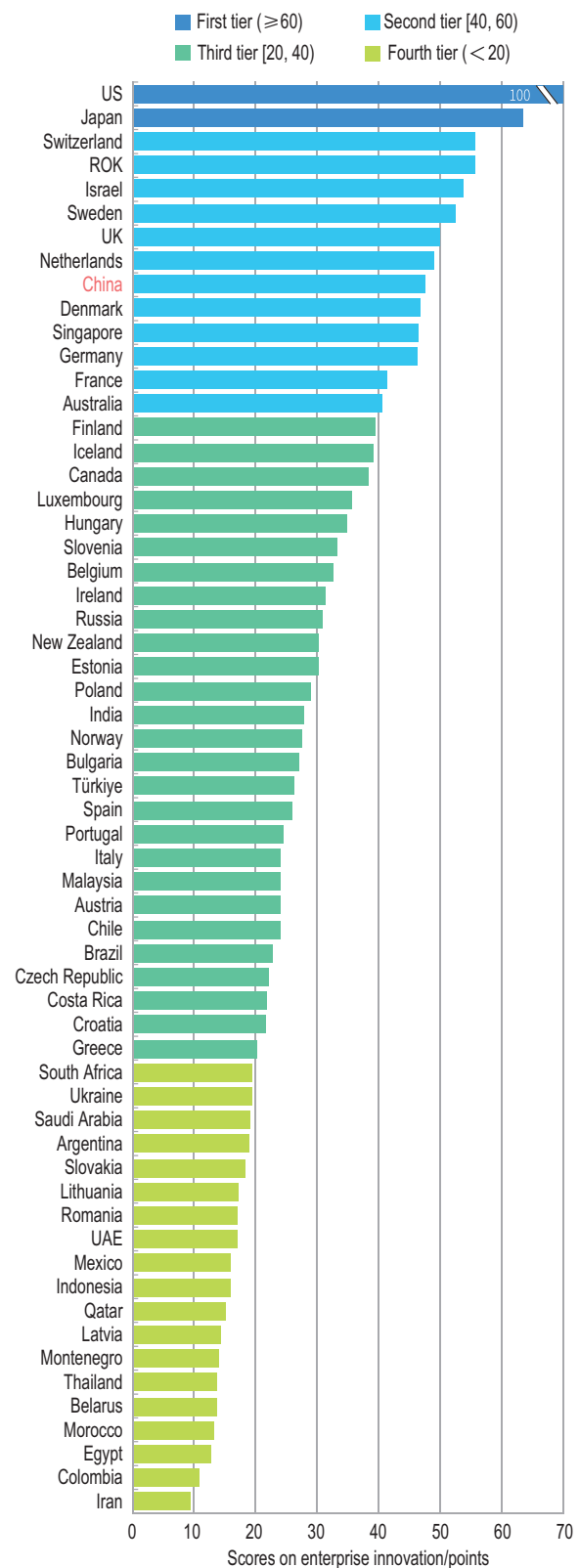
Enterprises are important players in STI activities and a key component of the national innovation system. The scale of enterprise innovation and output efficiency in a country can, to a large extent, reflect that country's innovation capacity. The enterprise innovation sub-index comprehensively measures enterprise innovation activities with nine indicators: ratio of enterprise R&D expenditure to value-added; enterprise researchers as a share of total researchers; average R&D expenditure intensity of the top 10 companies; triadic patents as a share of the world's total; PCT applications per 10,000 enterprise researchers; proportion of intellectual property royalty income in service exports; economic growth rate; number of newly registered companies per 10 million labor force; and number of high-growth technology companies.

I. Developed countries have a clear advantage in enterprise innovation capability, with Asia and Europe on a par among global leaders

In terms of the country rankings on the enterprise innovation sub-index, most developed countries are in the front and have a comparative advantage. The top 10 countries are the US, Japan, Switzerland, the ROK, Israel, Sweden, the UK, the Netherlands, China and Denmark. Asian countries perform relatively well, securing three spots in the top 10 and matching the strength of European countries.

Regarding enterprise innovation scores among the 60 countries, the US ranks first with an absolute advantage over other countries. Japan, in the second place, lags significantly behind the US but still maintains a considerable lead over other countries. Countries ranking third to 12th have scores between 45 and 55 points, with only small gaps. 27 countries, including Finland and Iceland, have scores between 20 and 40 points. 19 countries, including South Africa and Ukraine, have scores below 20 points (Figure 5-1).

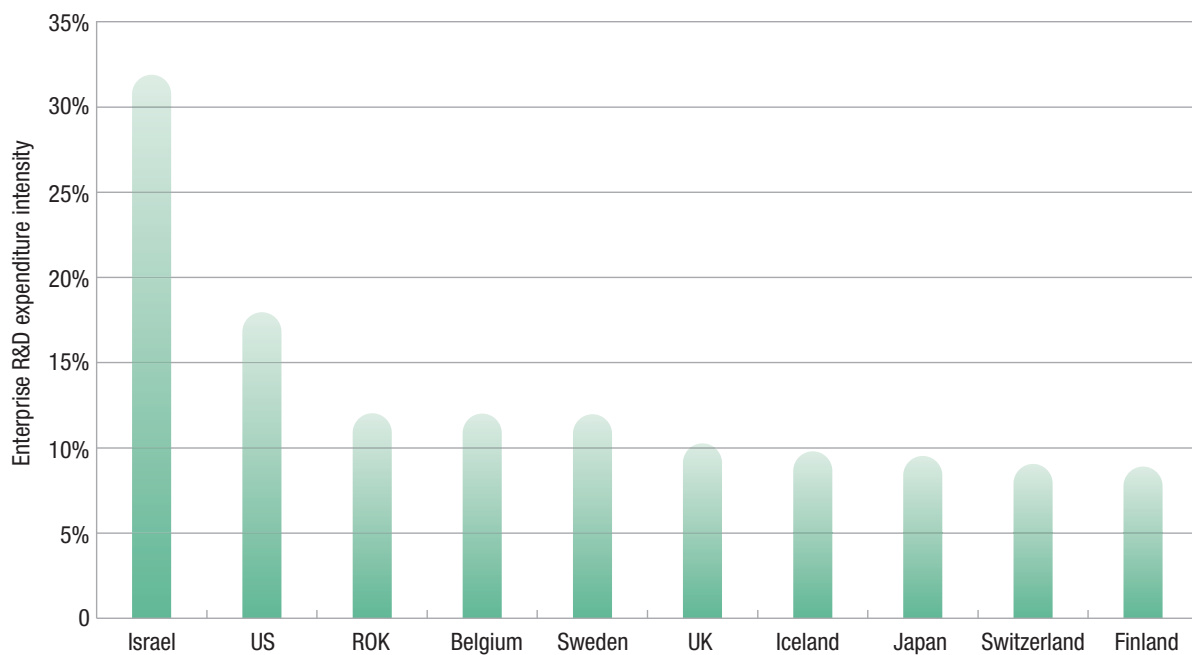
Figure 5-1 Global rankings and scores of countries on the enterprise innovation sub-index



II. The US and Israel have a clear advantage in the intensity of corporate R&D investment

The innovation capability of enterprises is an important source of market competitiveness, and the R&D expenditure intensity of companies is a key indicator of enterprise innovation capability. Measured by the ratio of enterprise R&D expenditure to value-added, Israel has the most active enterprise R&D activities, with its R&D expenditure intensity far exceeding that of other countries and nearly double that of the US in the second place. The US also has a clear advantage over the countries behind. The countries ranking third to 10th include the ROK, Belgium, Sweden, the UK, Iceland, Japan, Switzerland and Finland, with relatively small differences in their corporate R&D investment intensity (Figure 5-2).

Figure 5-2 Top 10 countries on enterprise R&D expenditure intensity

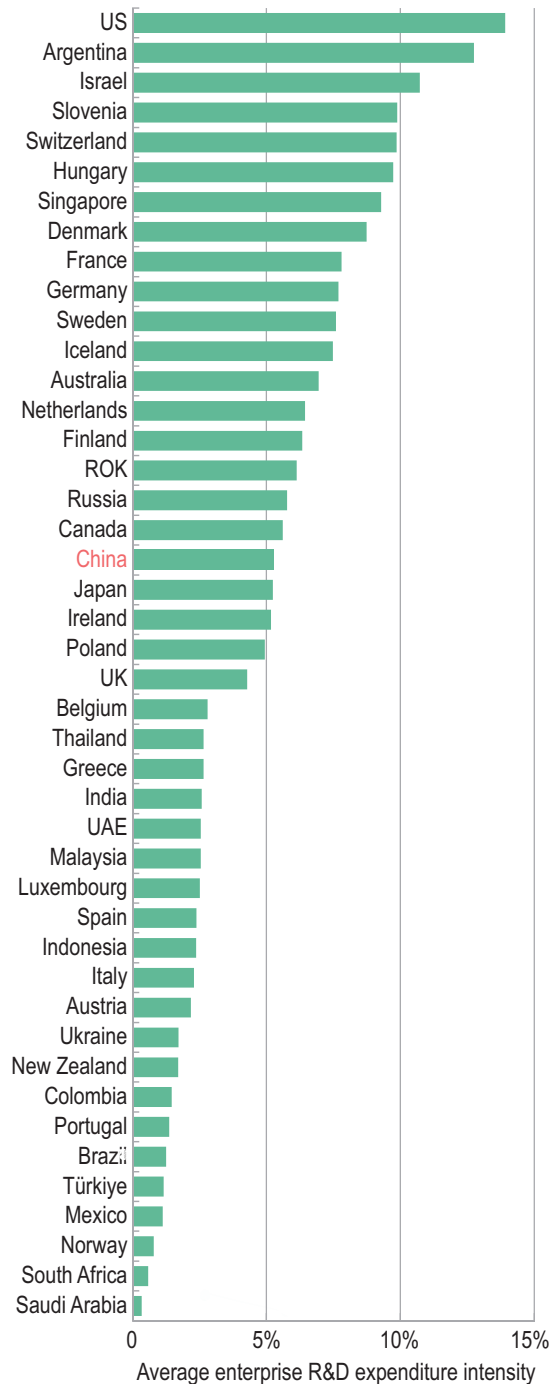


The leading enterprises of a country, which have the highest R&D investment, are not only among the most innovative entities but also serve as key forces for the country to participate in international competition.

In terms of the average R&D expenditure intensity of the top 10 companies in each country, the US, Argentina and Israel rank in the top three, each with indicator values exceeding 10%, which place them in a relatively strong position. Slovenia, Switzerland, Hungary, Singapore and Denmark rank fourth to eighth, with indicator values between 8% and 10%. 10 countries, including Ukraine and New Zealand, have indicator values below 2% (Figure 5-3).

Enterprise researchers as a share of total researchers reflects the impact of enterprise innovation activities on society as a whole. The ROK has the highest share of enterprise researchers in total researchers, at 81.9%, followed by the US, Israel, the UK, Japan, Sweden and the Netherlands, with indicator values between 70% and 80%. Austria, Türkiye, Canada, Hungary, Germany, and France also perform well, with indicator values ranging from 60% to 70%. India and Brazil are at 38.4% and 26.2%, respectively, while Argentina and South Africa are slightly above 11%. More than 10 countries have indicator values below 20%.

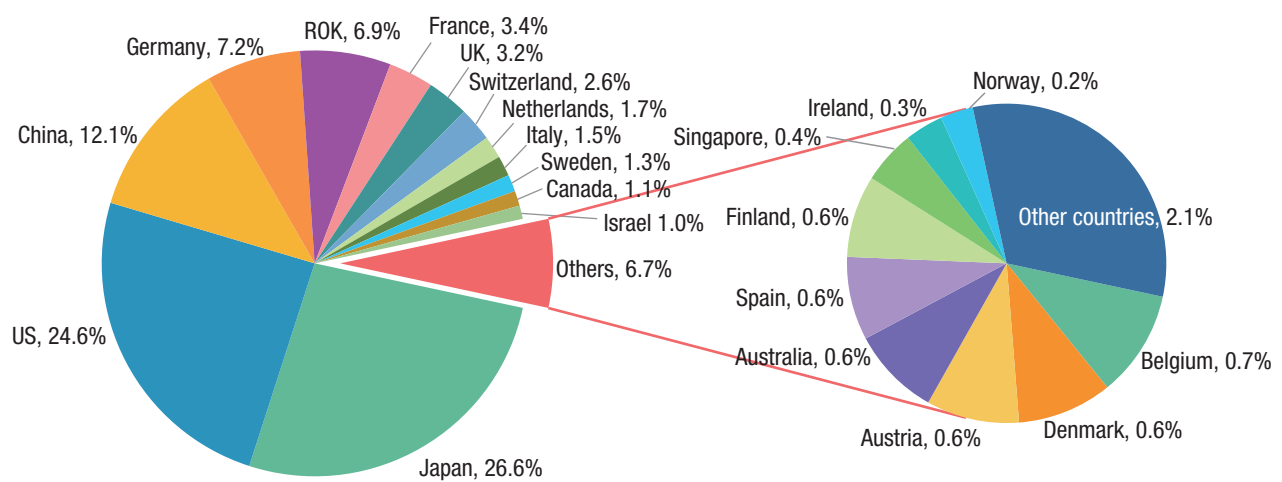
Figure 5-3 Average R&D expenditure intensity of the top 10 companies in major countries



III. Patent creation is concentrated in a few countries

The global patent distribution of enterprises reflects the influence and competitiveness of their technologies and products in the international market. The number of triadic patents and the number of granted national-phase PCT applications are important indicators for measuring the internationalization level of enterprise patents. Japan and the US have a clear advantage in the number of triadic patents, with 16,000 and 15,000 pieces respectively, together accounting for over half of the global total. China, Germany and the ROK are closely behind, with 7,480, 4,435, and 4,248 pieces respectively, accounting for 12.1%, 7.2%, and 6.9% of the global total. Other countries with more than 1,000 triadic patents include France, the UK, Switzerland and the Netherlands (Figure 5-4).

Figure 5-4 Global distribution of triadic patents by country

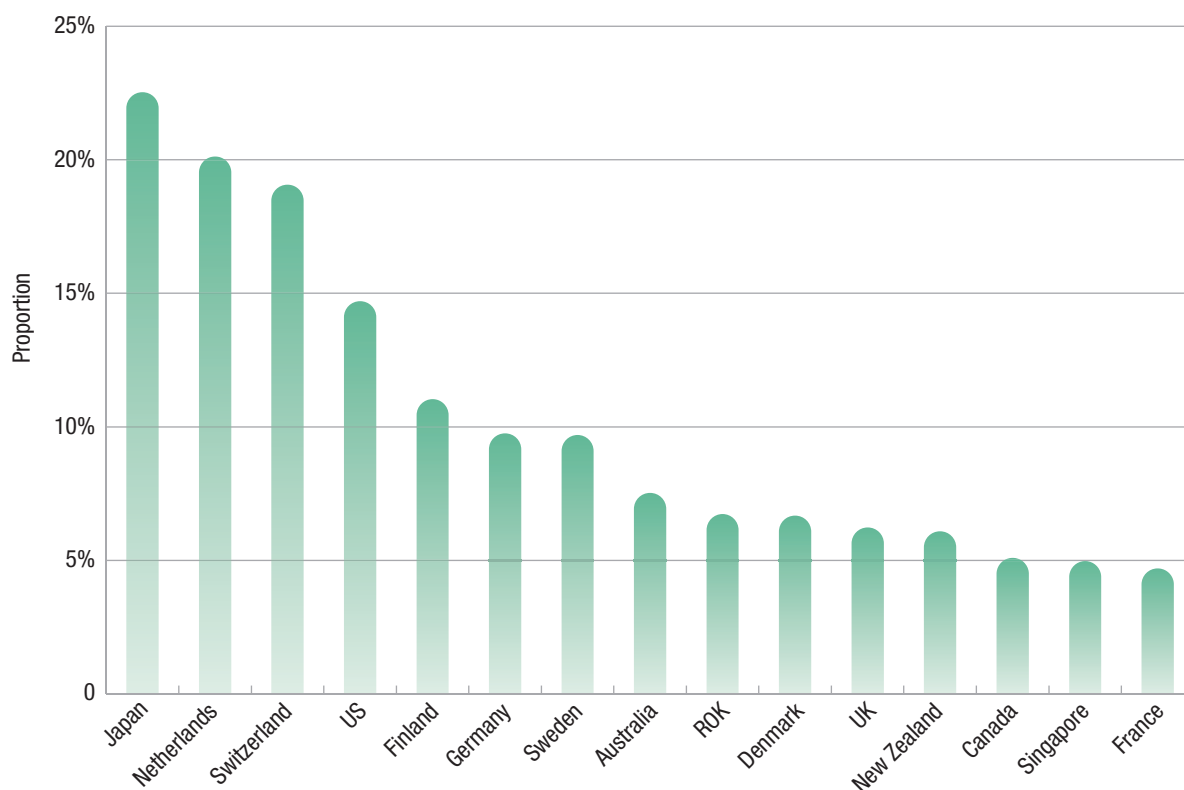


The number of PCT applications per 10,000 enterprise researchers can be used to measure the efficiency of the international patent output of enterprises. Japan has the highest number of granted national-phase PCT applications, at 26,000 pieces, far exceeding other countries. The US, Germany, China and France rank second to fifth, with 9,116, 8,126, 7,180 and 4,046 granted applications, respectively. Regarding the output efficiency of enterprise researchers, Switzerland maintains a clear advantage, with over 900 PCT applications per 10,000 enterprise researchers. Japan and South Africa rank second and third, with around 500 PCT applications per 10,000 enterprise researchers. Sweden, Denmark, Iceland, Germany, Finland, Italy, the Netherlands, Ireland and Austria have between 200 and 300 PCT applications per 10,000 enterprise researchers. More than half of the countries have a low output of PCT applications, fewer than 50 pieces.

IV. Intellectual property exports contribute relatively little to service exports in most countries

The status of intellectual property royalty income reflects a country's technology export capacity and international competitiveness. In 2024, 10 countries had intellectual property royalty income exceeding USD 10 billion, i.e. the US, the Netherlands, Japan, Germany, the UK, Switzerland, Singapore, France, Sweden and China. Among them, Japan, the Netherlands, Switzerland, the US, Germany and Sweden also have a relatively high proportion of intellectual property royalty income in service exports (Figure 5-5). Among the 60 countries, about half of them have intellectual property royalty income accounting for less than 1% of service exports, and in nine countries, this proportion drops to less than 0.1%.

Figure 5-5 Top 15 countries with the highest proportion of intellectual property royalty income in service exports



V. China is among the global top 10 in enterprise innovation capability

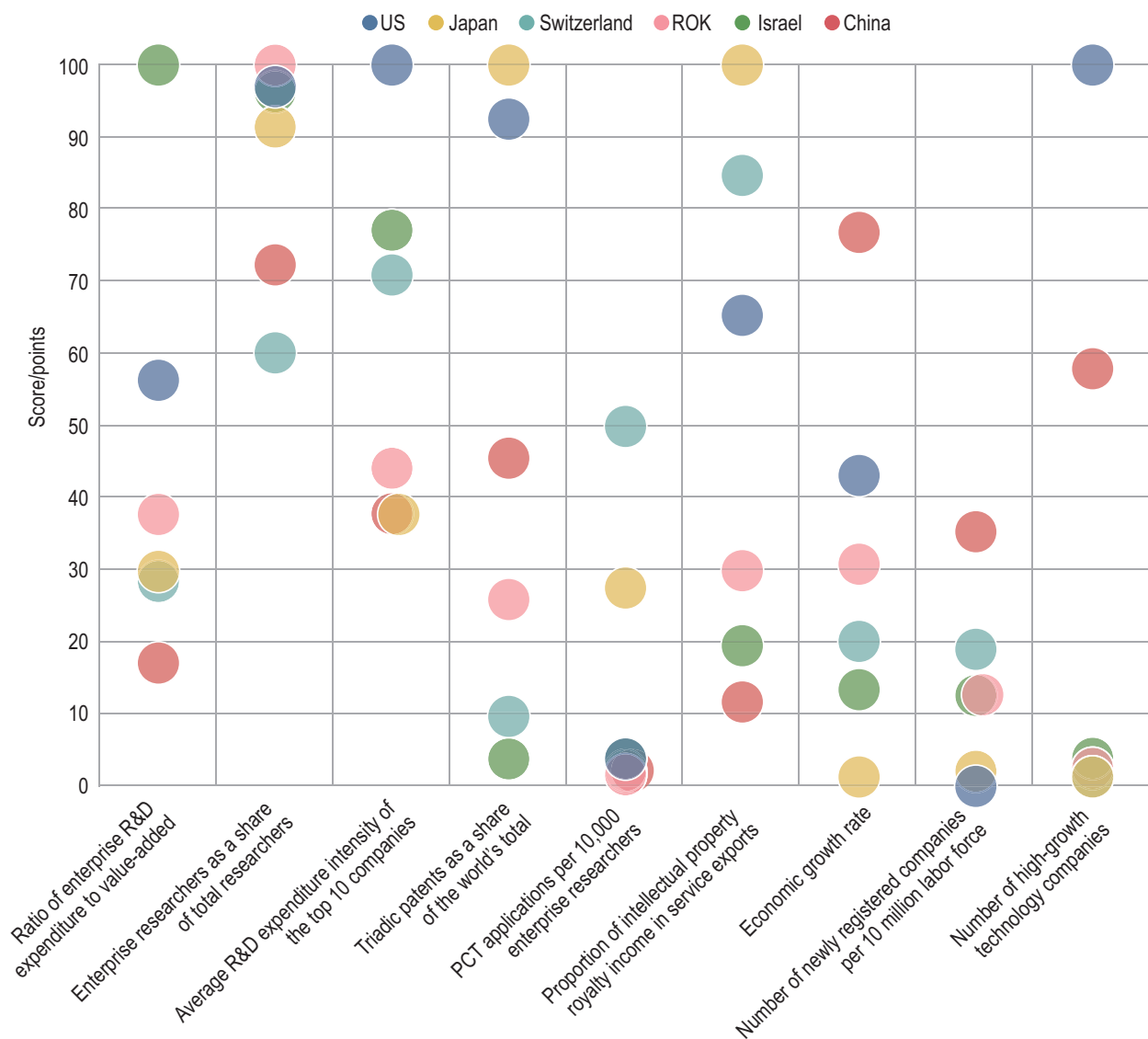
The US, Japan, Switzerland, the ROK and Israel are the top five countries on the enterprise innovation sub-index. China ranks ninth among the 60 countries with a score of 47.7 points. Compared to the top five countries, China lags behind to varying degrees on five out of the nine indicators.

China holds relative advantages on the number of high-growth technology companies, triadic patents as a share of the world's total, and economic growth rate. China's score for high-growth technology companies is lower only than the US, which puts it in the second place. Its score for triadic patents as a share of the world's total is a modest 45.5 points, ranking third globally. Its score for economic growth rate,

exceeding 75 points, is the highest among the nine indicators, ranking fourth.

China's performance on the indicator of enterprise researchers as a share of total researchers is relatively good, with a score exceeding 70 points. However, its scores on the other five indicators are all below 40 points. China performs poorly on three indicators, i.e. PCT applications per 10,000 enterprise researchers, proportion of intellectual property royalty income in service exports, and ratio of enterprise R&D expenditure to value-added, with a clear gap compared to top-ranking countries (Figure 5-6). The relatively low rankings of four indicators, i.e. PCT applications per 10,000 enterprise researchers, proportion of intellectual property royalty income in service exports, average R&D expenditure intensity of the top 10 companies, and ratio of enterprise R&D expenditure to value-added, are the main factors dragging China's ranking on enterprise innovation (Figure 5-6). To further improve its ranking on this sub-index, China needs to step up its R&D investment and focus on enhancing the ability of enterprises to create and protect intellectual property overseas.

Figure 5-6 China and the top five countries on the enterprise innovation sub-index





6

Innovation Performance

Countries exhibit a gradient pattern of distribution on innovation performance

Significant gaps exist across countries in the innovation levels and international competitiveness of manufacturing and service industries

Developed economies dominate the high ground of production efficiency, while significant divergence exists in green output benefits

China is in the middle of the ranking table on innovation performance



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Innovation performance encompasses various outputs generated by innovation activities, as well as their direct and indirect impacts on the economy and society. The innovation performance sub-index measures and evaluates the output of innovation activities and their contribution to the economy with six indicators: proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector; proportion of ICT service exports in total service exports; proportion of high-tech products in total manufacturing exports; labor productivity; economic output per unit of energy consumption; and economic output per unit of CO₂ emission.

I. Countries exhibit a gradient pattern of distribution on innovation performance

Looking at the scores of the innovation performance sub-index, the 60 countries exhibit a clear pattern of gradient distribution. Countries in the first tier have scores of 60 points or above; those in the second tier have scores between 40 and 60 points (40 included); those in the third tier have scores between 20 and 40 points (20 included); and those in the fourth tier have scores below 20 points (Figure 6-1). The gap between adjacent countries within the first tier is significant, while gaps within the other tiers are less notable.

Small innovative countries such as Ireland, Switzerland, Singapore, Israel, Norway and Sweden are in the first tier with significant advantages on innovation performance. Traditional major countries such as the UK, France, Germany and the US are in the second tier. India is in the middle of the third tier, while Brazil and Russia are in the fourth tier. It is evident that country size is not a determining factor of innovation performance; flexible policies and intensive resource input often lead to higher performance output.

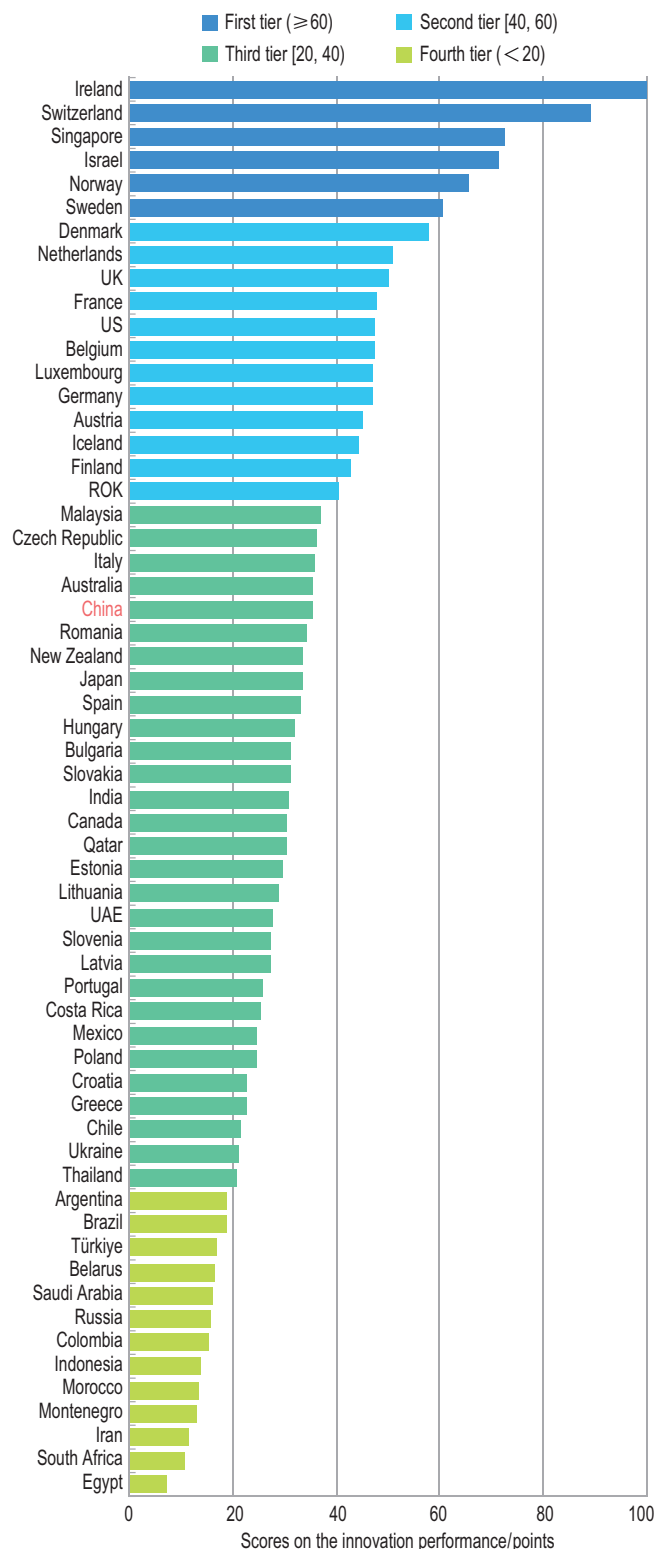
There is a notable divergence between countries' innovation performance and their overall innovation rankings. Romania, Slovakia, Ireland, Mexico, Norway, Singapore and Luxembourg have significantly higher rankings on the innovation performance sub-index than their overall NII

rankings, demonstrating a strong capacity to convert innovation resources into output. The innovation performance sub-index rankings of the Netherlands, France, Switzerland, Denmark, Sweden and the UK are very close to their overall NII rankings, reflecting the sound coordination of their innovation systems. The innovation performance sub-index rankings of Japan, China, Saudi Arabia, Canada, the ROK, Slovenia, South Africa, the US, Estonia and Germany lag behind their overall NII rankings, highlighting the need for more efficient conversion of R&D investment into high-quality economic output.

II. Significant gaps exist across countries in the innovation levels and international competitiveness of manufacturing and service industries

The structure and trade of knowledge-intensive industries can reflect a country's "hard technology" strength and its advantages in global competition. In terms of the structure of manufacturing production, Singapore has the highest proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector, at 82.3%, demonstrating an extremely high level of industrial sophistication. Switzerland (71.4%) and the ROK (65.6%) rank second and third, respectively, while traditional industrial powers such as Germany and Japan are above 50%. By contrast, resource-based or agricultural countries such as Argentina, Chile and New Zealand are mostly below 30%.

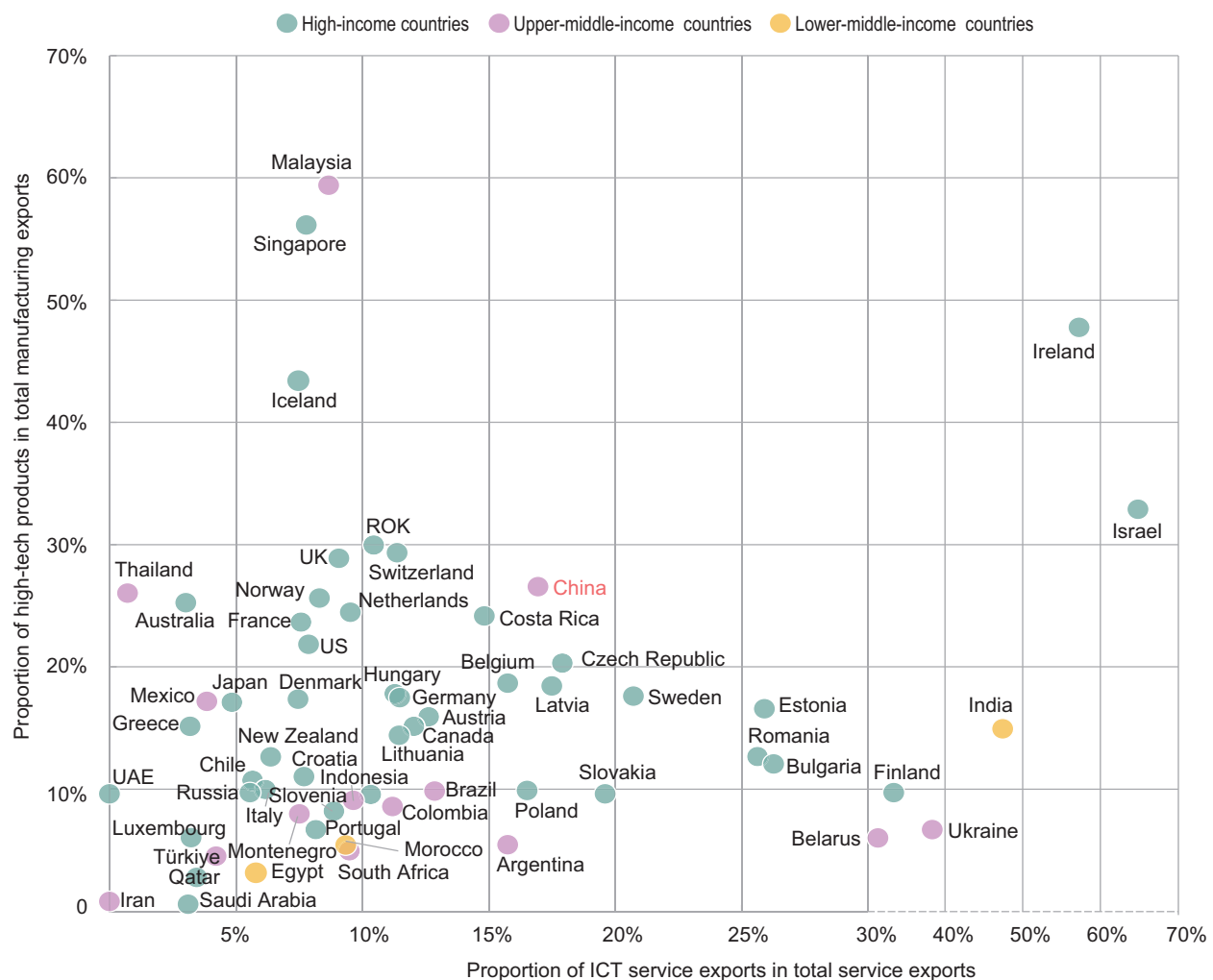
Figure 6-1 Global rankings and scores of countries on the innovation performance sub-index



In terms of the structure of manufacturing export, Malaysia and Singapore are the best performers, with high-tech product exports accounting for 59.4% and 56.1% of their total manufacturing exports, respectively (Figure 6-2). Ireland has a share of 47.8% and Iceland 43.4%, both at relatively high levels. Israel has a share above 30%. China, the US and the ROK, all of which have large manufacturing exports, record shares above 20%. Countries with unitary export structures, such as South Africa, Türkiye and Egypt, have shares below 5%.

In terms of the structure of service exports, Israel has the highest proportion of ICT service exports in total service exports, at 64.8%, demonstrating a high level of digitalization and technology intensity in its service trade. Ireland ranks second with a share of 57.2%, and India ranks third with a share of 47.4%. Countries such as Ukraine, Finland and Belarus all have shares exceeding 30%. In contrast, traditional service powerhouses such as the US and Australia have ICT service exports accounting for less than 10% of their total service exports.

Figure 6-2 High-tech products and ICT service exports



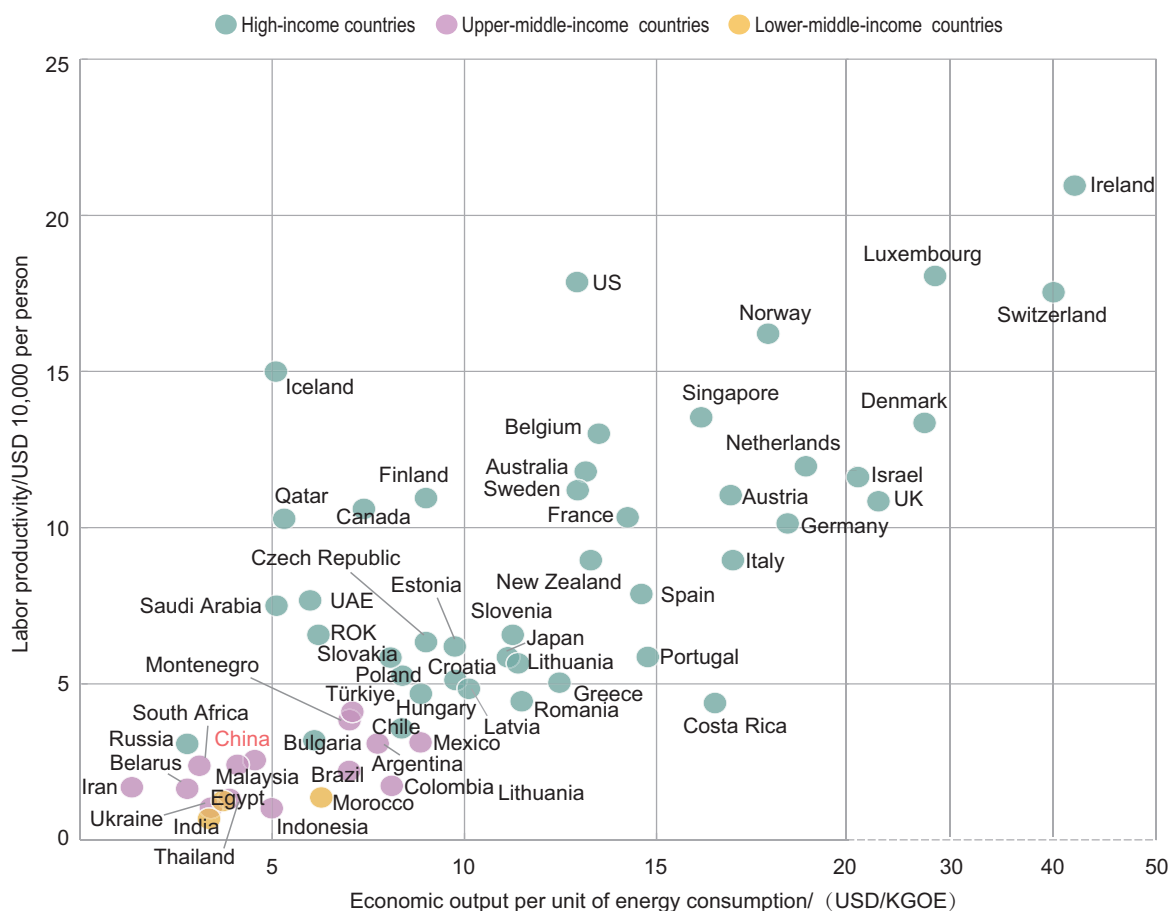
III. Developed economies dominate the high ground of production efficiency, while significant divergence exists in green output benefits

Labor productivity is a core indicator for measuring a country's quality of economic development and its capacity for innovation-driven growth. Globally, labor productivity exhibits a highly uneven distribution. Ireland has the highest labor productivity, at USD 209,500 per person, ranking first globally, while Luxembourg, the US and Switzerland are all above USD 170,000 per person (Figure 6-3). Norway, Iceland, Denmark and Singapore trail closely behind, ranging from USD 130,000 to USD 160,000 per person, demonstrating high-level human capital and extensive technology application in developed countries. Japan and the ROK, the two manufacturing powerhouses, have labor productivity of approximately USD 60,000 per person. Developing and emerging economies are mostly below USD 50,000 per person in labor productivity, with Russia at USD 30,800 per person, China at USD 25,500 per person, and India at USD 6,700 per person.

In terms of green and low-carbon development, economic output per unit of energy consumption reflects the technological sophistication and environmental friendliness of a country's industrial structure. Ireland (USD 42.10 per kilogram of oil equivalent) and Switzerland (USD 40.07 per kilogram of oil equivalent) are far ahead. Luxembourg, Denmark, the UK and Israel also stand out in performance, all exceeding USD 20 per kilogram of oil equivalent. Germany, Singapore, France, Sweden, the US and Japan are all between USD 10 and USD 20 per kilogram of oil equivalent, exhibiting a high level of energy efficiency. Emerging economies, on the other hand, are generally below USD 5 per kilogram of oil equivalent.

In terms of carbon emissions, Switzerland and Sweden have exhibited extremely notable features of low-carbon economy, with economic output per unit of CO₂ emissions reaching USD 260.75 and USD 258.24, respectively. France (USD 122.70) and the UK (USD 95.14), along with other European countries, rank at the forefront due to their advantages of clean energy structure. Countries such as Russia, South Africa and India, which rely primarily on resource-based or heavy chemical industries, generally have low values for this indicator. Emerging countries still face severe challenges in improving energy efficiency and promoting green industrial transformation.

Figure 6–3 Productivity

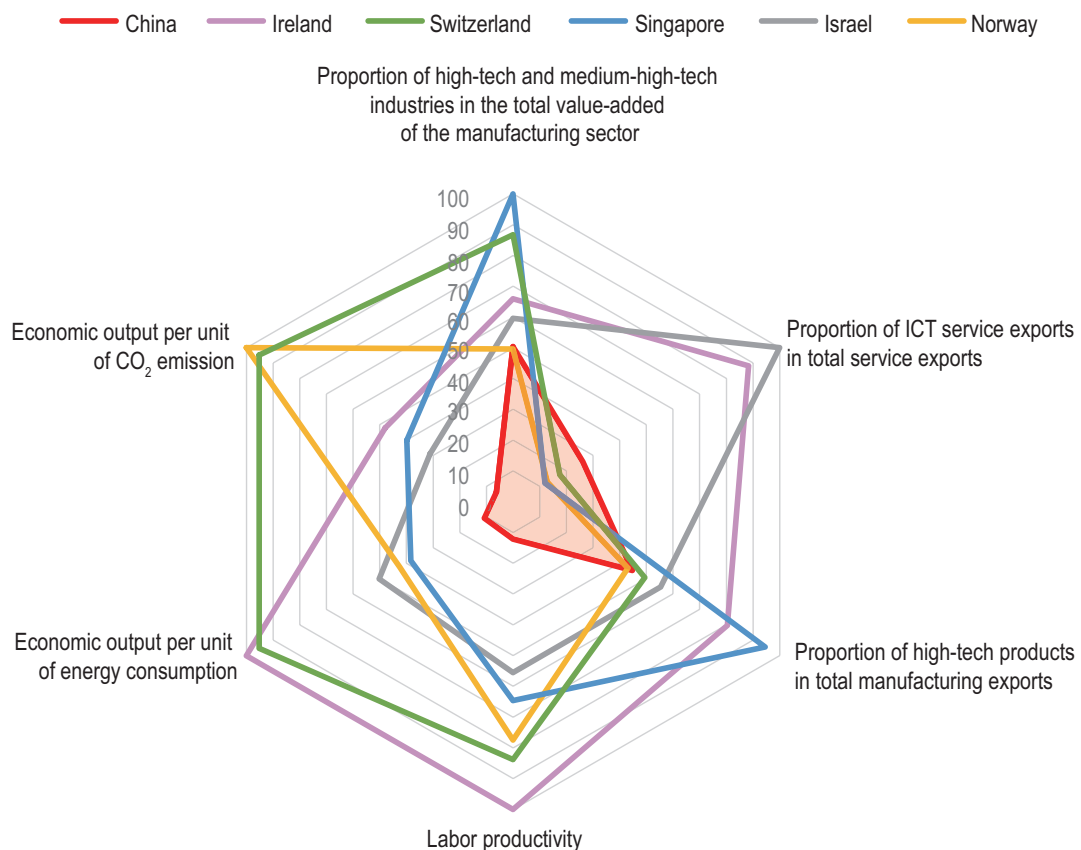


IV. China is in the middle of the ranking table on innovation performance

Ireland, Switzerland, Singapore, Israel and Norway are the top five countries on the innovation performance sub-index. China, with a score of 35.35 points, ranks 23rd among the 60 countries, which is the lowest of its scores on the six first-level indicators. Among the six basic indicators, China ranks 24th on one, outperforming some of the top five countries on that same indicator, but ranks relatively low on three others.

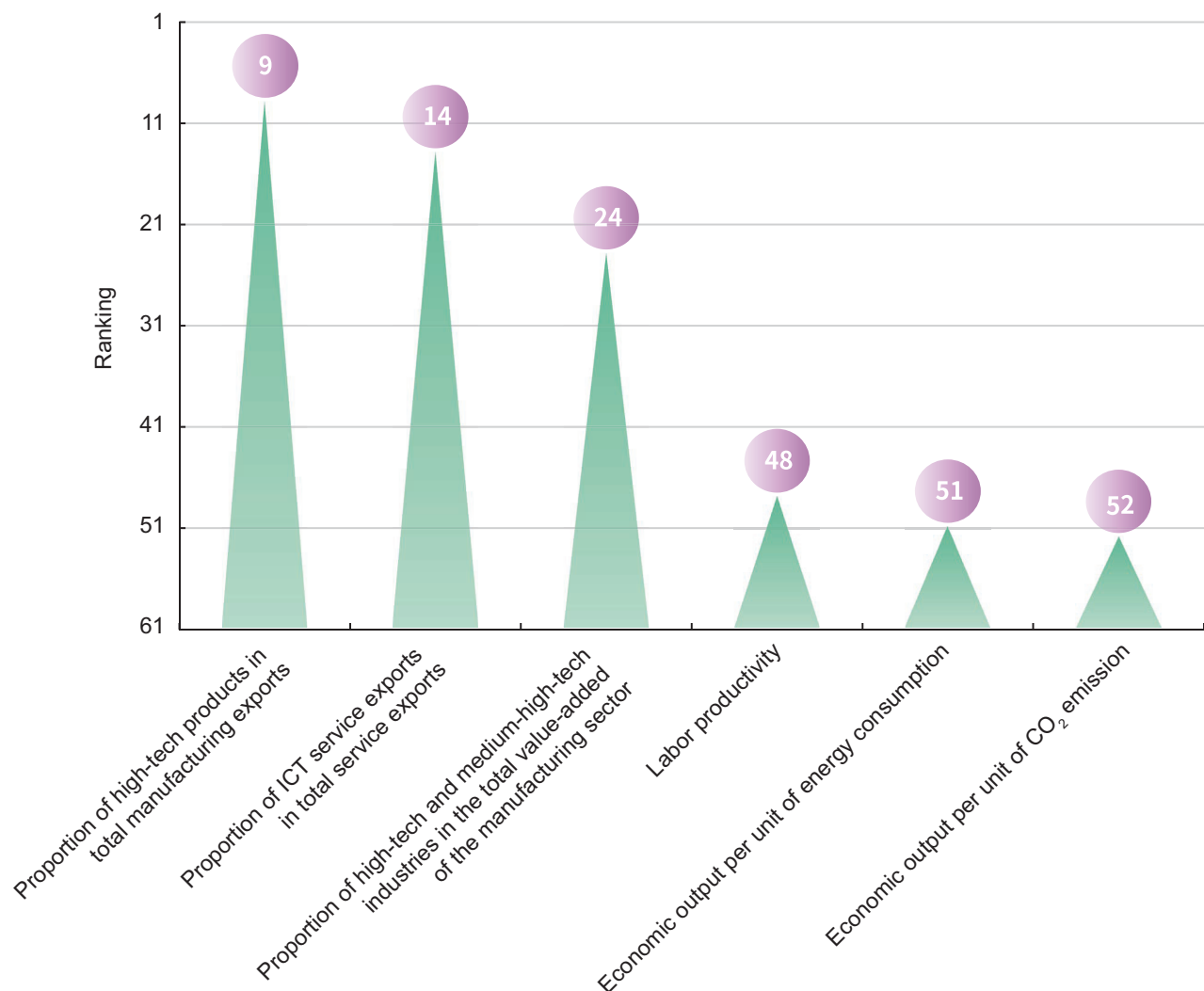
China performs relatively well in the export of high-tech industries and services. China's score on the indicator "proportion of high-tech products in total manufacturing exports" is 44.72 points, ranking ninth, which is higher than Norway (43.13 points) in the top five countries on innovation performance (Figures 6-4, 6-5). China's score on the indicator "proportion of ICT service exports in total service exports" is 26.14 points, ranking 14th, which is higher than Norway (12.8 points), Switzerland (17.54 points) and Singapore (12.01 points) in the top five countries on innovation performance. China's score on the indicator "proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector" is 50.35 points, ranking 24th, which is higher than Norway (49.63 points) in the top five countries on innovation performance.

Figure 6-4 China and the top five countries on the innovation performance sub-index



China still has notable weaknesses in areas such as production efficiency and green development, with low scores on three indicators: labor productivity (12.18 points), economic output per unit of energy consumption (10.79 points), and economic output per unit of CO₂ emission (6.26 points). On the whole, while China has made significant progress in optimizing energy structure, cultivating green industries, and promoting the advancement of manufacturing toward the mid-to-high end of the value chain, there remains substantial room for improvement in its overall innovation performance compared to leading innovation powers. Therefore, on its journey toward becoming a science and technology powerhouse, China needs to further deepen green and innovation-driven transformation, focus on increasing total factor productivity, and leverage science and technology to reduce energy consumption intensity and carbon emissions, thereby achieving a fundamental upgrade in innovation performance, from an advantage rooted in industrial scale to one defined by development quality.

Figure 6–5 China’s global rankings on the indicators of the innovation performance sub-index





Innovation Governance

Developed economies are in the lead, with significant regional differentiation and stratification across the globe

Europe and Asia have relatively favorable policy environments

Countries such as Finland and Singapore have relatively flexible and efficient market mechanisms

Developed countries are generally ahead in innovation ecosystem and have their own distinctive features

China needs further improvement on innovation governance



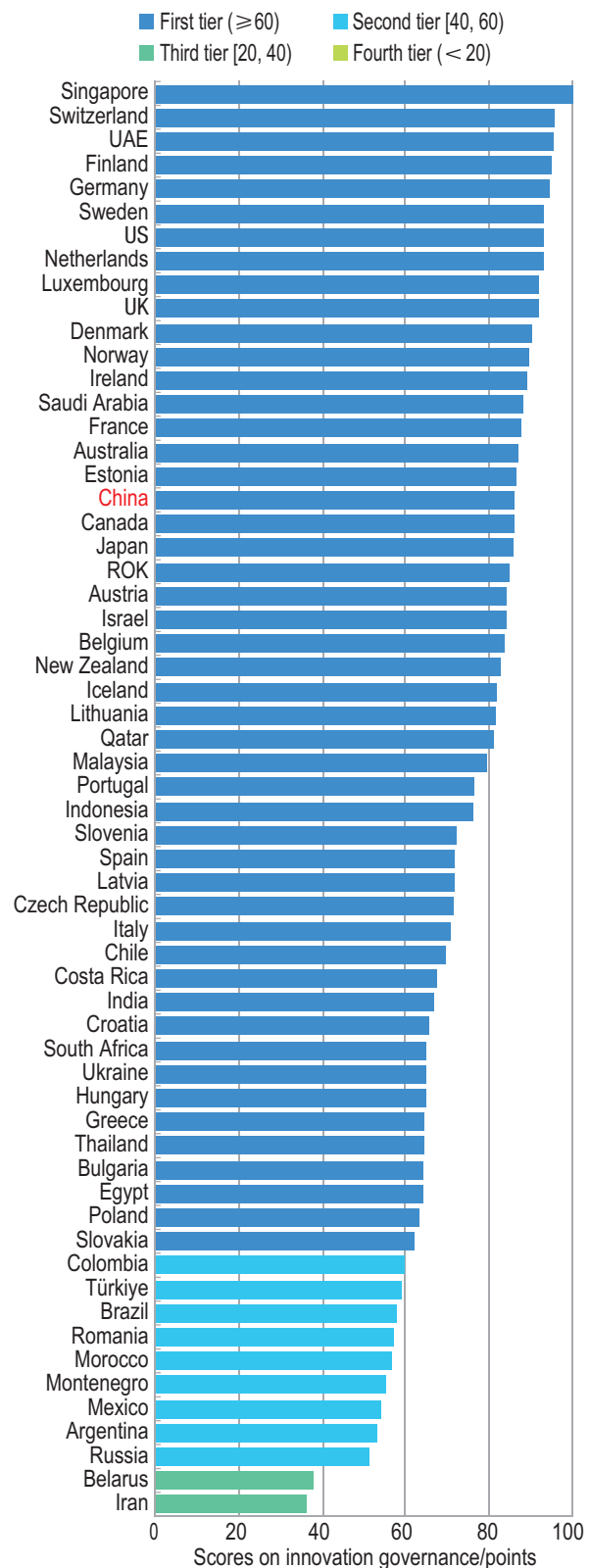
National Innovation Index Report 2025

Innovation governance is an important guarantee for enhancing a country's innovation capacity. Factors of the innovation ecosystem such as policy, institutions and society directly affect innovation activities and all aspects of innovation entities. The innovation governance sub-index comprehensively measures the governance system and eco-environment of innovation activities with 10 indicators: rule-of-law environment; policy environment for doing business; e-government services; level of ICT development; availability of venture capital for startups and scaleups; industry-university R&D collaboration; proportion of international co-authored papers in all domestic papers; Number of technical (sub) committees of the International Organization for Standardization; ratio of international investment to GDP; and entrepreneurial culture.

I. Developed economies are in the lead, with significant regional differentiation and stratification across the globe

On the innovation governance sub-index, economically advanced countries in Europe and North America mostly have higher rankings. Singapore leads the list, followed by Switzerland, the UAE, Finland, Germany, Sweden and the US in the second to the seventh place. The top 15 countries all have scores above 87 points, though a noticeable gap remains relative to frontrunners like Germany and the US. Countries ranking 20th to 50th cover a wide score range, approximately 25 points, and mainly include Japan, the ROK, Malaysia, India and South Africa. At the tail end, the gap is clear among countries ranking 50th to 60th, which include Türkiye, Brazil and Argentina, with Belarus and Iran scoring significantly lower than the rest (Figure 7-1).

Figure 7-1 Global rankings and scores of countries on the innovation governance sub-index



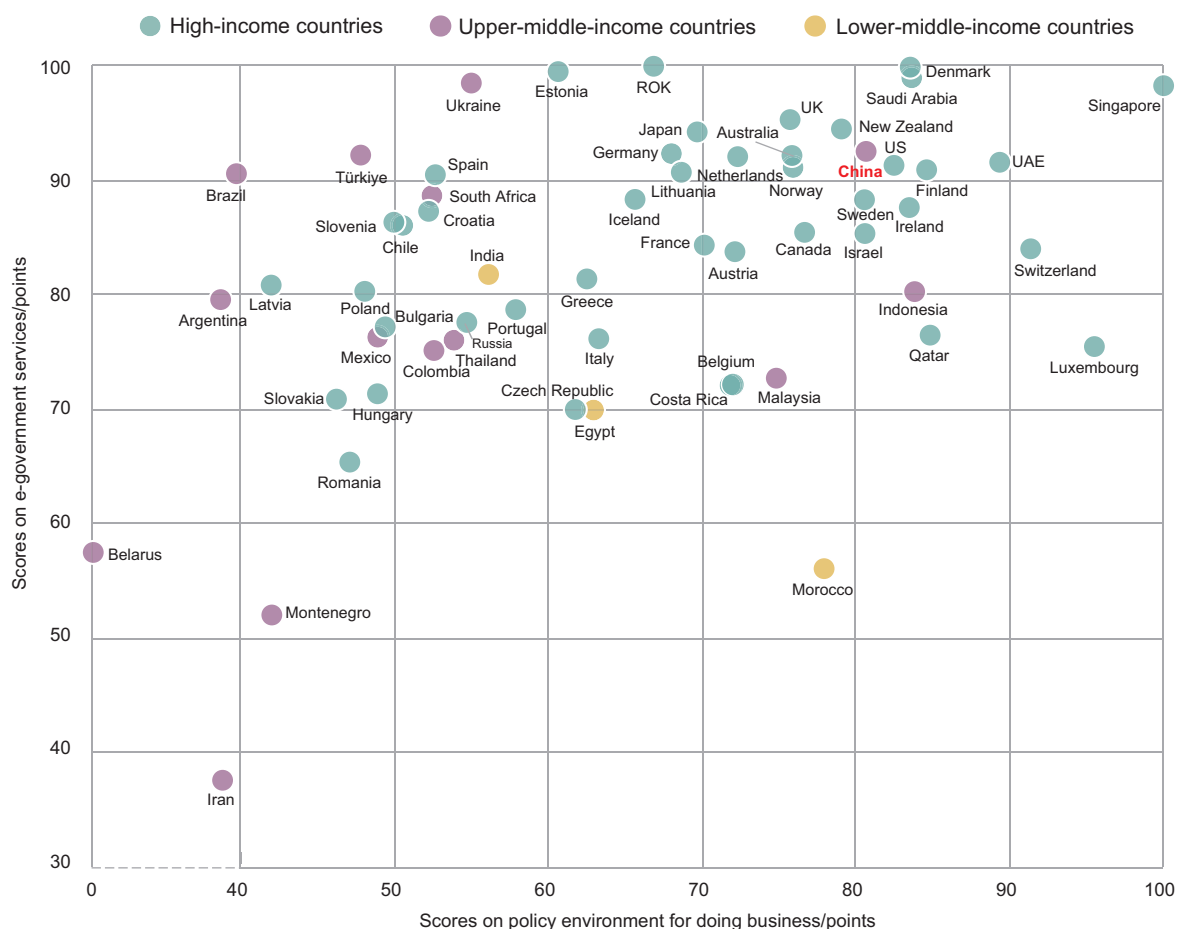
The performance of countries varies across regions. European countries as a whole stand out in performance, occupying 14 seats in the global top 20. Asia is notably diversified, with Singapore, China, Japan and the ROK making into the top 25, while Malaysia, India and Thailand staying in the middle. Countries in America have exhibited a clear gradient pattern, with the US and Canada at the front, Chile and Costa Rica in the middle, and Brazil and Argentina staying relatively behind. The situation in the Middle East and Africa is mixed, with the UAE and Saudi Arabia at the front, and Egypt, Morocco and South Africa in the middle or behind. Overall, countries' governance performance is closely linked to their level of economic development, institutional paths, and social and cultural background.

II. Europe and Asia have relatively favorable policy environments

An efficient and excellent national policy environment is the primary condition for achieving flexible innovation and entrepreneurship. In terms of the policy environment for doing business, countries vary significantly in scores. Singapore ranks first globally, followed by Luxembourg, Switzerland, the UAE, Qatar, Finland, Indonesia, Saudi Arabia, Denmark and Ireland, all scoring above 80 points. The US and China rank 11th and 12th, respectively. Countries at the lower end, such as Brazil, Iran and Argentina, all have scores at around 30 points. On the more foundational rule-of-law environment indicator, Finland, Denmark, Norway, Switzerland, Singapore, Luxembourg, Austria, Iceland, New Zealand and the Netherlands rank in the top 10.

On the indicator of e-government services, countries' scores have exhibited a clear pattern of gradient distribution. The ROK ranks first with a full score, followed by Denmark, Estonia, Saudi Arabia and Ukraine in the top five (Figure 7-2). Countries such as Singapore, the UK, New Zealand, Japan, China, Germany, Türkiye and Australia form the second tier, with scores between 90 and 98 points, and China has scored 92.58 points on this indicator. Sweden, Ireland, Canada, Israel, France, Switzerland and others have scores between 80 and 90 points. 17 countries, including Argentina, Portugal, Russia, Mexico and Italy, have scores between 70 and 80 points. Countries with lower scores include Romania, Belarus and Morocco.

Figure 7-2 Policy environment for doing business



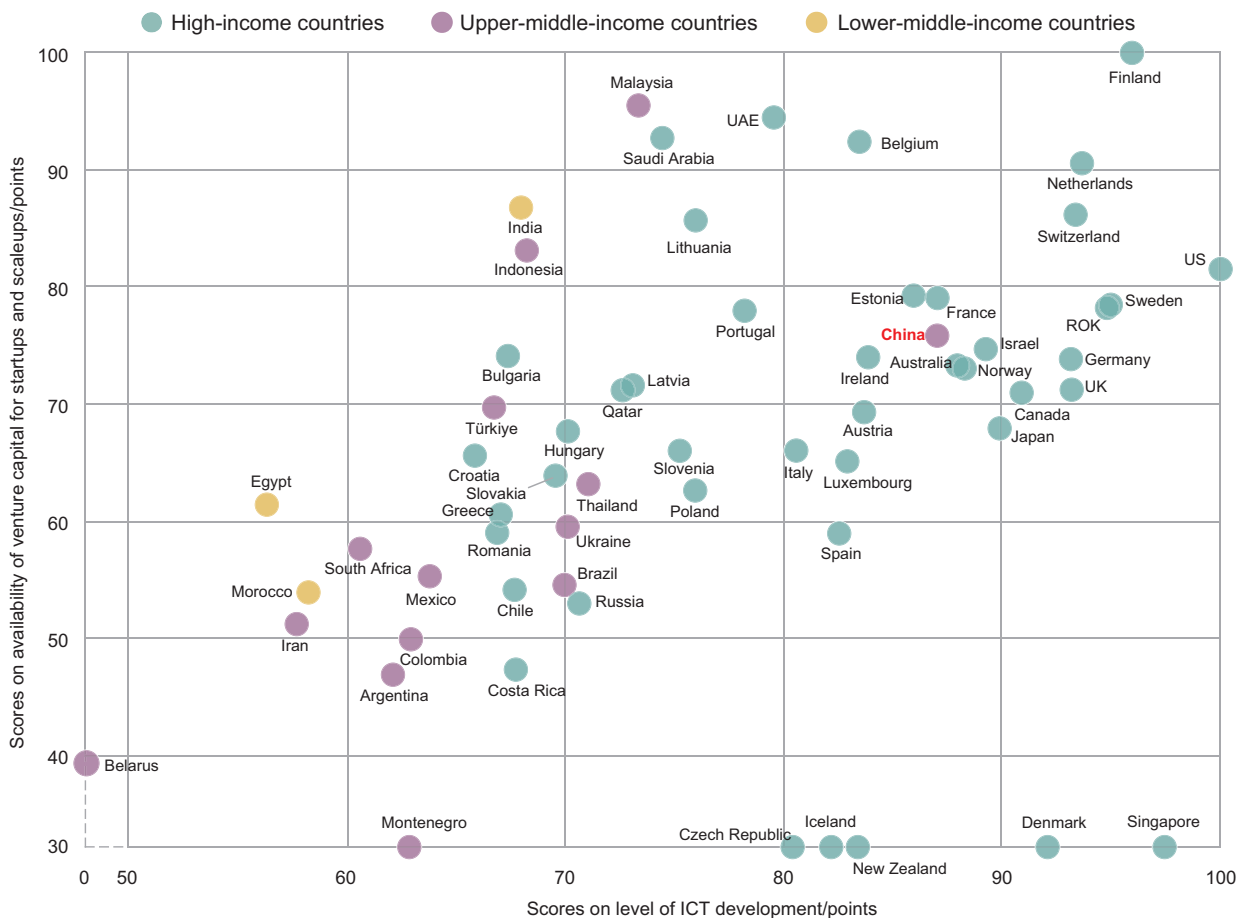
III. Countries such as Finland and Singapore have relatively flexible and efficient market mechanisms

Smooth and flexible market mechanisms can maximize the vitality of innovation and entrepreneurship. On the indicator of level of ICT development, scores are relatively balanced across countries. The US and Singapore are the best performers, followed by Finland, Sweden and the ROK, all scoring above 94 points (Figure 7-3). Most countries, including China and Australia, have scores between 70 and 90 points, placing themselves in the upper-middle range. Egypt, Morocco, Iran and others have scores below 60 points.

On the indicator of availability of venture capital for startups and scaleups, Finland ranks first globally, followed by Malaysia, the UAE, Saudi Arabia, Belgium, the Netherlands, India, Switzerland, Lithuania, Indonesia and the US, with scores of 80 points or above. Estonia, France, Sweden, the ROK, Portugal, China and Israel, among others, have scores between 70 and 80 points. Türkiye, Austria, Japan and Hungary, among others, have scores between 60 and 70 points. Ukraine, Romania, Spain, South Africa, Mexico and Brazil, among others, have scores below 60 points. On the indicator of industry-university

R&D collaboration, Israel ranks first with a full score, followed by Switzerland, Norway, the US and the Netherlands, with scores above 80 points, demonstrating the soundness of their industry-university R&D collaboration system and the high efficiency of knowledge conversion. China, Germany and the UK, among others, have scores between 70 and 80 points. Greece and Iran, among others have scores below 50 points.

Figure 7-3 Market mechanism



IV. Developed countries are generally ahead in innovation ecosystem and have their own distinctive features

The proportion of international co-authored papers in all domestic papers measures the extent to which a country's research system is integrated into the global knowledge production network. A high proportion often indicates stronger international academic collaboration and knowledge movement.

Most developed economies and small open economies excel on this indicator, with average values remaining at a high level, reflecting the growing trend of global collaboration in scientific research. However, some larger economies have relatively low proportions. The UAE has the highest proportion

globally at 86.9%, followed by Saudi Arabia, Luxembourg, Iceland, Costa Rica, Qatar, Singapore, Belarus, Montenegro and Switzerland, all with proportions above 75% (Figure 7-4). The middle tier includes most developed countries in Europe and Oceania, as well as some emerging economies, such as Austria, Belgium, Denmark, Sweden, the Netherlands, the UK, Germany and France, with proportions between 60% and 75%. In contrast, some large economies with an expanded domestic research system or affected by specific factors—including China, India, Japan, the US, Brazil, Russia and Türkiye—have proportions below 50%.

The number of technical (sub) committees of the International Organization for Standardization that a country hosts reflects its leadership in setting technical rules. Germany (172), the US (118), France (107), Japan (107) and China (106) are the undisputed leaders in setting global technical standards.

The UK, Italy, the ROK, Sweden, Canada and Switzerland, among others, host between 20 and 100 committees. Most countries, including India, the Netherlands, South Africa and Norway, host fewer than 20 committees (Figure 7-5).

Figure 7-4 Proportion of international co-authored papers in all domestic papers

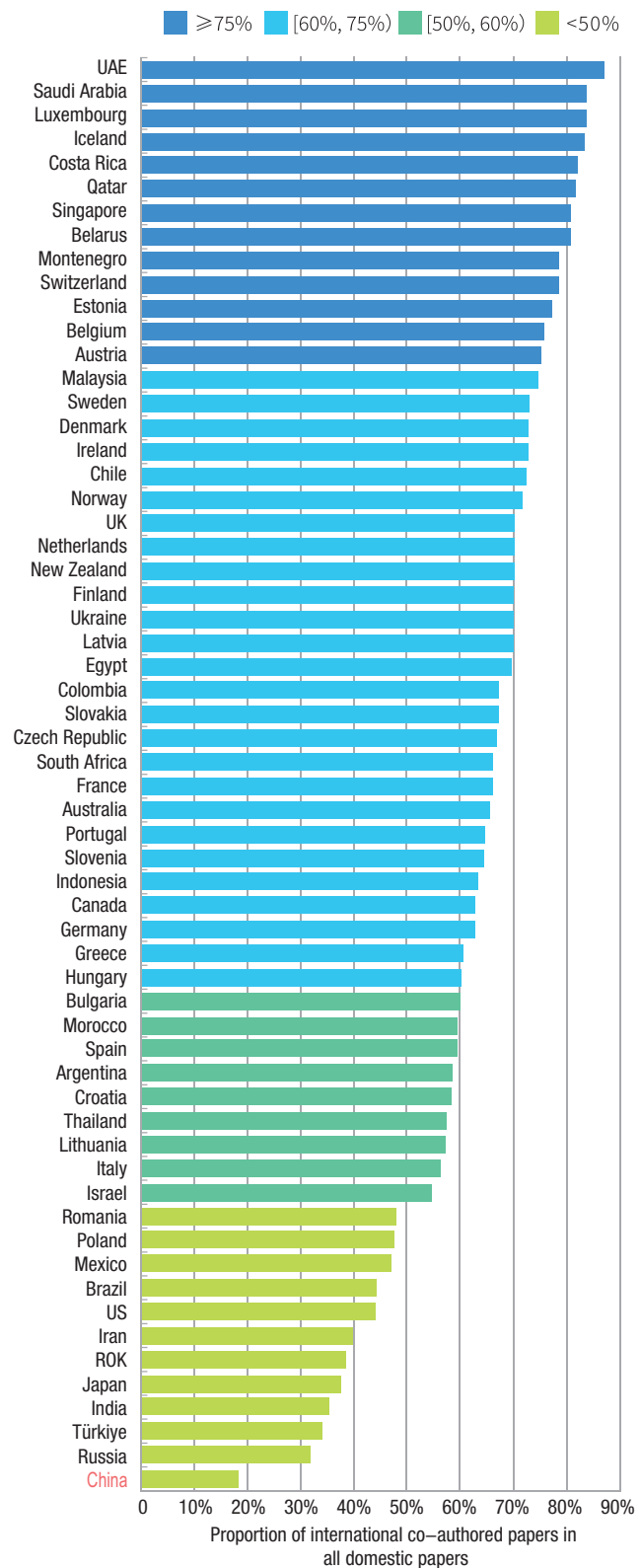
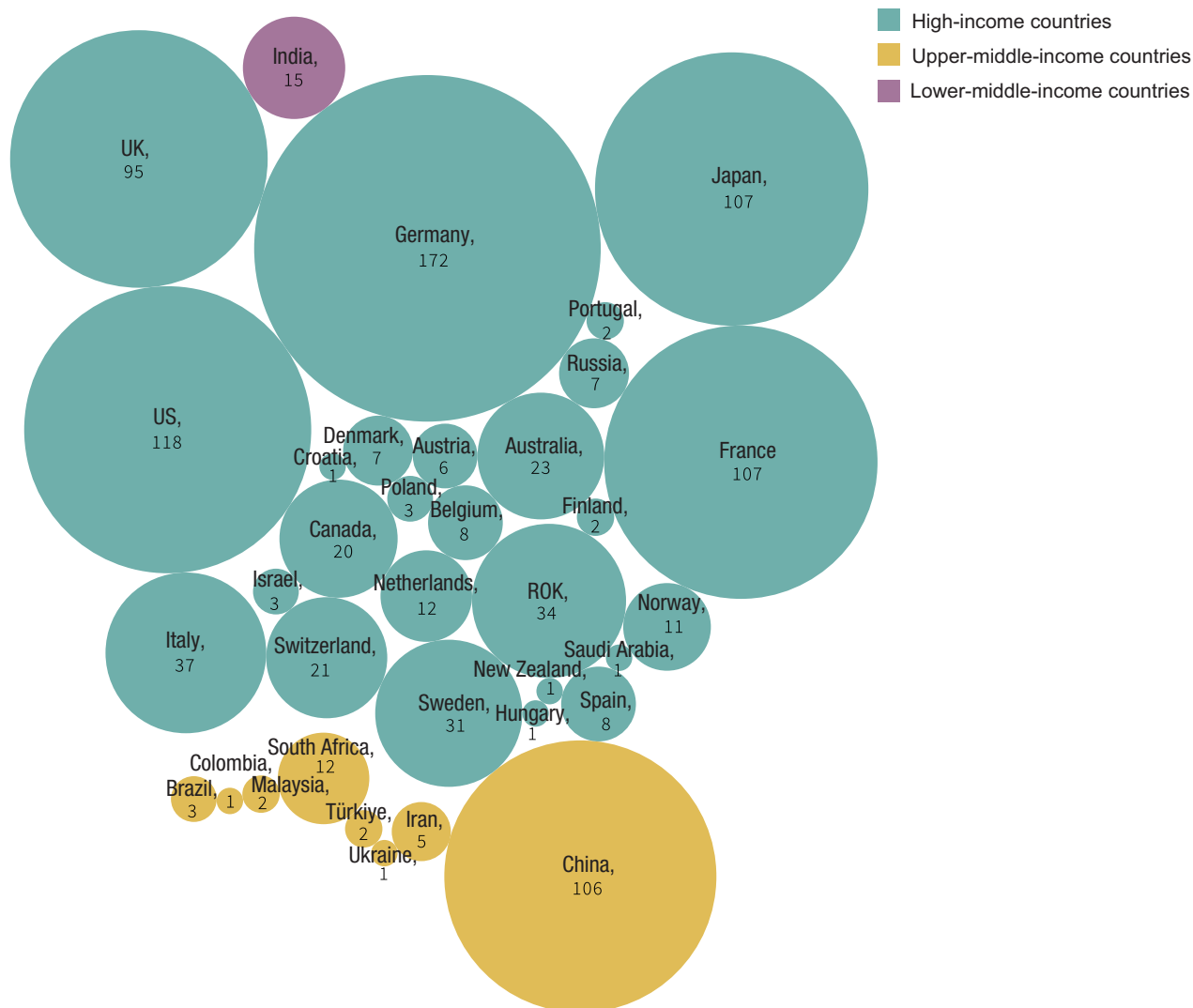


Figure 7-5 Number of technical (sub) committees of the International Organization for Standardization



The ratio of international investment to GDP reflects a country's openness to and attractiveness for international direct investment. It is an important measure of market vitality, the business environment, and the depth of integration into global value chains. Singapore and Luxembourg stand out in performance, demonstrating their roles as global financial and investment hubs (Figure 7-6). The UAE, Egypt and Ireland, among others, have ratios between 10% and 20%. The middle tier includes most developed economies and some emerging markets, such as Canada, Switzerland, Sweden, Portugal, Croatia, the Czech Republic, the Netherlands and Japan, with ratios between 3% and 10%. Countries such as the UK, China (1.49%), India, the US, Germany, Russia and Iran have ratios below 3%.

Scores on the entrepreneurial culture indicator are widely distributed, reflecting how much a society tolerates and encourages risk-taking and entrepreneurship. Emerging markets and Asian economies such

as the UAE, Malaysia, India and China stand out in performance, while Nordic and Western European countries such as Finland and the Netherlands also boast vibrant entrepreneurial cultures.

V. China needs further improvement on innovation governance

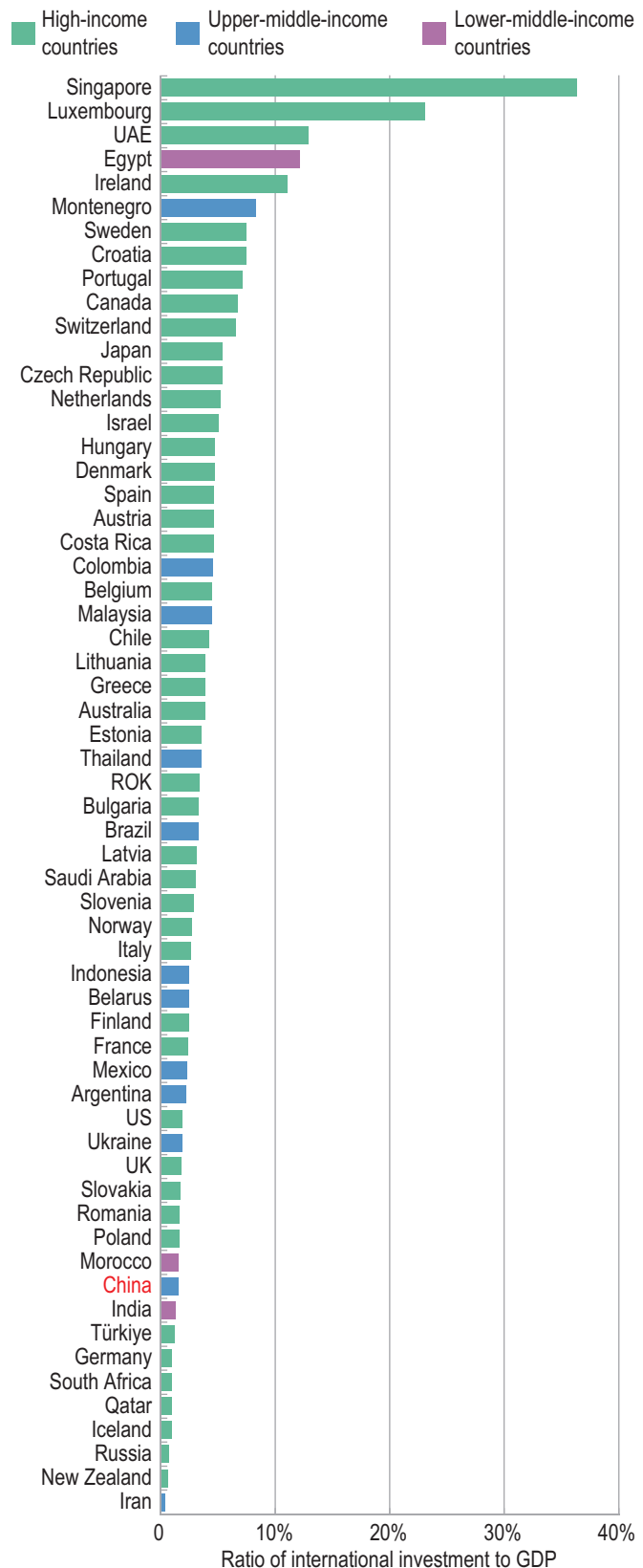
1. China has improved its innovation governance ranking, but yet to enter the first tier.

China ranks 18th on innovation governance with 86.13 points, up two places but still lagging behind most leading countries. The gap is twofold: First, compared to the average score of 90.99 points in the first tier, China still lags by 4.86 points; Second, among the leading (top 15) countries of overall innovation strength, only three countries, i.e. Japan (85.54), the ROK (84.98) and Israel (83.98), have scores lower than China. Most other countries in this group have scored more than 90 points, with Singapore at the top, followed by Switzerland (95.76) and Finland (95.13). Consequently, China's gap relative to its peers in this tier remains substantial.

2. China's performance on second-level indicators is uneven, doing particularly well on some indicators.

Among the second-level indicators, China ranks 47th on rule of law environment, and last (60th) on proportion of international co-authored papers in all domestic papers, indicating substantial room for future improvement. China ranks 17th on level of ICT development, 51st on the ratio of international investment to GDP, and 17th on

Figure 7-6 Ratio of international investment to GDP



the availability of venture capital for startups and scaleups, promising significant development potential (Figure 7-7, Figure 7-8). China ranks 10th on e-government services, 11th on industry-university R&D collaboration, and 12th on policy environment for doing business. China ranks fifth on the number of technical (sub) committees of the International Organization for Standardization, comparable to that of France and Japan. China ranks eighth on entrepreneurial culture, holding a clear advantage. It is worth noting that the top three countries on entrepreneurial culture are the UAE, Saudi Arabia and Lithuania, while the Netherlands only ranks fourth. This shows that many emerging economies have made remarkable progress in fostering entrepreneurial culture. They boast substantial potential for improvement in this area, and their market entities are vibrant in innovation and entrepreneurship.

Figure 7-7 China and the top five countries on the innovation governance sub-index

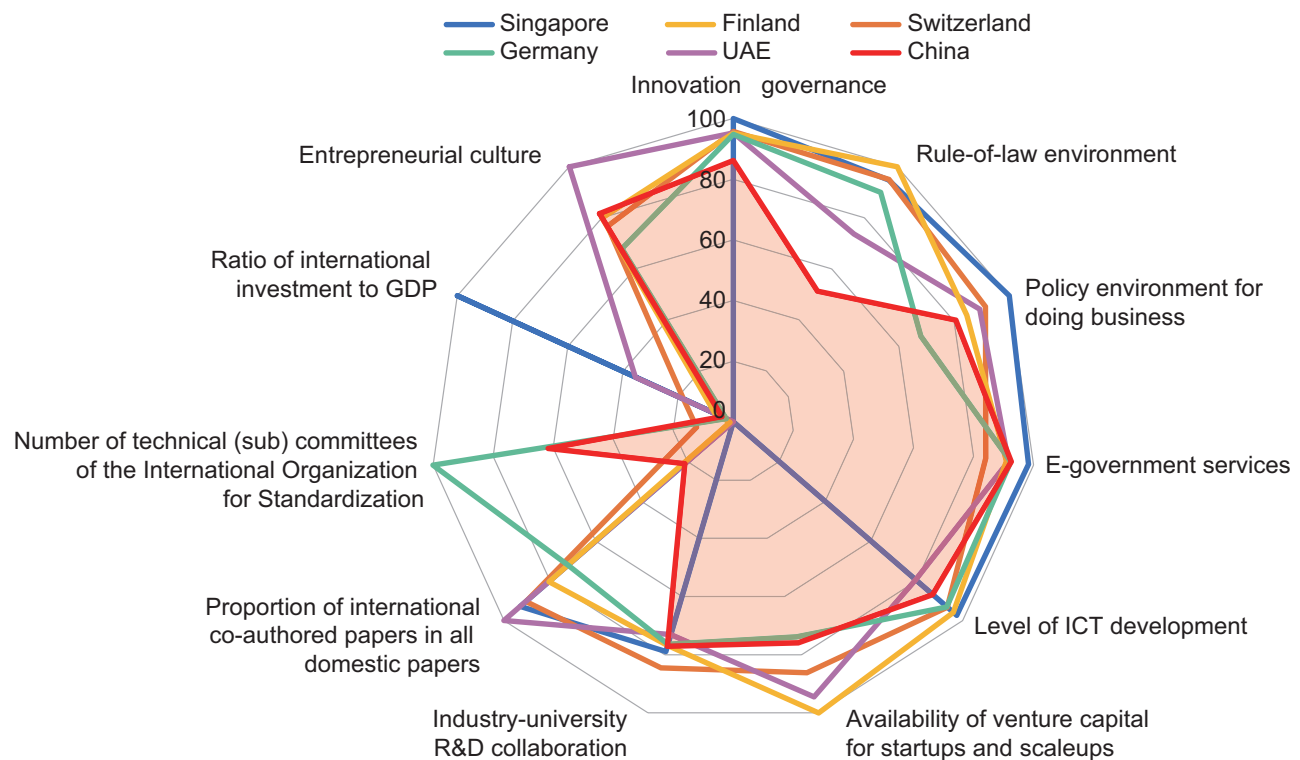
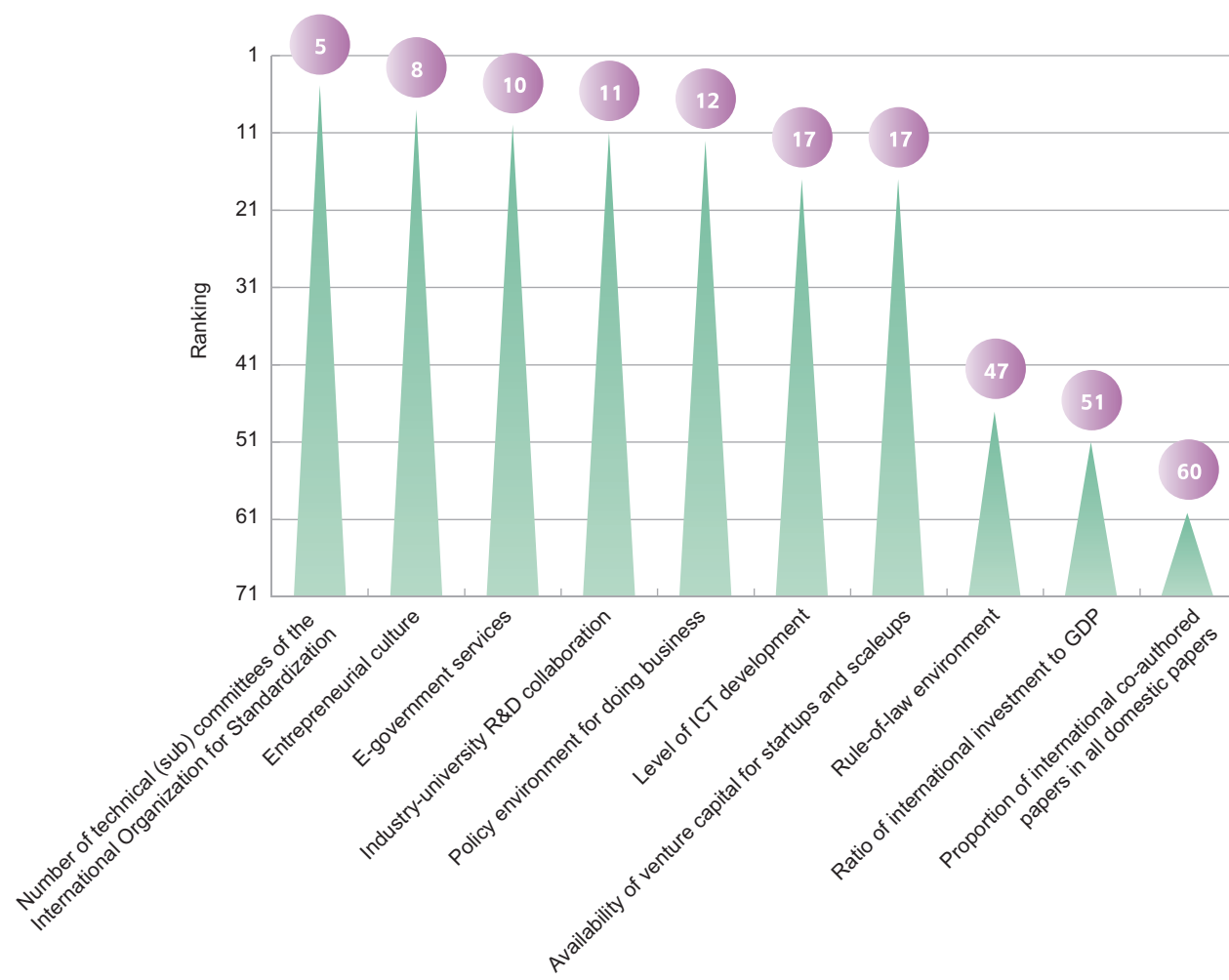


Figure 7-8 China's global rankings on the indicators of the innovation governance sub-index





8



Country Profiles



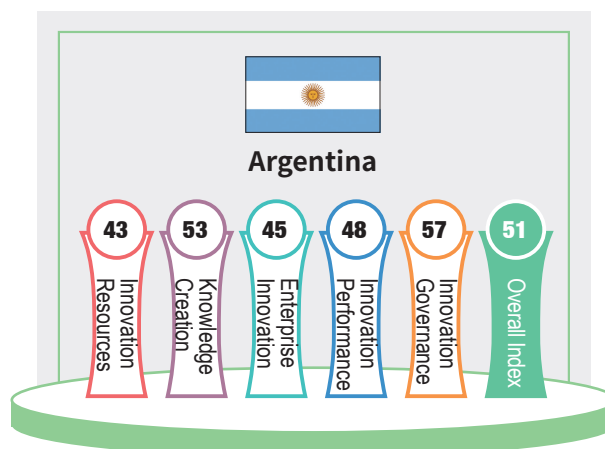
National Innovation Index Report 2025

Argentina

2025 Overall Index Ranking

51

Population/10,000 persons	4,569.6
Area/10,000 square kilometers	278
GDP/USD 100 million	6,332.7
GDP per capita/USD	13,858.2
Economic output per unit of energy consumption/(USD/KGOE)	7.7
R&D expenditure/USD 100 million	38.8
R&D expenditure intensity	0.60%
SCI indexed papers/pieces	10,654
Invention patents in force/pieces	1,891
Proportion of high-tech products in total manufacturing exports	5.4%



	Score	Ranking
 Innovation Resources	21.3	43
1.1 R&D expenditure as a percentage of GDP	9.5	50
1.2 Share of global R&D expenditure	0.4	38
1.3 Proportion of basic research expenditure in total R&D expenditure	46.6	21
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	1.9	42
1.5 Number of the world's first-tier research institutions	2.3	25
1.6 Proportion of STEM graduates in all college graduates	31.7	60
1.7 R&D personnel per 10,000 employed individuals	20.2	44
1.8 Number of highly cited scientists	0.1	39
1.9 Gross enrollment ratio in higher education	65.3	4
1.10 Average score of the top three domestic universities in the world university rankings top 500	69.2	13
1.11 Number of students enrolled in postgraduate education	6.0	16
1.12 Proportion of international students in total higher education enrollment	4.9	43

 Knowledge Creation	18.3	53
2.1 Number of S&T papers per USD 1 million of R&D expenditure	15.3	33
2.2 Invention patents in force per 10,000 employed individuals	0.2	51
2.3 Number of industrial design applications per USD 100 million of industrial value-added	7.9	17
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	18.9	49
2.5 Proportion of highly cited papers in all domestic papers	44.7	44
2.6 Number of major international S&T awards won	1.8	12

 Enterprise Innovation	19.0	45
3.1 Ratio of enterprise R&D expenditure to value-added	3.1	45
3.2 Enterprise researchers as a share of total researchers	13.7	51

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	91.6	2
3.4 Triadic patents as a share of the world's total	0.1	39
3.5 PCT applications per 10,000 enterprise researchers	6.2	19
3.6 Proportion of intellectual property royalty income in service exports	7.4	28
3.7 Economic growth rate	-26.5	60
3.8 Number of newly registered companies per 10 million labor force	0.8	58
3.9 Number of high-growth technology companies	0.1	37

 Innovation Performance	18.9	48
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	33.7	45
4.2 Proportion of ICT service exports in total service exports	24.3	16
4.3 Proportion of high-tech products in total manufacturing exports	9.2	53
4.4 Labor productivity	14.7	46
4.5 Economic output per unit of energy consumption	18.4	38
4.6 Economic output per unit of CO ₂ emission	10.8	38

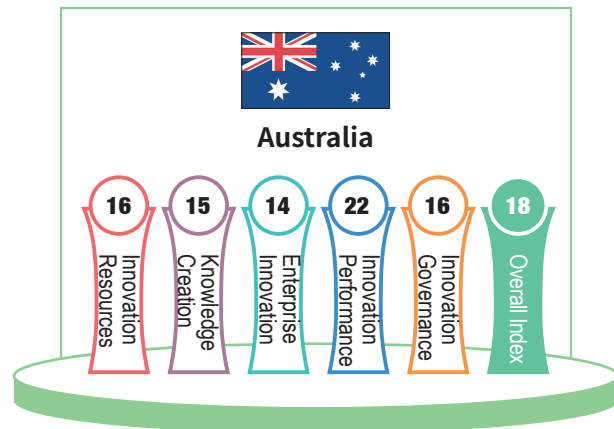
 Innovation Governance	53.2	57
5.1 Rule-of-law environment	42.3	53
5.2 Policy environment for doing business	34.3	59
5.3 E-government services	79.6	39
5.4 Level of ICT development	62.0	55
5.5 Availability of venture capital for startups and scaleups	47.0	53
5.6 Industry-university R&D collaboration	52.0	54
5.7 Proportion of international co-authored papers in all domestic papers	67.4	43
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	6.1	43
5.10 Entrepreneurial culture	46.8	52

Australia

2025 Overall Index Ranking

18

Population/10,000 persons	2,719.7
Area/10,000 square kilometers	769
GDP/USD 100 million	17,521.9
GDP per capita/USD	64,407.5
Economic output per unit of energy consumption/(USD/KGOE)	13.2
R&D expenditure/USD 100 million	257.4
R&D expenditure intensity	1.86%
SCI indexed papers/pieces	80,174
Invention patents in force/pieces	65,628
Proportion of high-tech products in total manufacturing exports	25.3%



	Score	Ranking
 Innovation Resources	42.4	16
1.1 R&D expenditure as a percentage of GDP	29.2	18
1.2 Share of global R&D expenditure	2.7	14
1.3 Proportion of basic research expenditure in total R&D expenditure	53.4	15
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	35.0	17
1.5 Number of the world's first-tier research institutions	17.8	8
1.6 Proportion of STEM graduates in all college graduates	40.7	53
1.7 R&D personnel per 10,000 employed individuals	46.1	31
1.8 Number of highly cited scientists	12.4	5
1.9 Gross enrollment ratio in higher education	63.4	7
1.10 Average score of the top three domestic universities in the world university rankings top 500	89.9	3
1.11 Number of students enrolled in postgraduate education	5.7	17
1.12 Proportion of international students in total higher education enrollment	39.0	4

 Knowledge Creation	37.6	15
2.1 Number of S&T papers per USD 1 million of R&D expenditure	17.5	27
2.2 Invention patents in force per 10,000 employed individuals	2.2	24
2.3 Number of industrial design applications per USD 100 million of industrial value-added	4.9	36
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	39.4	23
2.5 Proportion of highly cited papers in all domestic papers	68.7	12
2.6 Number of major international S&T awards won	0.9	17

 Enterprise Innovation	40.5	14
3.1 Ratio of enterprise R&D expenditure to value-added	9.0	33
3.2 Enterprise researchers as a share of total researchers	49.7	32

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	50.0	13
3.4 Triadic patents as a share of the world's total	2.3	17
3.5 PCT applications per 10,000 enterprise researchers	7.4	18
3.6 Proportion of intellectual property royalty income in service exports	33.4	8
3.7 Economic growth rate	22.1	37
3.8 Number of newly registered companies per 10 million labor force	71.0	4
3.9 Number of high-growth technology companies	0.9	16

 Innovation Performance	35.5	22
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	35.4	41
4.2 Proportion of ICT service exports in total service exports	4.7	57
4.3 Proportion of high-tech products in total manufacturing exports	42.5	12
4.4 Labor productivity	56.3	11
4.5 Economic output per unit of energy consumption	31.3	19
4.6 Economic output per unit of CO ₂ emission	17.1	28

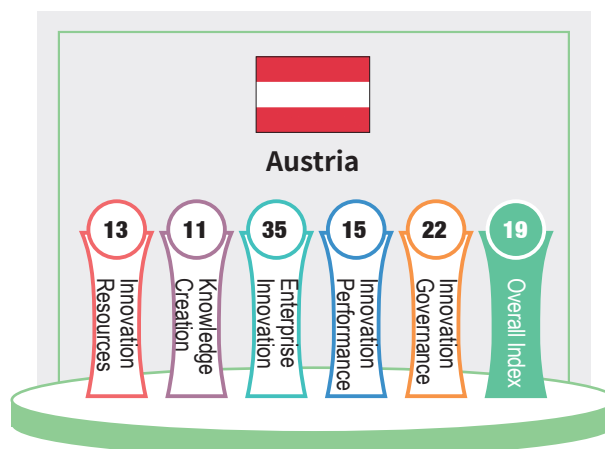
 Innovation Governance	86.8	16
5.1 Rule-of-law environment	89.2	15
5.2 Policy environment for doing business	75.8	19
5.3 E-government services	92.2	13
5.4 Level of ICT development	87.9	15
5.5 Availability of venture capital for startups and scaleups	73.4	22
5.6 Industry-university R&D collaboration	76.0	16
5.7 Proportion of international co-authored papers in all domestic papers	75.3	32
5.8 Number of technical (sub) committees of the International Organization for Standardization	13.4	10
5.9 Ratio of international investment to GDP	10.6	27
5.10 Entrepreneurial culture	67.4	27

Austria

2025 Overall Index Ranking

19

Population/10,000 persons	917.8
Area/10,000 square kilometers	8
GDP/USD 100 million	5,216.4
GDP per capita/USD	56,833.2
Economic output per unit of energy consumption/(USD/KGOE)	16.9
R&D expenditure/USD 100 million	166.6
R&D expenditure intensity	3.26%
SCI indexed papers/pieces	22,180
Invention patents in force/pieces	122,832
Proportion of high-tech products in total manufacturing exports	15.9%



	Score	Ranking
Innovation Resources	44.9	13
1.1 R&D expenditure as a percentage of GDP	51.3	7
1.2 Share of global R&D expenditure	1.7	19
1.3 Proportion of basic research expenditure in total R&D expenditure	39.8	30
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	2.8	21
1.6 Proportion of STEM graduates in all college graduates	65.7	12
1.7 R&D personnel per 10,000 employed individuals	89.6	5
1.8 Number of highly cited scientists	2.0	18
1.9 Gross enrollment ratio in higher education	55.5	12
1.10 Average score of the top three domestic universities in the world university rankings top 500	46.5	28
1.11 Number of students enrolled in postgraduate education	2.7	27
1.12 Proportion of international students in total higher education enrollment	28.6	7

Knowledge Creation	42.0	11
2.1 Number of S&T papers per USD 1 million of R&D expenditure	7.4	54
2.2 Invention patents in force per 10,000 employed individuals	9.6	9
2.3 Number of industrial design applications per USD 100 million of industrial value-added	5.6	30
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	23.0	45
2.5 Proportion of highly cited papers in all domestic papers	68.0	13
2.6 Number of major international S&T awards won	2.7	9

Enterprise Innovation	24.0	35
3.1 Ratio of enterprise R&D expenditure to value-added	26.7	12
3.2 Enterprise researchers as a share of total researchers	78.8	8

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	15.7	34
3.4 Triadic patents as a share of the world's total	2.4	16
3.5 PCT applications per 10,000 enterprise researchers	11.9	14
3.6 Proportion of intellectual property royalty income in service exports	9.0	27
3.7 Economic growth rate	-18.1	59
3.8 Number of newly registered companies per 10 million labor force	3.9	51
3.9 Number of high-growth technology companies	0.4	26

Innovation Performance	45.1	15
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	55.8	17
4.2 Proportion of ICT service exports in total service exports	19.5	20
4.3 Proportion of high-tech products in total manufacturing exports	26.8	27
4.4 Labor productivity	52.7	14
4.5 Economic output per unit of energy consumption	40.2	11
4.6 Economic output per unit of CO ₂ emission	33.4	13

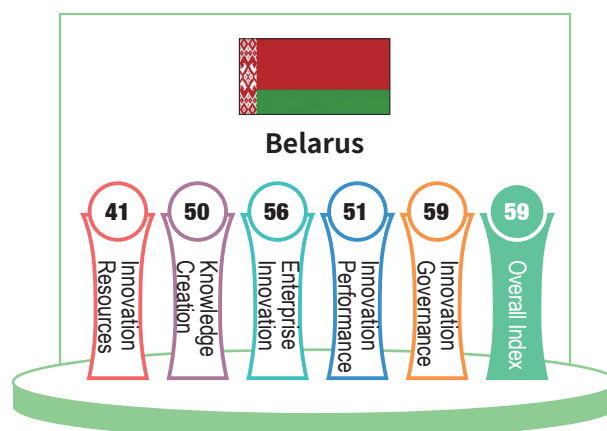
Innovation Governance	84.3	22
5.1 Rule-of-law environment	94.6	7
5.2 Policy environment for doing business	72.1	23
5.3 E-government services	83.8	33
5.4 Level of ICT development	83.7	20
5.5 Availability of venture capital for startups and scaleups	69.4	29
5.6 Industry-university R&D collaboration	71.7	23
5.7 Proportion of international co-authored papers in all domestic papers	86.6	13
5.8 Number of technical (sub) committees of the International Organization for Standardization	3.5	21
5.9 Ratio of international investment to GDP	12.7	19
5.10 Entrepreneurial culture	67.6	26

Belarus

2025 Overall Index Ranking

59

Population/10,000 persons	913.3
Area/10,000 square kilometers	21
GDP/USD 100 million	759.6
GDP per capita/USD	8,316.6
Economic output per unit of energy consumption/(USD/KGOE)	2.8
R&D expenditure/USD 100 million	4.2
R&D expenditure intensity	0.58%
SCI indexed papers/pieces	1,108
Invention patents in force/pieces	1,361
Proportion of high-tech products in total manufacturing exports	6.0%



	Score	Ranking
Innovation Resources	22.6	41
1.1 R&D expenditure as a percentage of GDP	9.1	51
1.2 Share of global R&D expenditure	0.0	57
1.3 Proportion of basic research expenditure in total R&D expenditure	26.1	42
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	0.5	46
1.6 Proportion of STEM graduates in all college graduates	79.3	3
1.7 R&D personnel per 10,000 employed individuals	25.8	43
1.8 Number of highly cited scientists	—	—
1.9 Gross enrollment ratio in higher education	44.1	34
1.10 Average score of the top three domestic universities in the world university rankings top 500	31.0	46
1.11 Number of students enrolled in postgraduate education	0.2	55
1.12 Proportion of international students in total higher education enrollment	10.0	30

Knowledge Creation	20.3	50
2.1 Number of S&T papers per USD 1 million of R&D expenditure	15.2	34
2.2 Invention patents in force per 10,000 employed individuals	0.5	44
2.3 Number of industrial design applications per USD 100 million of industrial value-added	6.1	25
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	28.5	39
2.5 Proportion of highly cited papers in all domestic papers	47.5	41
2.6 Number of major international S&T awards won	0.0	26

Enterprise Innovation	13.7	56
3.1 Ratio of enterprise R&D expenditure to value-added	3.9	42
3.2 Enterprise researchers as a share of total researchers	—	—

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	—	—
3.6 Proportion of intellectual property royalty income in service exports	5.3	34
3.7 Economic growth rate	61.8	8
3.8 Number of newly registered companies per 10 million labor force	5.3	50
3.9 Number of high-growth technology companies	0.1	37

Innovation Performance	16.5	51
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	24.1	56
4.2 Proportion of ICT service exports in total service exports	48.5	6
4.3 Proportion of high-tech products in total manufacturing exports	10.1	52
4.4 Labor productivity	7.8	54
4.5 Economic output per unit of energy consumption	6.6	58
4.6 Economic output per unit of CO ₂ emission	5.3	54

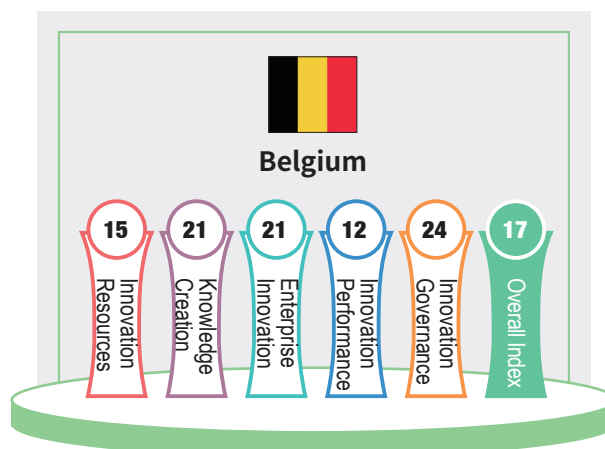
Innovation Governance	37.8	59
5.1 Rule-of-law environment	21.9	60
5.2 Policy environment for doing business	—	—
5.3 E-government services	57.6	57
5.4 Level of ICT development	—	—
5.5 Availability of venture capital for startups and scaleups	37.5	54
5.6 Industry-university R&D collaboration	—	—
5.7 Proportion of international co-authored papers in all domestic papers	92.8	8
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	6.7	39
5.10 Entrepreneurial culture	41.4	54

Belgium

2025 Overall Index Ranking

17

Population/10,000 persons	1,185.9
Area/10,000 square kilometers	3
GDP/USD 100 million	6,645.6
GDP per capita/USD	55,954.6
Economic output per unit of energy consumption/(USD/KGOE)	13.5
R&D expenditure/USD 100 million	211.0
R&D expenditure intensity	3.27%
SCI indexed papers/pieces	28,291
Invention patents in force/pieces	99,108
Proportion of high-tech products in total manufacturing exports	18.7%



	Score	Ranking
 Innovation Resources	44.7	15
1.1 R&D expenditure as a percentage of GDP	51.6	6
1.2 Share of global R&D expenditure	2.2	16
1.3 Proportion of basic research expenditure in total R&D expenditure	20.8	45
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	62.9	7
1.5 Number of the world's first-tier research institutions	7.5	14
1.6 Proportion of STEM graduates in all college graduates	41.8	51
1.7 R&D personnel per 10,000 employed individuals	93.7	4
1.8 Number of highly cited scientists	3.2	13
1.9 Gross enrollment ratio in higher education	49.8	15
1.10 Average score of the top three domestic universities in the world university rankings top 500	56.8	18
1.11 Number of students enrolled in postgraduate education	2.3	30
1.12 Proportion of international students in total higher education enrollment	14.9	22

 Knowledge Creation	34.2	21
2.1 Number of S&T papers per USD 1 million of R&D expenditure	7.6	53
2.2 Invention patents in force per 10,000 employed individuals	—	—
2.3 Number of industrial design applications per USD 100 million of industrial value-added	4.0	44
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	28.5	40
2.5 Proportion of highly cited papers in all domestic papers	70.3	7
2.6 Number of major international S&T awards won	1.8	12

 Enterprise Innovation	32.8	21
3.1 Ratio of enterprise R&D expenditure to value-added	37.7	4
3.2 Enterprise researchers as a share of total researchers	67.4	19

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	20.1	24
3.4 Triadic patents as a share of the world's total	2.7	14
3.5 PCT applications per 10,000 enterprise researchers	10.0	16
3.6 Proportion of intellectual property royalty income in service exports	14.3	21
3.7 Economic growth rate	15.7	44
3.8 Number of newly registered companies per 10 million labor force	26.1	22
3.9 Number of high-growth technology companies	0.5	22

 Innovation Performance	47.5	12
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	62.2	11
4.2 Proportion of ICT service exports in total service exports	24.3	17
4.3 Proportion of high-tech products in total manufacturing exports	31.4	18
4.4 Labor productivity	62.1	9
4.5 Economic output per unit of energy consumption	32.1	17
4.6 Economic output per unit of CO ₂ emission	26.6	17

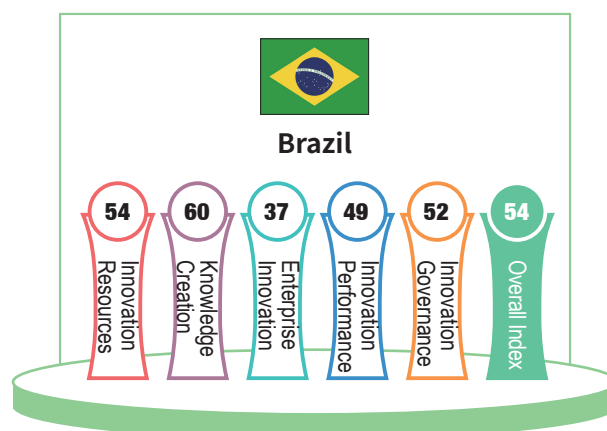
 Innovation Governance	83.8	24
5.1 Rule-of-law environment	83.7	20
5.2 Policy environment for doing business	72.0	24
5.3 E-government services	72.2	50
5.4 Level of ICT development	83.4	21
5.5 Availability of venture capital for startups and scaleups	92.4	5
5.6 Industry-university R&D collaboration	75.4	18
5.7 Proportion of international co-authored papers in all domestic papers	87.2	12
5.8 Number of technical (sub) committees of the International Organization for Standardization	4.7	17
5.9 Ratio of international investment to GDP	12.3	22
5.10 Entrepreneurial culture	70.3	18

Brazil

2025 Overall Index Ranking

54

Population/10,000 persons	21,199.9
Area/10,000 square kilometers	851
GDP/USD 100 million	21,794.1
GDP per capita/USD	10,280.3
Economic output per unit of energy consumption/(USD/KGOE)	7.0
R&D expenditure/USD 100 million	261.6
R&D expenditure intensity	1.15%
SCI indexed papers/pieces	56,682
Invention patents in force/pieces	21,494
Proportion of high-tech products in total manufacturing exports	9.8%



	Score	Ranking
 Innovation Resources	15.0	54
1.1 R&D expenditure as a percentage of GDP	18.0	36
1.2 Share of global R&D expenditure	2.7	13
1.3 Proportion of basic research expenditure in total R&D expenditure	—	—
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	5.2	16
1.6 Proportion of STEM graduates in all college graduates	34.9	59
1.7 R&D personnel per 10,000 employed individuals	14.6	47
1.8 Number of highly cited scientists	0.6	26
1.9 Gross enrollment ratio in higher education	36.6	41
1.10 Average score of the top three domestic universities in the world university rankings top 500	47.9	27
1.11 Number of students enrolled in postgraduate education	5.1	20
1.12 Proportion of international students in total higher education enrollment	0.4	56

 Knowledge Creation	4.2	60
2.1 Number of S&T papers per USD 1 million of R&D expenditure	12.0	40
2.2 Invention patents in force per 10,000 employed individuals	0.3	45
2.3 Number of industrial design applications per USD 100 million of industrial value-added	7.4	20
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	14.5	53
2.5 Proportion of highly cited papers in all domestic papers	25.7	59
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	22.6	37
3.1 Ratio of enterprise R&D expenditure to value-added	8.9	34
3.2 Enterprise researchers as a share of total researchers	32.0	46

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	9.0	39
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	1.3	37
3.6 Proportion of intellectual property royalty income in service exports	10.1	25
3.7 Economic growth rate	52.4	12
3.8 Number of newly registered companies per 10 million labor force	21.0	28
3.9 Number of high-growth technology companies	1.9	11

 Innovation Performance	18.8	49
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	38.1	39
4.2 Proportion of ICT service exports in total service exports	19.8	19
4.3 Proportion of high-tech products in total manufacturing exports	16.6	39
4.4 Labor productivity	10.5	51
4.5 Economic output per unit of energy consumption	16.6	42
4.6 Economic output per unit of CO ₂ emission	8.7	43

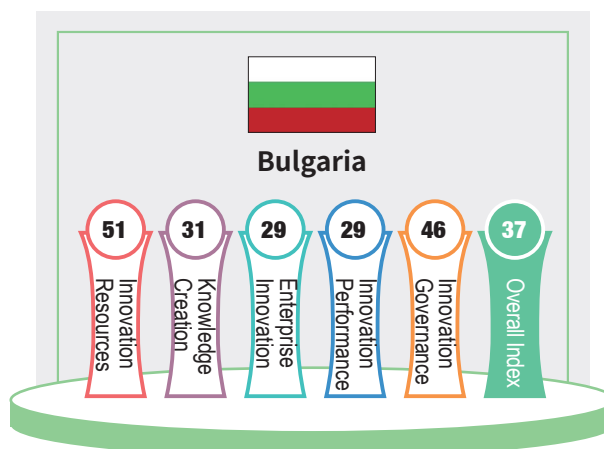
 Innovation Governance	58.0	52
5.1 Rule-of-law environment	44.7	52
5.2 Policy environment for doing business	38.6	57
5.3 E-government services	90.6	20
5.4 Level of ICT development	69.9	41
5.5 Availability of venture capital for startups and scaleups	54.7	46
5.6 Industry-university R&D collaboration	53.6	50
5.7 Proportion of international co-authored papers in all domestic papers	50.9	52
5.8 Number of technical (sub) committees of the International Organization for Standardization	1.7	23
5.9 Ratio of international investment to GDP	9.1	32
5.10 Entrepreneurial culture	51.5	48

Bulgaria

2025 Overall Index Ranking

37

Population/10,000 persons	644.1
Area/10,000 square kilometers	11
GDP/USD 100 million	1,122.1
GDP per capita/USD	17,412.4
Economic output per unit of energy consumption/(USD/KGOE)	6.1
R&D expenditure/USD 100 million	8.1
R&D expenditure intensity	0.79%
SCI indexed papers/pieces	3,441
Invention patents in force/pieces	2,263
Proportion of high-tech products in total manufacturing exports	12.1%



	Score	Ranking
 Innovation Resources	16.9	51
1.1 R&D expenditure as a percentage of GDP	12.5	44
1.2 Share of global R&D expenditure	0.1	52
1.3 Proportion of basic research expenditure in total R&D expenditure	35.0	35
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	10.6	36
1.5 Number of the world's first-tier research institutions	0.5	46
1.6 Proportion of STEM graduates in all college graduates	42.9	48
1.7 R&D personnel per 10,000 employed individuals	33.0	39
1.8 Number of highly cited scientists	—	—
1.9 Gross enrollment ratio in higher education	48.4	21
1.10 Average score of the top three domestic universities in the world university rankings top 500	—	—
1.11 Number of students enrolled in postgraduate education	1.2	42
1.12 Proportion of international students in total higher education enrollment	12.5	28

 Knowledge Creation	29.8	31
2.1 Number of S&T papers per USD 1 million of R&D expenditure	23.9	18
2.2 Invention patents in force per 10,000 employed individuals	0.5	43
2.3 Number of industrial design applications per USD 100 million of industrial value-added	10.9	11
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	45.7	17
2.5 Proportion of highly cited papers in all domestic papers	66.9	15
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	27.0	
3.1 Ratio of enterprise R&D expenditure to value-added	7.0	36
3.2 Enterprise researchers as a share of total researchers	60.1	26

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	0.1	40
3.5 PCT applications per 10,000 enterprise researchers	1.0	45
3.6 Proportion of intellectual property royalty income in service exports	11.3	23
3.7 Economic growth rate	43.3	20
3.8 Number of newly registered companies per 10 million labor force	40.0	11
3.9 Number of high-growth technology companies	0.0	47

 Innovation Performance	31.4	29
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	44.5	32
4.2 Proportion of ICT service exports in total service exports	40.5	7
4.3 Proportion of high-tech products in total manufacturing exports	20.3	34
4.4 Labor productivity	15.2	44
4.5 Economic output per unit of energy consumption	14.5	45
4.6 Economic output per unit of CO ₂ emission	33.1	14

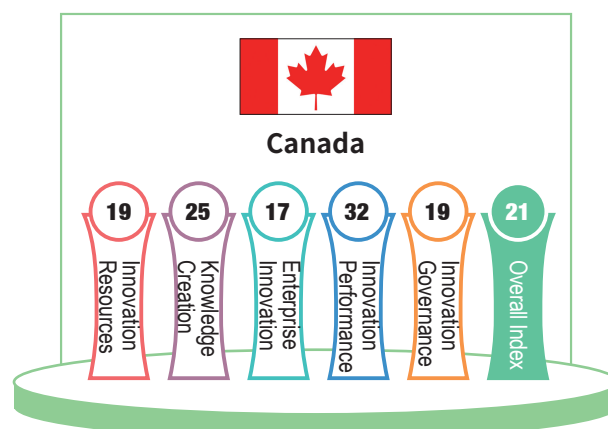
 Innovation Governance	64.2	46
5.1 Rule-of-law environment	52.1	46
5.2 Policy environment for doing business	49.4	48
5.3 E-government services	77.3	42
5.4 Level of ICT development	67.3	47
5.5 Availability of venture capital for startups and scaleups	74.2	19
5.6 Industry-university R&D collaboration	60.7	37
5.7 Proportion of international co-authored papers in all domestic papers	68.9	40
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	9.2	31
5.10 Entrepreneurial culture	57.6	38

Canada

2025 Overall Index Ranking

21

Population/10,000 persons	4,128.9
Area/10,000 square kilometers	998
GDP/USD 100 million	22,412.5
GDP per capita/USD	54,282.6
Economic output per unit of energy consumption/(USD/KGOE)	7.4
R&D expenditure/USD 100 million	393.5
R&D expenditure intensity	1.81%
SCI indexed papers/pieces	83,600
Invention patents in force/pieces	151,471
Proportion of high-tech products in total manufacturing exports	15.2%



	Score	Ranking
Innovation Resources	37.7	19
1.1 R&D expenditure as a percentage of GDP	28.5	23
1.2 Share of global R&D expenditure	4.1	8
1.3 Proportion of basic research expenditure in total R&D expenditure	—	—
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	12.7	11
1.6 Proportion of STEM graduates in all college graduates	54.2	27
1.7 R&D personnel per 10,000 employed individuals	66.1	19
1.8 Number of highly cited scientists	8.3	6
1.9 Gross enrollment ratio in higher education	46.2	30
1.10 Average score of the top three domestic universities in the world university rankings top 500	84.7	5
1.11 Number of students enrolled in postgraduate education	4.7	21
1.12 Proportion of international students in total higher education enrollment	30.4	6

	Score	Ranking
Knowledge Creation	33.0	25
2.1 Number of S&T papers per USD 1 million of R&D expenditure	12.1	39
2.2 Invention patents in force per 10,000 employed individuals	3.6	20
2.3 Number of industrial design applications per USD 100 million of industrial value-added	1.2	53
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	26.7	42
2.5 Proportion of highly cited papers in all domestic papers	58.7	22
2.6 Number of major international S&T awards won	6.3	5

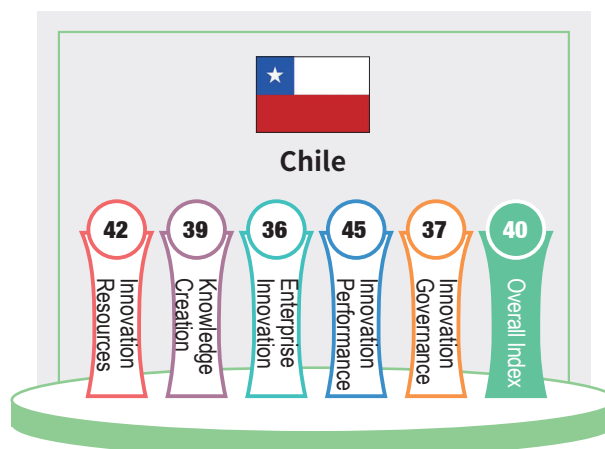
	Score	Ranking
Enterprise Innovation	38.3	17
3.1 Ratio of enterprise R&D expenditure to value-added	14.2	24
3.2 Enterprise researchers as a share of total researchers	77.4	10

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	40.3	18
3.4 Triadic patents as a share of the world's total	4.3	12
3.5 PCT applications per 10,000 enterprise researchers	5.3	22
3.6 Proportion of intellectual property royalty income in service exports	22.6	13
3.7 Economic growth rate	23.6	35
3.8 Number of newly registered companies per 10 million labor force	40.4	10
3.9 Number of high-growth technology companies	4.1	6

	Score	Ranking
Innovation Performance	30.7	32
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	38.8	38
4.2 Proportion of ICT service exports in total service exports	18.6	21
4.3 Proportion of high-tech products in total manufacturing exports	25.5	28
4.4 Labor productivity	50.6	17
4.5 Economic output per unit of energy consumption	17.6	39
4.6 Economic output per unit of CO ₂ emission	13.7	34

	Score	Ranking
Innovation Governance	86.1	19
5.1 Rule-of-law environment	88.0	16
5.2 Policy environment for doing business	76.6	17
5.3 E-government services	85.5	29
5.4 Level of ICT development	90.9	11
5.5 Availability of venture capital for startups and scaleups	71.0	27
5.6 Industry-university R&D collaboration	78.9	6
5.7 Proportion of international co-authored papers in all domestic papers	72.2	36
5.8 Number of technical (sub) committees of the International Organization for Standardization	11.6	12
5.9 Ratio of international investment to GDP	18.5	10
5.10 Entrepreneurial culture	69.2	21

Population/10,000 persons	1,976.5
Area/10,000 square kilometers	76
GDP/USD 100 million	3,302.7
GDP per capita/USD	16,709.9
Economic output per unit of energy consumption/(USD/KGOE)	8.4
R&D expenditure/USD 100 million	13.9
R&D expenditure intensity	0.39%
SCI indexed papers/pieces	13,407
Invention patents in force/pieces	4,744
Proportion of high-tech products in total manufacturing exports	10.7%



	Score	Ranking
Innovation Resources	21.4	42
1.1 R&D expenditure as a percentage of GDP	6.2	54
1.2 Share of global R&D expenditure	0.1	45
1.3 Proportion of basic research expenditure in total R&D expenditure	69.9	6
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	16.2	31
1.5 Number of the world's first-tier research institutions	1.4	34
1.6 Proportion of STEM graduates in all college graduates	48.1	40
1.7 R&D personnel per 10,000 employed individuals	10.6	52
1.8 Number of highly cited scientists	0.1	35
1.9 Gross enrollment ratio in higher education	63.4	6
1.10 Average score of the top three domestic universities in the world university rankings top 500	41.0	33
1.11 Number of students enrolled in postgraduate education	1.9	35
1.12 Proportion of international students in total higher education enrollment	2.1	50

Knowledge Creation	27.4	39
2.1 Number of S&T papers per USD 1 million of R&D expenditure	53.0	3
2.2 Invention patents in force per 10,000 employed individuals	0.7	37
2.3 Number of industrial design applications per USD 100 million of industrial value-added	—	—
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	74.2	4
2.5 Proportion of highly cited papers in all domestic papers	42.4	47
2.6 Number of major international S&T awards won	0.0	26

Enterprise Innovation	24.0	36
3.1 Ratio of enterprise R&D expenditure to value-added	1.9	51
3.2 Enterprise researchers as a share of total researchers	47.5	35

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	0.1	41
3.5 PCT applications per 10,000 enterprise researchers	4.7	23
3.6 Proportion of intellectual property royalty income in service exports	3.3	37
3.7 Economic growth rate	40.8	24
3.8 Number of newly registered companies per 10 million labor force	44.5	9
3.9 Number of high-growth technology companies	0.2	33

Innovation Performance	21.5	45
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	24.7	55
4.2 Proportion of ICT service exports in total service exports	8.7	48
4.3 Proportion of high-tech products in total manufacturing exports	18.0	36
4.4 Labor productivity	17.0	43
4.5 Economic output per unit of energy consumption	19.9	35
4.6 Economic output per unit of CO ₂ emission	36.4	11

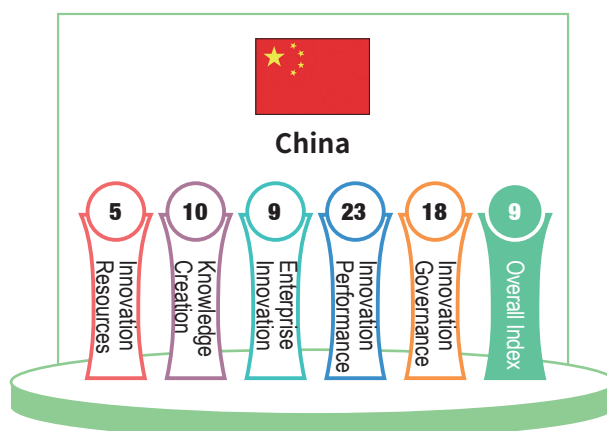
Innovation Governance	69.4	37
5.1 Rule-of-law environment	67.4	32
5.2 Policy environment for doing business	50.5	46
5.3 E-government services	86.1	28
5.4 Level of ICT development	67.6	46
5.5 Availability of venture capital for startups and scaleups	54.2	47
5.6 Industry-university R&D collaboration	57.3	45
5.7 Proportion of international co-authored papers in all domestic papers	83.2	18
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	11.5	24
5.10 Entrepreneurial culture	69.7	19

China

2025 Overall Index Ranking

9

Population/10,000 persons	140,828.0
Area/10,000 square kilometers	960
GDP/USD 100 million	187,438.0
GDP per capita/USD	13,303.1
Economic output per unit of energy consumption/(USD/KGOE)	4.5
R&D expenditure/USD 100 million	4,708.8
R&D expenditure intensity	2.58%
SCI indexed papers/pieces	839,332
Invention patents in force/pieces	5 293,831
Proportion of high-tech products in total manufacturing exports	26.6%



	Score	Ranking
Innovation Resources	53.1	5
1.1 R&D expenditure as a percentage of GDP	40.6	14
1.2 Share of global R&D expenditure	49.3	2
1.3 Proportion of basic research expenditure in total R&D expenditure	14.4	47
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	13.7	34
1.5 Number of the world's first-tier research institutions	70.0	2
1.6 Proportion of STEM graduates in all college graduates	100.0	1
1.7 R&D personnel per 10,000 employed individuals	44.2	35
1.8 Number of highly cited scientists	56.8	2
1.9 Gross enrollment ratio in higher education	36.5	42
1.10 Average score of the top three domestic universities in the world university rankings top 500	87.2	4
1.11 Number of students enrolled in postgraduate education	59.2	2
1.12 Proportion of international students in total higher education enrollment	0.5	55

Knowledge Creation	42.8	10
2.1 Number of S&T papers per USD 1 million of R&D expenditure	8.9	49
2.2 Invention patents in force per 10,000 employed individuals	16.1	7
2.3 Number of industrial design applications per USD 100 million of industrial value-added	100.0	1
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	39.9	21
2.5 Proportion of highly cited papers in all domestic papers	48.8	39
2.6 Number of major international S&T awards won	0.9	17

Enterprise Innovation	47.7	9
3.1 Ratio of enterprise R&D expenditure to value-added	17.1	17
3.2 Enterprise researchers as a share of total researchers	72.3	15

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	37.8	19
3.4 Triadic patents as a share of the world's total	45.5	3
3.5 PCT applications per 10,000 enterprise researchers	2.2	29
3.6 Proportion of intellectual property royalty income in service exports	11.7	22
3.7 Economic growth rate	76.8	4
3.8 Number of newly registered companies per 10 million labor force	35.3	15
3.9 Number of high-growth technology companies	57.9	2

Innovation Performance	35.4	23
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	50.3	24
4.2 Proportion of ICT service exports in total service exports	26.1	14
4.3 Proportion of high-tech products in total manufacturing exports	44.7	9
4.4 Labor productivity	12.2	48
4.5 Economic output per unit of energy consumption	10.8	51
4.6 Economic output per unit of CO ₂ emission	6.3	52

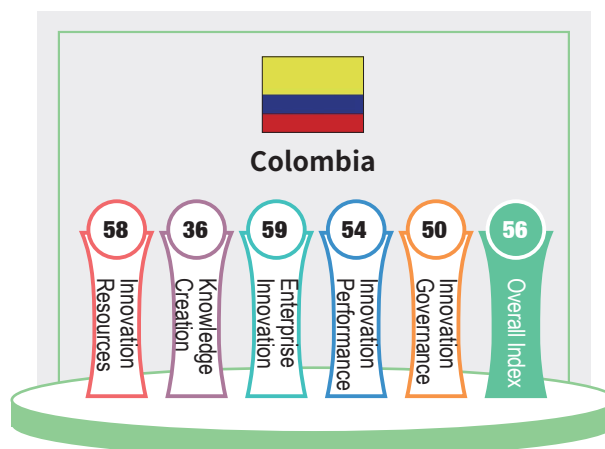
Innovation Governance	86.1	18
5.1 Rule-of-law environment	51.3	47
5.2 Policy environment for doing business	80.6	12
5.3 E-government services	92.6	10
5.4 Level of ICT development	87.0	17
5.5 Availability of venture capital for startups and scaleups	75.9	17
5.6 Industry-university R&D collaboration	77.2	11
5.7 Proportion of international co-authored papers in all domestic papers	21.1	60
5.8 Number of technical (sub) committees of the International Organization for Standardization	61.6	5
5.9 Ratio of international investment to GDP	4.1	51
5.10 Entrepreneurial culture	81.6	8

Colombia

2025 Overall Index Ranking

56

Population/10,000 persons	5,288.6
Area/10,000 square kilometers	114
GDP/USD 100 million	4,185.4
GDP per capita/USD	7,914.0
Economic output per unit of energy consumption/(USD/KGOE)	8.1
R&D expenditure/USD 100 million	6.7
R&D expenditure intensity	0.29 %
SCI indexed papers/pieces	8,419
Invention patents in force/pieces	2,595
Proportion of high-tech products in total manufacturing exports	8.6%



	Score	Ranking
Innovation Resources	10.1	58
1.1 R&D expenditure as a percentage of GDP	4.6	58
1.2 Share of global R&D expenditure	0.1	55
1.3 Proportion of basic research expenditure in total R&D expenditure	—	—
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	0.0	55
1.6 Proportion of STEM graduates in all college graduates	50.2	36
1.7 R&D personnel per 10,000 employed individuals	0.8	56
1.8 Number of highly cited scientists	0.1	39
1.9 Gross enrollment ratio in higher education	35.9	43
1.10 Average score of the top three domestic universities in the world university rankings top 500	39.5	35
1.11 Number of students enrolled in postgraduate education	2.9	25
1.12 Proportion of international students in total higher education enrollment	0.3	57

Knowledge Creation	28.9	36
2.1 Number of S&T papers per USD 1 million of R&D expenditure	72.5	2
2.2 Invention patents in force per 10,000 employed individuals	0.2	50
2.3 Number of industrial design applications per USD 100 million of industrial value-added	3.9	45
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	100.0	1
2.5 Proportion of highly cited papers in all domestic papers	42.2	48
2.6 Number of major international S&T awards won	0.0	26

Enterprise Innovation	10.8	59
3.1 Ratio of enterprise R&D expenditure to value-added	1.2	53
3.2 Enterprise researchers as a share of total researchers	—	—

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	10.5	37
3.4 Triadic patents as a share of the world's total	0.0	43
3.5 PCT applications per 10,000 enterprise researchers	—	—
3.6 Proportion of intellectual property royalty income in service exports	5.7	30
3.7 Economic growth rate	26.9	33
3.8 Number of newly registered companies per 10 million labor force	9.3	43
3.9 Number of high-growth technology companies	0.4	26

Innovation Performance	15.6	54
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	29.4	51
4.2 Proportion of ICT service exports in total service exports	17.3	26
4.3 Proportion of high-tech products in total manufacturing exports	14.5	46
4.4 Labor productivity	8.2	52
4.5 Economic output per unit of energy consumption	19.3	36
4.6 Economic output per unit of CO ₂ emission	7.8	47

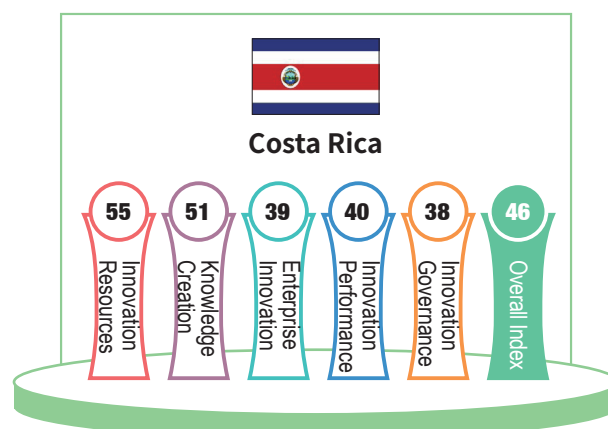
Innovation Governance	60.0	50
5.1 Rule-of-law environment	41.1	54
5.2 Policy environment for doing business	52.5	43
5.3 E-government services	75.2	48
5.4 Level of ICT development	62.9	53
5.5 Availability of venture capital for startups and scaleups	50.0	51
5.6 Industry-university R&D collaboration	59.4	40
5.7 Proportion of international co-authored papers in all domestic papers	77.1	27
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.6	30
5.9 Ratio of international investment to GDP	12.4	21
5.10 Entrepreneurial culture	62.5	30

Costa Rica

2025 Overall Index Ranking

46

Population/10,000 persons	513.0
Area/10,000 square kilometers	5
GDP/USD 100 million	953.5
GDP per capita/USD	18,587.2
Economic output per unit of energy consumption/(USD/KGOE)	16.5
R&D expenditure/USD 100 million	2.9
R&D expenditure intensity	0.34%
SCI indexed papers/pieces	1,001
Invention patents in force/pieces	513
Proportion of high-tech products in total manufacturing exports	24.2%



	Score	Ranking
Innovation Resources	14.6	55
1.1 R&D expenditure as a percentage of GDP	5.3	56
1.2 Share of global R&D expenditure	0.0	59
1.3 Proportion of basic research expenditure in total R&D expenditure	100.0	1
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	0.5	46
1.6 Proportion of STEM graduates in all college graduates	37.0	56
1.7 R&D personnel per 10,000 employed individuals	7.4	53
1.8 Number of highly cited scientists	—	—
1.9 Gross enrollment ratio in higher education	33.3	49
1.10 Average score of the top three domestic universities in the world university rankings top 500	24.8	49
1.11 Number of students enrolled in postgraduate education	0.2	56
1.12 Proportion of international students in total higher education enrollment	1.7	53

Knowledge Creation	18.9	51
2.1 Number of S&T papers per USD 1 million of R&D expenditure	18.7	23
2.2 Invention patents in force per 10,000 employed individuals	—	—
2.3 Number of industrial design applications per USD 100 million of industrial value-added	—	—
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	18.7	50
2.5 Proportion of highly cited papers in all domestic papers	68.9	11
2.6 Number of major international S&T awards won	0.0	26

Enterprise Innovation	21.9	39
3.1 Ratio of enterprise R&D expenditure to value-added	1.6	52
3.2 Enterprise researchers as a share of total researchers	41.2	38

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	0.1	42
3.5 PCT applications per 10,000 enterprise researchers	0.8	47
3.6 Proportion of intellectual property royalty income in service exports	0.6	51
3.7 Economic growth rate	66.6	7
3.8 Number of newly registered companies per 10 million labor force	23.9	26
3.9 Number of high-growth technology companies	0.0	47

Innovation Performance	25.5	40
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	17.2	59
4.2 Proportion of ICT service exports in total service exports	22.9	18
4.3 Proportion of high-tech products in total manufacturing exports	40.7	14
4.4 Labor productivity	20.9	40
4.5 Economic output per unit of energy consumption	39.3	12
4.6 Economic output per unit of CO ₂ emission	4.0	58

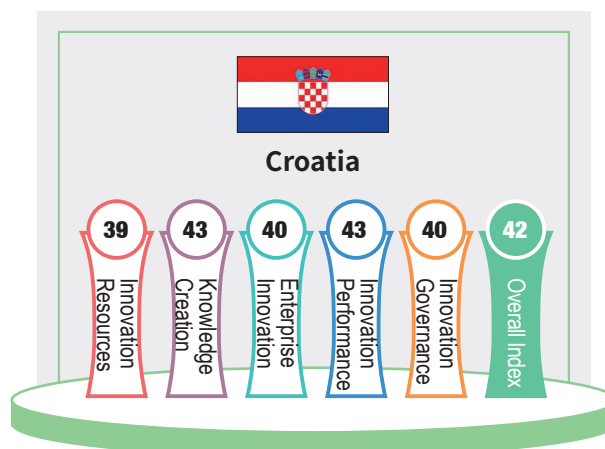
Innovation Governance	67.5	38
5.1 Rule-of-law environment	61.7	40
5.2 Policy environment for doing business	71.8	25
5.3 E-government services	72.2	51
5.4 Level of ICT development	67.7	45
5.5 Availability of venture capital for startups and scaleups	47.4	52
5.6 Industry-university R&D collaboration	59.7	39
5.7 Proportion of international co-authored papers in all domestic papers	94.2	5
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	12.6	20
5.10 Entrepreneurial culture	53.5	43

Croatia

2025 Overall Index Ranking

42

Population/10,000 persons	386.6
Area/10,000 square kilometers	6
GDP/USD 100 million	925.3
GDP per capita/USD	23,931.5
Economic output per unit of energy consumption/(USD/KGOE)	9.8
R&D expenditure/USD 100 million	11.7
R&D expenditure intensity	1.39 %
SCI indexed papers/pieces	5,392
Invention patents in force/pieces	790
Proportion of high-tech products in total manufacturing exports	11.0%



	Score	Ranking
 Innovation Resources	24.5	39
1.1 R&D expenditure as a percentage of GDP	21.8	32
1.2 Share of global R&D expenditure	0.1	48
1.3 Proportion of basic research expenditure in total R&D expenditure	48.8	19
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	9.1	37
1.5 Number of the world's first-tier research institutions	0.9	39
1.6 Proportion of STEM graduates in all college graduates	61.9	16
1.7 R&D personnel per 10,000 employed individuals	44.2	34
1.8 Number of highly cited scientists	0.0	45
1.9 Gross enrollment ratio in higher education	49.2	18
1.10 Average score of the top three domestic universities in the world university rankings top 500	—	—
1.11 Number of students enrolled in postgraduate education	1.1	45
1.12 Proportion of international students in total higher education enrollment	5.4	41

 Knowledge Creation	25.5	43
2.1 Number of S&T papers per USD 1 million of R&D expenditure	27.7	12
2.2 Invention patents in force per 10,000 employed individuals	0.1	53
2.3 Number of industrial design applications per USD 100 million of industrial value-added	8.1	16
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	47.9	15
2.5 Proportion of highly cited papers in all domestic papers	49.4	38
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	21.6	40
3.1 Ratio of enterprise R&D expenditure to value-added	11.1	29
3.2 Enterprise researchers as a share of total researchers	31.6	47

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	0.0	44
3.5 PCT applications per 10,000 enterprise researchers	1.1	39
3.6 Proportion of intellectual property royalty income in service exports	2.9	39
3.7 Economic growth rate	58.8	9
3.8 Number of newly registered companies per 10 million labor force	25.7	24
3.9 Number of high-growth technology companies	0.2	33

 Innovation Performance	22.9	43
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	31.1	48
4.2 Proportion of ICT service exports in total service exports	11.9	40
4.3 Proportion of high-tech products in total manufacturing exports	18.6	35
4.4 Labor productivity	24.4	35
4.5 Economic output per unit of energy consumption	23.2	28
4.6 Economic output per unit of CO ₂ emission	20.9	26

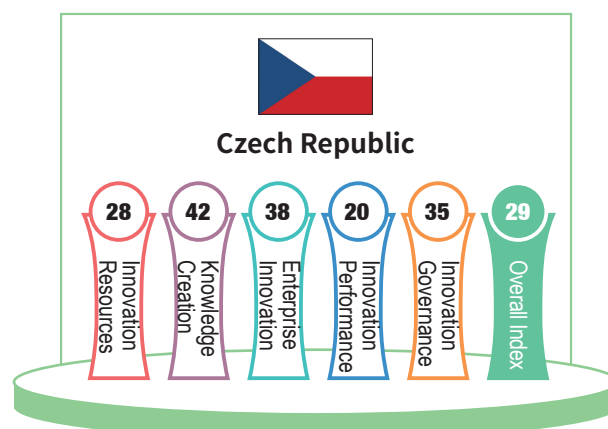
 Innovation Governance	65.7	40
5.1 Rule-of-law environment	61.0	41
5.2 Policy environment for doing business	52.2	45
5.3 E-government services	87.3	26
5.4 Level of ICT development	65.8	51
5.5 Availability of venture capital for startups and scaleups	65.7	34
5.6 Industry-university R&D collaboration	50.1	57
5.7 Proportion of international co-authored papers in all domestic papers	67.0	44
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.6	30
5.9 Ratio of international investment to GDP	20.5	8
5.10 Entrepreneurial culture	48.4	50

Czech Republic

2025 Overall Index Ranking

29

Population/10,000 persons	1,090.5
Area/10,000 square kilometers	8
GDP/USD 100 million	3,450.4
GDP per capita/USD	31,706.6
Economic output per unit of energy consumption/(USD/KGOE)	9.0
R&D expenditure/USD 100 million	62.9
R&D expenditure intensity	1.82%
SCI indexed papers/pieces	17,179
Invention patents in force/pieces	3,367
Proportion of high-tech products in total manufacturing exports	20.3%



	Score	Ranking
Innovation Resources	32.9	28
1.1 R&D expenditure as a percentage of GDP	28.7	22
1.2 Share of global R&D expenditure	0.7	30
1.3 Proportion of basic research expenditure in total R&D expenditure	50.9	16
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	15.4	32
1.5 Number of the world's first-tier research institutions	1.9	31
1.6 Proportion of STEM graduates in all college graduates	52.6	30
1.7 R&D personnel per 10,000 employed individuals	71.3	17
1.8 Number of highly cited scientists	0.3	28
1.9 Gross enrollment ratio in higher education	40.4	38
1.10 Average score of the top three domestic universities in the world university rankings top 500	33.6	40
1.11 Number of students enrolled in postgraduate education	2.1	33
1.12 Proportion of international students in total higher education enrollment	23.8	10

Knowledge Creation	26.7	42
2.1 Number of S&T papers per USD 1 million of R&D expenditure	15.6	32
2.2 Invention patents in force per 10,000 employed individuals	1.9	27
2.3 Number of industrial design applications per USD 100 million of industrial value-added	4.4	40
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	37.0	27
2.5 Proportion of highly cited papers in all domestic papers	53.9	28
2.6 Number of major international S&T awards won	0.0	26

Enterprise Innovation	22.2	38
3.1 Ratio of enterprise R&D expenditure to value-added	12.3	27
3.2 Enterprise researchers as a share of total researchers	66.6	20

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	45
3.4 Triadic patents as a share of the world's total	0.4	27
3.5 PCT applications per 10,000 enterprise researchers	1.9	32
3.6 Proportion of intellectual property royalty income in service exports	11.2	24
3.7 Economic growth rate	17.3	41
3.8 Number of newly registered companies per 10 million labor force	16.7	31
3.9 Number of high-growth technology companies	0.1	37

Innovation Performance	36.1	20
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	60.6	14
4.2 Proportion of ICT service exports in total service exports	27.6	12
4.3 Proportion of high-tech products in total manufacturing exports	34.2	17
4.4 Labor productivity	30.2	28
4.5 Economic output per unit of energy consumption	21.4	31
4.6 Economic output per unit of CO ₂ emission	12.7	35

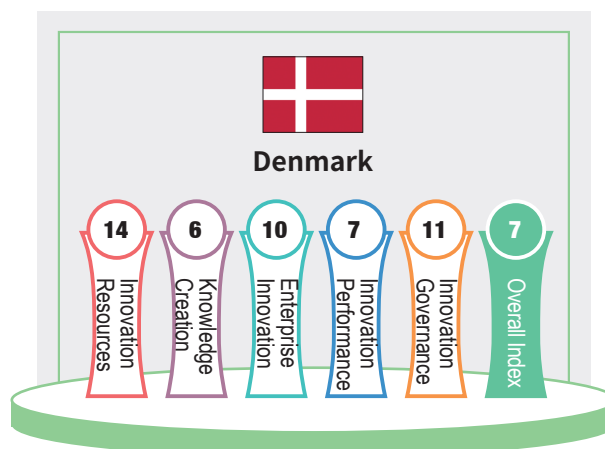
Innovation Governance	71.4	35
5.1 Rule-of-law environment	80.0	24
5.2 Policy environment for doing business	61.7	35
5.3 E-government services	70.1	54
5.4 Level of ICT development	80.4	27
5.5 Availability of venture capital for startups and scaleups	—	—
5.6 Industry-university R&D collaboration	70.2	27
5.7 Proportion of international co-authored papers in all domestic papers	76.9	29
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	14.8	13
5.10 Entrepreneurial culture	—	—

Denmark

2025 Overall Index Ranking

7

Population/10,000 persons	597.7
Area/10,000 square kilometers	4
GDP/USD 100 million	4,294.6
GDP per capita/USD	71,851.8
Economic output per unit of energy consumption/(USD/KGOE)	27.6
R&D expenditure/USD 100 million	124.1
R&D expenditure intensity	3.07%
SCI indexed papers/pieces	24,852
Invention patents in force/pieces	95,859
Proportion of high-tech products in total manufacturing exports	17.4%



	Score	Ranking
Innovation Resources	44.7	14
1.1 R&D expenditure as a percentage of GDP	48.3	11
1.2 Share of global R&D expenditure	1.3	24
1.3 Proportion of basic research expenditure in total R&D expenditure	41.5	29
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	29.5	22
1.5 Number of the world's first-tier research institutions	2.8	21
1.6 Proportion of STEM graduates in all college graduates	54.8	25
1.7 R&D personnel per 10,000 employed individuals	100.0	1
1.8 Number of highly cited scientists	2.1	17
1.9 Gross enrollment ratio in higher education	49.2	17
1.10 Average score of the top three domestic universities in the world university rankings top 500	58.4	16
1.11 Number of students enrolled in postgraduate education	1.2	43
1.12 Proportion of international students in total higher education enrollment	14.3	24

Knowledge Creation	48.5	6
2.1 Number of S&T papers per USD 1 million of R&D expenditure	11.4	42
2.2 Invention patents in force per 10,000 employed individuals	6.9	13
2.3 Number of industrial design applications per USD 100 million of industrial value-added	5.2	32
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	33.9	32
2.5 Proportion of highly cited papers in all domestic papers	81.1	2
2.6 Number of major international S&T awards won	0.9	17

Enterprise Innovation	46.9	10
3.1 Ratio of enterprise R&D expenditure to value-added	25.3	13
3.2 Enterprise researchers as a share of total researchers	71.9	16

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	62.8	8
3.4 Triadic patents as a share of the world's total	2.4	15
3.5 PCT applications per 10,000 enterprise researchers	15.1	7
3.6 Proportion of intellectual property royalty income in service exports	29.6	10
3.7 Economic growth rate	56.7	11
3.8 Number of newly registered companies per 10 million labor force	30.0	17
3.9 Number of high-growth technology companies	0.5	22

Innovation Performance	58.0	7
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	66.9	6
4.2 Proportion of ICT service exports in total service exports	11.5	44
4.3 Proportion of high-tech products in total manufacturing exports	29.2	23
4.4 Labor productivity	63.7	8
4.5 Economic output per unit of energy consumption	65.5	4
4.6 Economic output per unit of CO ₂ emission	49.0	4

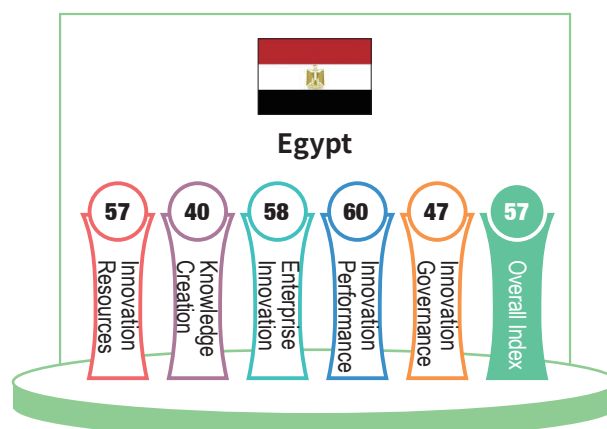
Innovation Governance	90.4	11
5.1 Rule-of-law environment	98.6	2
5.2 Policy environment for doing business	83.5	9
5.3 E-government services	99.9	2
5.4 Level of ICT development	92.1	10
5.5 Availability of venture capital for startups and scaleups	—	—
5.6 Industry-university R&D collaboration	77.5	9
5.7 Proportion of international co-authored papers in all domestic papers	83.7	16
5.8 Number of technical (sub) committees of the International Organization for Standardization	4.1	19
5.9 Ratio of international investment to GDP	12.9	17
5.10 Entrepreneurial culture	—	—

Egypt

2025 Overall Index Ranking

57

Population/10,000 persons	11,653.8
Area/10,000 square kilometers	100
GDP/USD 100 million	3,890.6
GDP per capita/USD	3,338.5
Economic output per unit of energy consumption/(USD/KGOE)	3.7
R&D expenditure/USD 100 million	45.7
R&D expenditure intensity	1.03%
SCI indexed papers/pieces	26,343
Invention patents in force/pieces	1,387
Proportion of high-tech products in total manufacturing exports	3.2%



	Score	Ranking
 Innovation Resources	11.6	57
1.1 R&D expenditure as a percentage of GDP	16.3	40
1.2 Share of global R&D expenditure	0.5	34
1.3 Proportion of basic research expenditure in total R&D expenditure	—	—
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	1.4	34
1.6 Proportion of STEM graduates in all college graduates	36.4	58
1.7 R&D personnel per 10,000 employed individuals	27.8	42
1.8 Number of highly cited scientists	—	—
1.9 Gross enrollment ratio in higher education	23.0	55
1.10 Average score of the top three domestic universities in the world university rankings top 500	26.7	48
1.11 Number of students enrolled in postgraduate education	1.8	36
1.12 Proportion of international students in total higher education enrollment	2.3	49

 Knowledge Creation	26.8	40
2.1 Number of S&T papers per USD 1 million of R&D expenditure	34.3	10
2.2 Invention patents in force per 10,000 employed individuals	0.1	52
2.3 Number of industrial design applications per USD 100 million of industrial value-added	4.9	35
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	41.9	20
2.5 Proportion of highly cited papers in all domestic papers	51.9	31
2.6 Number of major international S&T awards won	0.0	26

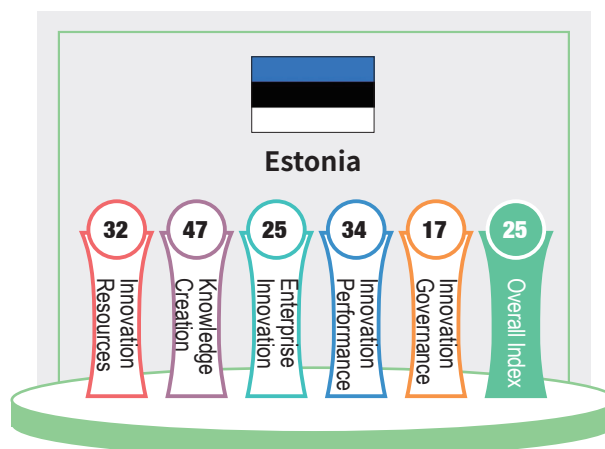
 Enterprise Innovation	12.6	58
3.1 Ratio of enterprise R&D expenditure to value-added	2.0	50
3.2 Enterprise researchers as a share of total researchers	28.0	48

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	0.1	53
3.6 Proportion of intellectual property royalty income in service exports	—	—
3.7 Economic growth rate	37.0	26
3.8 Number of newly registered companies per 10 million labor force	1.1	57
3.9 Number of high-growth technology companies	0.1	37

 Innovation Performance	7.2	60
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	22.8	57
4.2 Proportion of ICT service exports in total service exports	8.9	47
4.3 Proportion of high-tech products in total manufacturing exports	5.3	57
4.4 Labor productivity	5.9	57
4.5 Economic output per unit of energy consumption	8.8	54
4.6 Economic output per unit of CO ₂ emission	7.1	49

 Innovation Governance	64.1	47
5.1 Rule-of-law environment	47.8	51
5.2 Policy environment for doing business	62.9	33
5.3 E-government services	70.0	55
5.4 Level of ICT development	56.3	59
5.5 Availability of venture capital for startups and scaleups	61.5	39
5.6 Industry-university R&D collaboration	59.0	42
5.7 Proportion of international co-authored papers in all domestic papers	80.3	26
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	33.4	4
5.10 Entrepreneurial culture	56.1	41

Population/10,000 persons	137.2
Area/10,000 square kilometers	5
GDP/USD 100 million	427.6
GDP per capita/USD	31,170.1
Economic output per unit of energy consumption/(USD/KGOE)	9.8
R&D expenditure/USD 100 million	7.6
R&D expenditure intensity	1.83%
SCI indexed papers/pieces	2,641
Invention patents in force/pieces	1,700
Proportion of high-tech products in total manufacturing exports	16.6%



	Score	Ranking
Innovation Resources	30.0	32
1.1 R&D expenditure as a percentage of GDP	28.9	21
1.2 Share of global R&D expenditure	0.1	54
1.3 Proportion of basic research expenditure in total R&D expenditure	41.9	28
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	16.4	30
1.5 Number of the world's first-tier research institutions	0.5	46
1.6 Proportion of STEM graduates in all college graduates	57.1	22
1.7 R&D personnel per 10,000 employed individuals	57.5	27
1.8 Number of highly cited scientists	0.1	39
1.9 Gross enrollment ratio in higher education	41.0	37
1.10 Average score of the top three domestic universities in the world university rankings top 500	32.8	43
1.11 Number of students enrolled in postgraduate education	0.3	54
1.12 Proportion of international students in total higher education enrollment	15.9	18

Knowledge Creation	22.5	47
2.1 Number of S&T papers per USD 1 million of R&D expenditure	21.2	20
2.2 Invention patents in force per 10,000 employed individuals	0.5	42
2.3 Number of industrial design applications per USD 100 million of industrial value-added	16.7	7
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	53.2	14
2.5 Proportion of highly cited papers in all domestic papers	73.4	5
2.6 Number of major international S&T awards won	0.0	26

Enterprise Innovation	30.2	25
3.1 Ratio of enterprise R&D expenditure to value-added	15.5	22
3.2 Enterprise researchers as a share of total researchers	56.4	28

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	0.1	37
3.5 PCT applications per 10,000 enterprise researchers	2.0	30
3.6 Proportion of intellectual property royalty income in service exports	3.2	38
3.7 Economic growth rate	-4.0	57
3.8 Number of newly registered companies per 10 million labor force	100.0	1
3.9 Number of high-growth technology companies	0.3	28

Innovation Performance	29.9	34
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	32.7	46
4.2 Proportion of ICT service exports in total service exports	40.0	8
4.3 Proportion of high-tech products in total manufacturing exports	27.9	26
4.4 Labor productivity	29.6	29
4.5 Economic output per unit of energy consumption	23.2	29
4.6 Economic output per unit of CO ₂ emission	9.6	40

Innovation Governance	86.7	17
5.1 Rule-of-law environment	86.9	17
5.2 Policy environment for doing business	60.6	36
5.3 E-government services	99.5	3
5.4 Level of ICT development	85.9	18
5.5 Availability of venture capital for startups and scaleups	79.3	12
5.6 Industry-university R&D collaboration	63.6	33
5.7 Proportion of international co-authored papers in all domestic papers	88.6	11
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	9.8	28
5.10 Entrepreneurial culture	83.3	6

Finland

2025 Overall Index Ranking

15

Population/10,000 persons	562.0
Area/10,000 square kilometers	34
GDP/USD 100 million	2,998.4
GDP per capita/USD	53,188.6
Economic output per unit of energy consumption/(USD/KGOE)	9.0
R&D expenditure/USD 100 million	91.3
R&D expenditure intensity	3.09%
SCI indexed papers/pieces	17,402
Invention patents in force/pieces	93,601
Proportion of high-tech products in total manufacturing exports	9.7%



	Score	Ranking
 Innovation Resources	41.8	17
1.1 R&D expenditure as a percentage of GDP	48.7	10
1.2 Share of global R&D expenditure	1.0	26
1.3 Proportion of basic research expenditure in total R&D expenditure	—	—
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	4.7	17
1.6 Proportion of STEM graduates in all college graduates	63.1	14
1.7 R&D personnel per 10,000 employed individuals	97.5	2
1.8 Number of highly cited scientists	0.6	25
1.9 Gross enrollment ratio in higher education	65.5	3
1.10 Average score of the top three domestic universities in the world university rankings top 500	50.5	26
1.11 Number of students enrolled in postgraduate education	1.6	39
1.12 Proportion of international students in total higher education enrollment	13.3	27

 Knowledge Creation	34.4	20
2.1 Number of S&T papers per USD 1 million of R&D expenditure	10.5	45
2.2 Invention patents in force per 10,000 employed individuals	8.9	10
2.3 Number of industrial design applications per USD 100 million of industrial value-added	5.0	33
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	31.4	37
2.5 Proportion of highly cited papers in all domestic papers	57.4	23
2.6 Number of major international S&T awards won	0.0	26

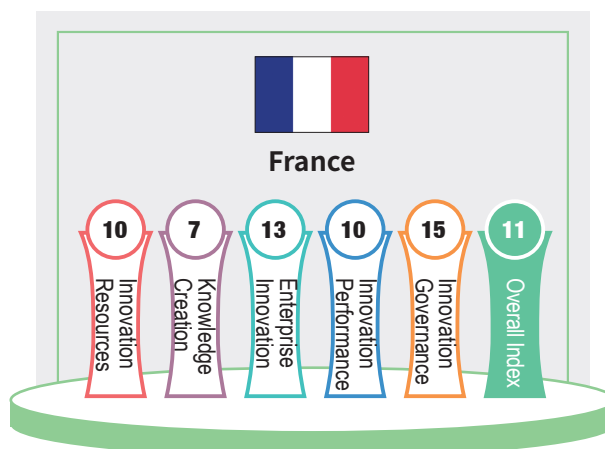
 Enterprise Innovation	39.6	15
3.1 Ratio of enterprise R&D expenditure to value-added	27.9	10
3.2 Enterprise researchers as a share of total researchers	73.0	14

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	45.5	15
3.4 Triadic patents as a share of the world's total	2.1	19
3.5 PCT applications per 10,000 enterprise researchers	14.0	10
3.6 Proportion of intellectual property royalty income in service exports	49.0	5
3.7 Economic growth rate	-2.4	55
3.8 Number of newly registered companies per 10 million labor force	25.1	25
3.9 Number of high-growth technology companies	0.6	20

 Innovation Performance	42.7	17
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	55.5	18
4.2 Proportion of ICT service exports in total service exports	51.5	5
4.3 Proportion of high-tech products in total manufacturing exports	16.3	41
4.4 Labor productivity	52.3	15
4.5 Economic output per unit of energy consumption	21.4	30
4.6 Economic output per unit of CO ₂ emission	21.1	24

 Innovation Governance	95.1	4
5.1 Rule-of-law environment	100.0	1
5.2 Policy environment for doing business	84.6	6
5.3 E-government services	91.0	18
5.4 Level of ICT development	95.9	3
5.5 Availability of venture capital for startups and scaleups	100.0	1
5.6 Industry-university R&D collaboration	76.9	14
5.7 Proportion of international co-authored papers in all domestic papers	80.4	23
5.8 Number of technical (sub) committees of the International Organization for Standardization	1.2	26
5.9 Ratio of international investment to GDP	6.7	40
5.10 Entrepreneurial culture	79.9	12

Population/10,000 persons	6,855.2
Area/10,000 square kilometers	55
GDP/USD 100 million	31,620.8
GDP per capita/USD	46,150.5
Economic output per unit of energy consumption/(USD/KGOE)	14.3
R&D expenditure/USD 100 million	664.8
R&D expenditure intensity	2.18%
SCI indexed papers/pieces	80,407
Invention patents in force/pieces	591,325
Proportion of high-tech products in total manufacturing exports	23.7%



	Score	Ranking
 Innovation Resources	46.9	10
1.1 R&D expenditure as a percentage of GDP	34.3	16
1.2 Share of global R&D expenditure	7.0	7
1.3 Proportion of basic research expenditure in total R&D expenditure	43.9	24
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	37.4	16
1.5 Number of the world's first-tier research institutions	20.7	5
1.6 Proportion of STEM graduates in all college graduates	52.9	29
1.7 R&D personnel per 10,000 employed individuals	76.3	12
1.8 Number of highly cited scientists	5.2	8
1.9 Gross enrollment ratio in higher education	42.7	35
1.10 Average score of the top three domestic universities in the world university rankings top 500	79.4	7
1.11 Number of students enrolled in postgraduate education	17.1	5
1.12 Proportion of international students in total higher education enrollment	13.9	25

 Knowledge Creation	48.0	7
2.1 Number of S&T papers per USD 1 million of R&D expenditure	6.9	55
2.2 Invention patents in force per 10,000 employed individuals	16.9	5
2.3 Number of industrial design applications per USD 100 million of industrial value-added	14.0	9
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	17.7	51
2.5 Proportion of highly cited papers in all domestic papers	51.2	34
2.6 Number of major international S&T awards won	10.8	3

 Enterprise Innovation	41.3	13
3.1 Ratio of enterprise R&D expenditure to value-added	24.9	15
3.2 Enterprise researchers as a share of total researchers	76.2	13

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	56.1	9
3.4 Triadic patents as a share of the world's total	12.8	6
3.5 PCT applications per 10,000 enterprise researchers	10.0	15
3.6 Proportion of intellectual property royalty income in service exports	20.9	15
3.7 Economic growth rate	18.0	40
3.8 Number of newly registered companies per 10 million labor force	27.6	20
3.9 Number of high-growth technology companies	3.6	8

 Innovation Performance	47.9	10
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	61.2	12
4.2 Proportion of ICT service exports in total service exports	11.7	41
4.3 Proportion of high-tech products in total manufacturing exports	39.9	15
4.4 Labor productivity	49.3	18
4.5 Economic output per unit of energy consumption	33.9	16
4.6 Economic output per unit of CO ₂ emission	44.8	8

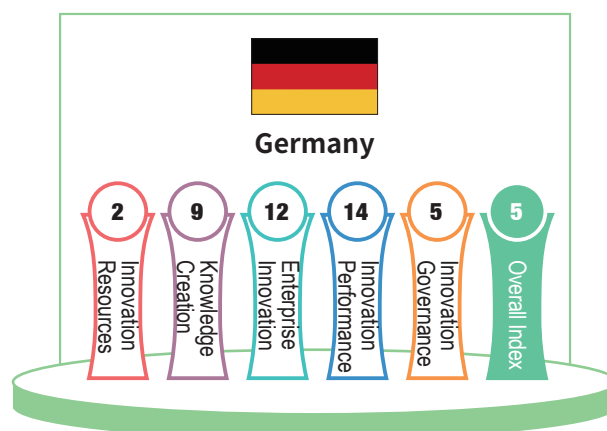
 Innovation Governance	87.8	15
5.1 Rule-of-law environment	80.9	23
5.2 Policy environment for doing business	70.1	26
5.3 E-government services	84.4	31
5.4 Level of ICT development	87.0	16
5.5 Availability of venture capital for startups and scaleups	79.1	13
5.6 Industry-university R&D collaboration	70.6	26
5.7 Proportion of international co-authored papers in all domestic papers	75.9	31
5.8 Number of technical (sub) committees of the International Organization for Standardization	62.2	3
5.9 Ratio of international investment to GDP	6.5	41
5.10 Entrepreneurial culture	70.8	17

Germany

2025 Overall Index Ranking

5

Population/10,000 persons	8,351.7
Area/10,000 square kilometers	36
GDP/USD 100 million	46,599.3
GDP per capita/USD	55,800.2
Economic output per unit of energy consumption/(USD/KGOE)	18.4
R&D expenditure/USD 100 million	1,427.4
R&D expenditure intensity	3.13%
SCI indexed papers/pieces	128,631
Invention patents in force/pieces	1 264,240
Proportion of high-tech products in total manufacturing exports	17.5%



	Score	Ranking
 Innovation Resources	58.4	2
1.1 R&D expenditure as a percentage of GDP	49.3	9
1.2 Share of global R&D expenditure	14.9	4
1.3 Proportion of basic research expenditure in total R&D expenditure	—	—
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	23.5	3
1.6 Proportion of STEM graduates in all college graduates	76.5	6
1.7 R&D personnel per 10,000 employed individuals	81.1	11
1.8 Number of highly cited scientists	13.4	4
1.9 Gross enrollment ratio in higher education	47.6	23
1.10 Average score of the top three domestic universities in the world university rankings top 500	74.6	10
1.11 Number of students enrolled in postgraduate education	21.2	4
1.12 Proportion of international students in total higher education enrollment	18.2	17

 Knowledge Creation	43.1	9
2.1 Number of S&T papers per USD 1 million of R&D expenditure	5.1	56
2.2 Invention patents in force per 10,000 employed individuals	15.3	8
2.3 Number of industrial design applications per USD 100 million of industrial value-added	5.7	29
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	14.5	52
2.5 Proportion of highly cited papers in all domestic papers	52.0	30
2.6 Number of major international S&T awards won	4.5	7

 Enterprise Innovation	46.2	12
3.1 Ratio of enterprise R&D expenditure to value-added	25.1	14
3.2 Enterprise researchers as a share of total researchers	76.4	12

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	55.3	10
3.4 Triadic patents as a share of the world's total	27.0	4
3.5 PCT applications per 10,000 enterprise researchers	14.3	9
3.6 Proportion of intellectual property royalty income in service exports	43.3	6
3.7 Economic growth rate	-3.7	56
3.8 Number of newly registered companies per 10 million labor force	5.7	49
3.9 Number of high-growth technology companies	5.6	5

 Innovation Performance	46.9	14
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	70.4	5
4.2 Proportion of ICT service exports in total service exports	17.7	22
4.3 Proportion of high-tech products in total manufacturing exports	29.4	22
4.4 Labor productivity	48.4	20
4.5 Economic output per unit of energy consumption	43.8	8
4.6 Economic output per unit of CO ₂ emission	24.8	20

 Innovation Governance	94.8	5
5.1 Rule-of-law environment	89.9	13
5.2 Policy environment for doing business	68.0	29
5.3 E-government services	92.4	11
5.4 Level of ICT development	93.1	9
5.5 Availability of venture capital for startups and scaleups	73.9	21
5.6 Industry-university R&D collaboration	76.5	15
5.7 Proportion of international co-authored papers in all domestic papers	72.1	37
5.8 Number of technical (sub) committees of the International Organization for Standardization	100.0	1
5.9 Ratio of international investment to GDP	2.6	54
5.10 Entrepreneurial culture	67.9	25

Population/10,000 persons	1,040.5
Area/10,000 square kilometers	13
GDP/USD 100 million	2,571.4
GDP per capita/USD	24,752.1
Economic output per unit of energy consumption/(USD/KGOE)	12.5
R&D expenditure/USD 100 million	36.4
R&D expenditure intensity	1.49 %
SCI indexed papers/pieces	15,488
Invention patents in force/pieces	8,579
Proportion of high-tech products in total manufacturing exports	15.2%



	Score	Ranking
 Innovation Resources	33.6	25
1.1 R&D expenditure as a percentage of GDP	23.5	29
1.2 Share of global R&D expenditure	0.4	40
1.3 Proportion of basic research expenditure in total R&D expenditure	74.7	4
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	51.9	9
1.5 Number of the world's first-tier research institutions	4.2	19
1.6 Proportion of STEM graduates in all college graduates	56.5	23
1.7 R&D personnel per 10,000 employed individuals	65.7	20
1.8 Number of highly cited scientists	0.1	35
1.9 Gross enrollment ratio in higher education	100.0	1
1.10 Average score of the top three domestic universities in the world university rankings top 500	32.8	42
1.11 Number of students enrolled in postgraduate education	2.2	32
1.12 Proportion of international students in total higher education enrollment	4.3	46

 Knowledge Creation	33.4	23
2.1 Number of S&T papers per USD 1 million of R&D expenditure	24.6	17
2.2 Invention patents in force per 10,000 employed individuals	1.7	29
2.3 Number of industrial design applications per USD 100 million of industrial value-added	4.3	41
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	47.6	16
2.5 Proportion of highly cited papers in all domestic papers	60.7	21
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	20.3	41
3.1 Ratio of enterprise R&D expenditure to value-added	15.6	21
3.2 Enterprise researchers as a share of total researchers	38.0	42

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	19.0	26
3.4 Triadic patents as a share of the world's total	0.1	32
3.5 PCT applications per 10,000 enterprise researchers	1.0	43
3.6 Proportion of intellectual property royalty income in service exports	0.4	52
3.7 Economic growth rate	35.0	27
3.8 Number of newly registered companies per 10 million labor force	8.6	46
3.9 Number of high-growth technology companies	0.3	28

 Innovation Performance	22.8	44
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	30.8	49
4.2 Proportion of ICT service exports in total service exports	4.9	55
4.3 Proportion of high-tech products in total manufacturing exports	25.5	29
4.4 Labor productivity	24.0	36
4.5 Economic output per unit of energy consumption	29.6	22
4.6 Economic output per unit of CO ₂ emission	14.5	32

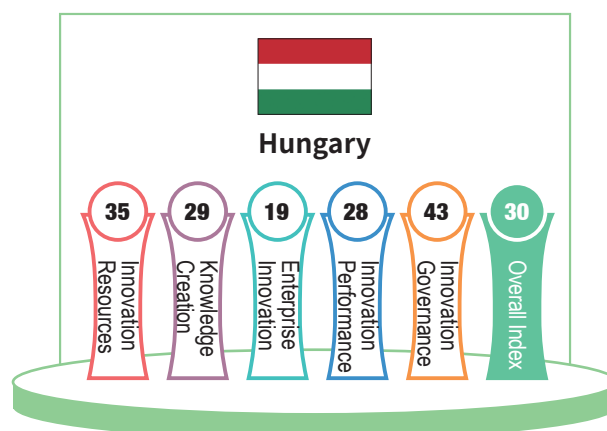
 Innovation Governance	64.6	44
5.1 Rule-of-law environment	57.4	43
5.2 Policy environment for doing business	62.5	34
5.3 E-government services	81.5	35
5.4 Level of ICT development	67.0	48
5.5 Availability of venture capital for startups and scaleups	60.7	40
5.6 Industry-university R&D collaboration	48.6	58
5.7 Proportion of international co-authored papers in all domestic papers	69.5	38
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	10.6	26
5.10 Entrepreneurial culture	57.8	37

Hungary

2025 Overall Index Ranking

30

Population/10,000 persons	956.2
Area/10,000 square kilometers	9
GDP/USD 100 million	2,229.0
GDP per capita/USD	23,310.8
Economic output per unit of energy consumption/(USD/KGOE)	8.9
R&D expenditure/USD 100 million	29.5
R&D expenditure intensity	1.38%
SCI indexed papers/pieces	10,429
Invention patents in force/pieces	7,813
Proportion of high-tech products in total manufacturing exports	17.8%



	Score	Ranking
 Innovation Resources	27.2	35
1.1 R&D expenditure as a percentage of GDP	21.7	33
1.2 Share of global R&D expenditure	0.3	41
1.3 Proportion of basic research expenditure in total R&D expenditure	42.4	27
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	38.4	15
1.5 Number of the world's first-tier research institutions	1.4	34
1.6 Proportion of STEM graduates in all college graduates	47.1	41
1.7 R&D personnel per 10,000 employed individuals	56.8	28
1.8 Number of highly cited scientists	0.1	39
1.9 Gross enrollment ratio in higher education	34.3	45
1.10 Average score of the top three domestic universities in the world university rankings top 500	22.3	51
1.11 Number of students enrolled in postgraduate education	1.5	40
1.12 Proportion of international students in total higher education enrollment	20.6	13

 Knowledge Creation	30.9	29
2.1 Number of S&T papers per USD 1 million of R&D expenditure	19.9	22
2.2 Invention patents in force per 10,000 employed individuals	0.6	39
2.3 Number of industrial design applications per USD 100 million of industrial value-added	2.7	50
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	60.5	8
2.5 Proportion of highly cited papers in all domestic papers	56.1	26
2.6 Number of major international S&T awards won	0.9	17

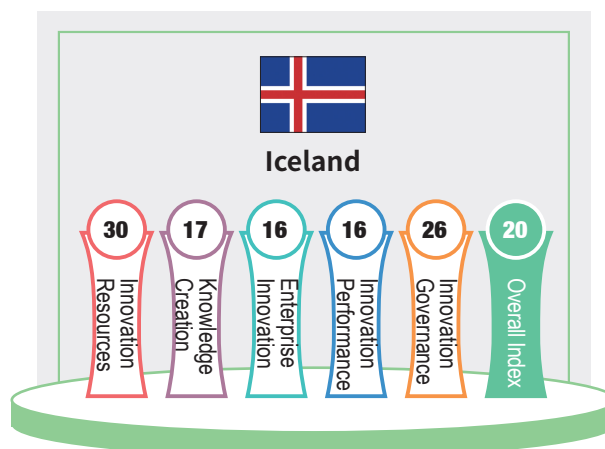
 Enterprise Innovation	34.8	19
3.1 Ratio of enterprise R&D expenditure to value-added	12.4	26
3.2 Enterprise researchers as a share of total researchers	76.6	11

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	69.9	6
3.4 Triadic patents as a share of the world's total	0.2	29
3.5 PCT applications per 10,000 enterprise researchers	1.0	44
3.6 Proportion of intellectual property royalty income in service exports	20.1	16
3.7 Economic growth rate	7.9	52
3.8 Number of newly registered companies per 10 million labor force	17.7	30
3.9 Number of high-growth technology companies	0.1	37

 Innovation Performance	32.2	28
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	62.6	10
4.2 Proportion of ICT service exports in total service exports	17.4	25
4.3 Proportion of high-tech products in total manufacturing exports	30.0	20
4.4 Labor productivity	22.3	38
4.5 Economic output per unit of energy consumption	21.1	32
4.6 Economic output per unit of CO ₂ emission	14.4	33

 Innovation Governance	64.8	43
5.1 Rule-of-law environment	62.6	37
5.2 Policy environment for doing business	48.9	50
5.3 E-government services	71.4	52
5.4 Level of ICT development	70.1	39
5.5 Availability of venture capital for startups and scaleups	67.7	31
5.6 Industry-university R&D collaboration	59.2	41
5.7 Proportion of international co-authored papers in all domestic papers	69.3	39
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.6	30
5.9 Ratio of international investment to GDP	13.1	16
5.10 Entrepreneurial culture	60.0	31

Population/10,000 persons	38.7
Area/10,000 square kilometers	10
GDP/USD 100 million	334.6
GDP per capita/USD	82,703.9
Economic output per unit of energy consumption/(USD/KGOE)	5.1
R&D expenditure/USD 100 million	8.3
R&D expenditure intensity	2.6%
SCI indexed papers/pieces	1,532
Invention patents in force/pieces	2,331
Proportion of high-tech products in total manufacturing exports	43.4%



	Score	Ranking
 Innovation Resources	31.4	30
1.1 R&D expenditure as a percentage of GDP	41.3	13
1.2 Share of global R&D expenditure	0.1	51
1.3 Proportion of basic research expenditure in total R&D expenditure	35.5	33
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	14.2	33
1.5 Number of the world's first-tier research institutions	0.9	39
1.6 Proportion of STEM graduates in all college graduates	36.6	57
1.7 R&D personnel per 10,000 employed individuals	83.2	8
1.8 Number of highly cited scientists	0.0	45
1.9 Gross enrollment ratio in higher education	46.3	28
1.10 Average score of the top three domestic universities in the world university rankings top 500	23.1	50
1.11 Number of students enrolled in postgraduate education	0.1	57
1.12 Proportion of international students in total higher education enrollment	14.8	23

 Knowledge Creation	35.8	17
2.1 Number of S&T papers per USD 1 million of R&D expenditure	10.4	46
2.2 Invention patents in force per 10,000 employed individuals	1.3	31
2.3 Number of industrial design applications per USD 100 million of industrial value-added	2.2	51
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	35.9	30
2.5 Proportion of highly cited papers in all domestic papers	70.8	6
2.6 Number of major international S&T awards won	0.0	26

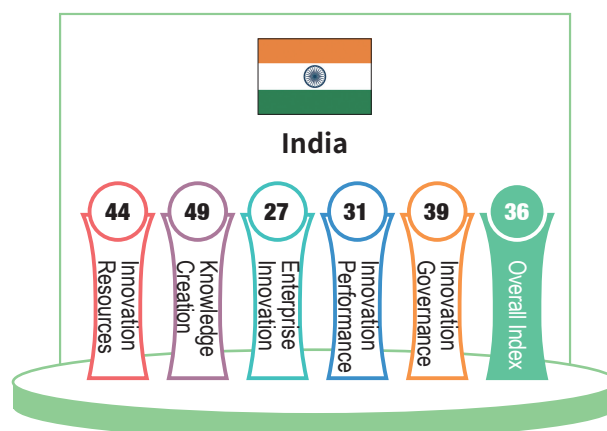
 Enterprise Innovation	39.1	16
3.1 Ratio of enterprise R&D expenditure to value-added	30.7	7
3.2 Enterprise researchers as a share of total researchers	61.6	23

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	53.8	12
3.4 Triadic patents as a share of the world's total	0.0	45
3.5 PCT applications per 10,000 enterprise researchers	14.3	8
3.6 Proportion of intellectual property royalty income in service exports	16.0	19
3.7 Economic growth rate	8.0	51
3.8 Number of newly registered companies per 10 million labor force	49.6	6
3.9 Number of high-growth technology companies	0.0	47

 Innovation Performance	44.4	16
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	16.9	60
4.2 Proportion of ICT service exports in total service exports	11.5	43
4.3 Proportion of high-tech products in total manufacturing exports	73.1	4
4.4 Labor productivity	71.6	6
4.5 Economic output per unit of energy consumption	12.1	49
4.6 Economic output per unit of CO ₂ emission	47.5	6

 Innovation Governance	82.0	26
5.1 Rule-of-law environment	94.0	8
5.2 Policy environment for doing business	68.6	28
5.3 E-government services	90.8	19
5.4 Level of ICT development	82.1	25
5.5 Availability of venture capital for startups and scaleups	—	—
5.6 Industry-university R&D collaboration	71.5	25
5.7 Proportion of international co-authored papers in all domestic papers	95.8	4
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	2.6	57
5.10 Entrepreneurial culture	—	—

Population/10,000 persons	145,093.6
Area/10,000 square kilometers	298
GDP/USD 100 million	39,126.9
GDP per capita/USD	2,696.7
Economic output per unit of energy consumption/(USD/KGOE)	3.4
R&D expenditure/USD 100 million	154.2
R&D expenditure intensity	0.65%
SCI indexed papers/pieces	131,732
Invention patents in force/pieces	116,829
Proportion of high-tech products in total manufacturing exports	14.9%



	Score	Ranking
 Innovation Resources	20.1	44
1.1 R&D expenditure as a percentage of GDP	10.2	48
1.2 Share of global R&D expenditure	1.6	22
1.3 Proportion of basic research expenditure in total R&D expenditure	—	—
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	16.9	9
1.6 Proportion of STEM graduates in all college graduates	58.4	20
1.7 R&D personnel per 10,000 employed individuals	4.4	55
1.8 Number of highly cited scientists	0.2	29
1.9 Gross enrollment ratio in higher education	20.6	58
1.10 Average score of the top three domestic universities in the world university rankings top 500	52.4	24
1.11 Number of students enrolled in postgraduate education	100.0	1
1.12 Proportion of international students in total higher education enrollment	0.2	58

 Knowledge Creation	20.5	49
2.1 Number of S&T papers per USD 1 million of R&D expenditure	46.5	5
2.2 Invention patents in force per 10,000 employed individuals	0.2	49
2.3 Number of industrial design applications per USD 100 million of industrial value-added	26.6	5
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	61.9	5
2.5 Proportion of highly cited papers in all domestic papers	30.3	56
2.6 Number of major international S&T awards won	0.9	17

 Enterprise Innovation	27.9	27
3.1 Ratio of enterprise R&D expenditure to value-added	2.1	49
3.2 Enterprise researchers as a share of total researchers	46.9	36

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	18.6	27
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	0.7	49
3.6 Proportion of intellectual property royalty income in service exports	2.0	46
3.7 Economic growth rate	100.0	1
3.8 Number of newly registered companies per 10 million labor force	0.7	59
3.9 Number of high-growth technology companies	9.5	3

 Innovation Performance	30.7	31
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	50.5	23
4.2 Proportion of ICT service exports in total service exports	73.2	3
4.3 Proportion of high-tech products in total manufacturing exports	25.1	30
4.4 Labor productivity	3.2	60
4.5 Economic output per unit of energy consumption	8.0	56
4.6 Economic output per unit of CO ₂ emission	4.6	56

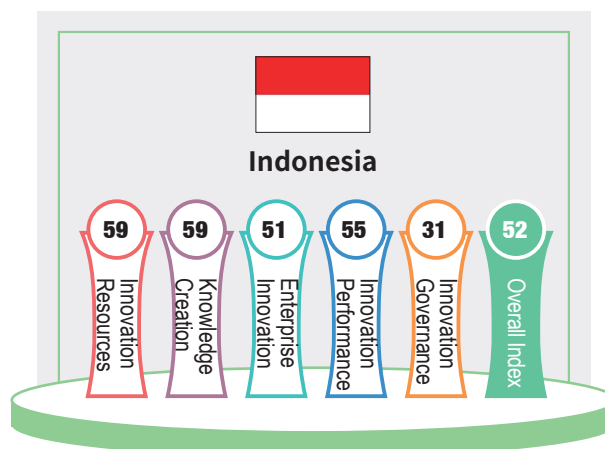
 Innovation Governance	67.0	39
5.1 Rule-of-law environment	56.8	44
5.2 Policy environment for doing business	56.1	38
5.3 E-government services	81.8	34
5.4 Level of ICT development	67.9	44
5.5 Availability of venture capital for startups and scaleups	86.8	7
5.6 Industry-university R&D collaboration	52.8	52
5.7 Proportion of international co-authored papers in all domestic papers	40.6	57
5.8 Number of technical (sub) committees of the International Organization for Standardization	8.7	13
5.9 Ratio of international investment to GDP	3.6	52
5.10 Entrepreneurial culture	81.9	7

Indonesia

2025 Overall Index Ranking

52

Population/10,000 persons	28,348.8
Area/10,000 square kilometers	191
GDP/USD 100 million	13,963.0
GDP per capita/USD	4,925.4
Economic output per unit of energy consumption/(USD/KGOE)	5.0
R&D expenditure/USD 100 million	38.5
R&D expenditure intensity	0.28%
SCI indexed papers/pieces	9,449
Invention patents in force/pieces	323
Proportion of high-tech products in total manufacturing exports	9.1



	Score	Ranking
 Innovation Resources	9.7	59
1.1 R&D expenditure as a percentage of GDP	4.4	59
1.2 Share of global R&D expenditure	0.4	39
1.3 Proportion of basic research expenditure in total R&D expenditure	—	—
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	0.5	46
1.6 Proportion of STEM graduates in all college graduates	41.9	50
1.7 R&D personnel per 10,000 employed individuals	—	—
1.8 Number of highly cited scientists	—	—
1.9 Gross enrollment ratio in higher education	27.2	54
1.10 Average score of the top three domestic universities in the world university rankings top 500	43.8	31
1.11 Number of students enrolled in postgraduate education	10.2	11
1.12 Proportion of international students in total higher education enrollment	0.1	59

 Knowledge Creation	4.2	59
2.1 Number of S&T papers per USD 1 million of R&D expenditure	13.4	36
2.2 Invention patents in force per 10,000 employed individuals	0.1	55
2.3 Number of industrial design applications per USD 100 million of industrial value-added	6.0	27
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	9.0	60
2.5 Proportion of highly cited papers in all domestic papers	27.1	58
2.6 Number of major international S&T awards won	0.0	26

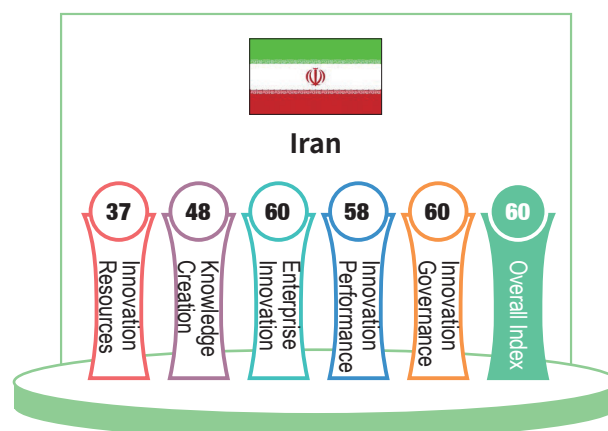
 Enterprise Innovation	16.0	51
3.1 Ratio of enterprise R&D expenditure to value-added	—	—
3.2 Enterprise researchers as a share of total researchers	—	—

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	17.1	32
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	—	—
3.6 Proportion of intellectual property royalty income in service exports	2.1	44
3.7 Economic growth rate	77.6	3
3.8 Number of newly registered companies per 10 million labor force	1.4	56
3.9 Number of high-growth technology companies	0.7	19

 Innovation Performance	13.8	55
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	36.2	40
4.2 Proportion of ICT service exports in total service exports	14.9	29
4.3 Proportion of high-tech products in total manufacturing exports	15.3	45
4.4 Labor productivity	4.8	59
4.5 Economic output per unit of energy consumption	11.9	50
4.6 Economic output per unit of CO ₂ emission	4.2	57

 Innovation Governance	76.0	31
5.1 Rule-of-law environment	48.5	50
5.2 Policy environment for doing business	83.8	7
5.3 E-government services	80.3	38
5.4 Level of ICT development	68.2	43
5.5 Availability of venture capital for startups and scaleups	83.2	10
5.6 Industry-university R&D collaboration	76.9	13
5.7 Proportion of international co-authored papers in all domestic papers	72.9	35
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	6.7	38
5.10 Entrepreneurial culture	83.4	5

Population/10,000 persons	9,156.8
Area/10,000 square kilometers	165
GDP/USD 100 million	4,369.1
GDP per capita/USD	4,771.4
Economic output per unit of energy consumption/(USD/KGOE)	1.4
R&D expenditure/USD 100 million	159.8
R&D expenditure intensity	0.73%
SCI indexed papers/pieces	43,977
Invention patents in force/pieces	41,255
Proportion of high-tech products in total manufacturing exports	0.8%



	Score	Ranking
 Innovation Resources	24.7	37
1.1 R&D expenditure as a percentage of GDP	11.5	45
1.2 Share of global R&D expenditure	1.7	20
1.3 Proportion of basic research expenditure in total R&D expenditure	24.9	44
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	0.9	39
1.6 Proportion of STEM graduates in all college graduates	75.5	7
1.7 R&D personnel per 10,000 employed individuals	44.9	33
1.8 Number of highly cited scientists	0.1	35
1.9 Gross enrollment ratio in higher education	35.5	44
1.10 Average score of the top three domestic universities in the world university rankings top 500	31.9	44
1.11 Number of students enrolled in postgraduate education	13.4	8
1.12 Proportion of international students in total higher education enrollment	1.1	54

 Knowledge Creation	20.7	48
2.1 Number of S&T papers per USD 1 million of R&D expenditure	16.3	31
2.2 Invention patents in force per 10,000 employed individuals	4.8	18
2.3 Number of industrial design applications per USD 100 million of industrial value-added	7.2	21
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	13.2	56
2.5 Proportion of highly cited papers in all domestic papers	44.2	45
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	9.3	60
3.1 Ratio of enterprise R&D expenditure to value-added	—	—
3.2 Enterprise researchers as a share of total researchers	—	—

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	—	—
3.6 Proportion of intellectual property royalty income in service exports	—	—
3.7 Economic growth rate	46.9	17
3.8 Number of newly registered companies per 10 million labor force	2.5	54
3.9 Number of high-growth technology companies	0.0	47

 Innovation Performance	11.6	58
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	44.2	33
4.2 Proportion of ICT service exports in total service exports	—	—
4.3 Proportion of high-tech products in total manufacturing exports	1.4	59
4.4 Labor productivity	8.0	53
4.5 Economic output per unit of energy consumption	3.2	60
4.6 Economic output per unit of CO ₂ emission	1.9	60

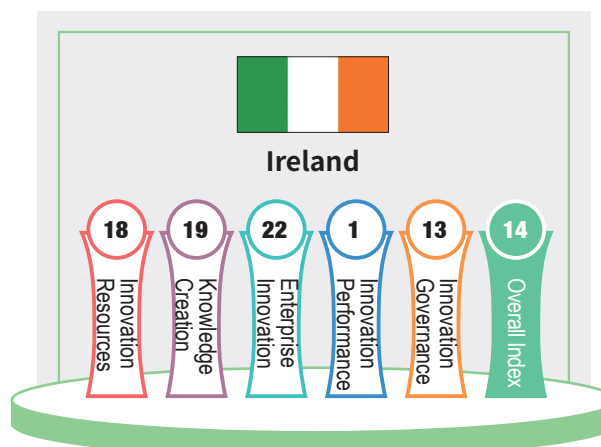
 Innovation Governance	36.3	60
5.1 Rule-of-law environment	26.5	58
5.2 Policy environment for doing business	34.8	58
5.3 E-government services	37.7	60
5.4 Level of ICT development	57.6	58
5.5 Availability of venture capital for startups and scaleups	51.3	50
5.6 Industry-university R&D collaboration	45.5	59
5.7 Proportion of international co-authored papers in all domestic papers	45.8	54
5.8 Number of technical (sub) committees of the International Organization for Standardization	2.9	22
5.9 Ratio of international investment to GDP	1.0	60
5.10 Entrepreneurial culture	44.0	53

Ireland

2025 Overall Index Ranking

14

Population/10,000 persons	539.6
Area/10,000 square kilometers	7
GDP/USD 100 million	5,773.9
GDP per capita/USD	107,316.3
Economic output per unit of energy consumption/(USD/KGOE)	42.1
R&D expenditure/USD 100 million	87.6
R&D expenditure intensity	1.54%
SCI indexed papers/pieces	13,253
Invention patents in force/pieces	51,009
Proportion of high-tech products in total manufacturing exports	47.8%



	Score	Ranking
 Innovation Resources	38.8	18
1.1 R&D expenditure as a percentage of GDP	24.3	27
1.2 Share of global R&D expenditure	0.9	28
1.3 Proportion of basic research expenditure in total R&D expenditure	26.7	41
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	100.0	1
1.5 Number of the world's first-tier research institutions	0.9	39
1.6 Proportion of STEM graduates in all college graduates	55.7	24
1.7 R&D personnel per 10,000 employed individuals	73.6	15
1.8 Number of highly cited scientists	1.4	20
1.9 Gross enrollment ratio in higher education	46.4	27
1.10 Average score of the top three domestic universities in the world university rankings top 500	53.3	22
1.11 Number of students enrolled in postgraduate education	0.8	47
1.12 Proportion of international students in total higher education enrollment	15.8	19

 Knowledge Creation	35.1	19
2.1 Number of S&T papers per USD 1 million of R&D expenditure	8.4	50
2.2 Invention patents in force per 10,000 employed individuals	—	58
2.3 Number of industrial design applications per USD 100 million of industrial value-added	0.8	56
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	61.5	7
2.5 Proportion of highly cited papers in all domestic papers	65.2	17
2.6 Number of major international S&T awards won	1.8	12

 Enterprise Innovation	31.2	22
3.1 Ratio of enterprise R&D expenditure to value-added	12.3	28
3.2 Enterprise researchers as a share of total researchers	59.9	27

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	37.2	21
3.4 Triadic patents as a share of the world's total	1.0	21
3.5 PCT applications per 10,000 enterprise researchers	12.1	13
3.6 Proportion of intellectual property royalty income in service exports	17.0	18
3.7 Economic growth rate	18.8	39
3.8 Number of newly registered companies per 10 million labor force	26.3	21
3.9 Number of high-growth technology companies	0.5	22

 Innovation Performance	100	1
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	65.9	8
4.2 Proportion of ICT service exports in total service exports	88.3	2
4.3 Proportion of high-tech products in total manufacturing exports	80.4	3
4.4 Labor productivity	100.0	1
4.5 Economic output per unit of energy consumption	100.0	1
4.6 Economic output per unit of CO ₂ emission	47.9	5

 Innovation Governance	89.2	13
5.1 Rule-of-law environment	91.9	11
5.2 Policy environment for doing business	83.5	10
5.3 E-government services	87.7	25
5.4 Level of ICT development	83.8	19
5.5 Availability of venture capital for startups and scaleups	74.1	20
5.6 Industry-university R&D collaboration	73.4	20
5.7 Proportion of international co-authored papers in all domestic papers	83.5	17
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	30.5	5
5.10 Entrepreneurial culture	75.3	14

Population/10,000 persons	997.4
Area/10,000 square kilometers	2
GDP/USD 100 million	5,403.8
GDP per capita/USD	54,176.7
Economic output per unit of energy consumption/(USD/KGOE)	21.1
R&D expenditure/USD 100 million	325.0
R&D expenditure intensity	6.35 %
SCI indexed papers/pieces	17,842
Invention patents in force/pieces	98,949
Proportion of high-tech products in total manufacturing exports	32.9%



	Score	Ranking
 Innovation Resources	50.8	7
1.1 R&D expenditure as a percentage of GDP	100.0	1
1.2 Share of global R&D expenditure	3.4	9
1.3 Proportion of basic research expenditure in total R&D expenditure	14.4	47
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	66.0	5
1.5 Number of the world's first-tier research institutions	1.9	31
1.6 Proportion of STEM graduates in all college graduates	58.1	21
1.7 R&D personnel per 10,000 employed individuals	75.5	14
1.8 Number of highly cited scientists	1.8	19
1.9 Gross enrollment ratio in higher education	33.8	46
1.10 Average score of the top three domestic universities in the world university rankings top 500	38.1	37
1.11 Number of students enrolled in postgraduate education	1.2	44
1.12 Proportion of international students in total higher education enrollment	4.8	44

 Knowledge Creation	34.0	22
2.1 Number of S&T papers per USD 1 million of R&D expenditure	3.2	59
2.2 Invention patents in force per 10,000 employed individuals	4.5	19
2.3 Number of industrial design applications per USD 100 million of industrial value-added	4.8	37
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	38.7	24
2.5 Proportion of highly cited papers in all domestic papers	60.8	20
2.6 Number of major international S&T awards won	2.7	9

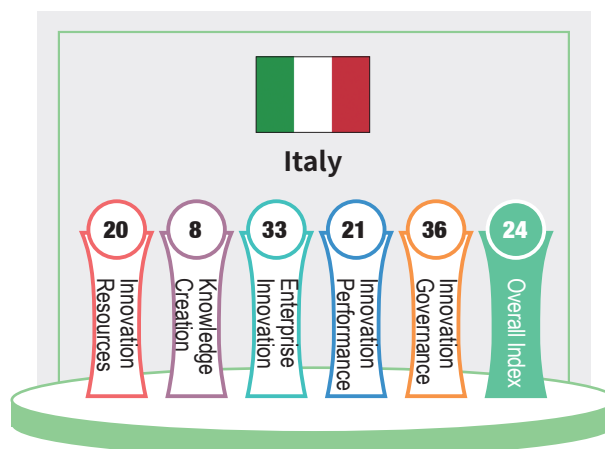
 Enterprise Innovation	53.8	5
3.1 Ratio of enterprise R&D expenditure to value-added	100.0	1
3.2 Enterprise researchers as a share of total researchers	96.3	3

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	77.1	3
3.4 Triadic patents as a share of the world's total	3.8	13
3.5 PCT applications per 10,000 enterprise researchers	3.9	25
3.6 Proportion of intellectual property royalty income in service exports	19.5	17
3.7 Economic growth rate	13.4	47
3.8 Number of newly registered companies per 10 million labor force	12.6	35
3.9 Number of high-growth technology companies	3.9	7

 Innovation Performance	71.4	4
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	59.6	15
4.2 Proportion of ICT service exports in total service exports	100.0	1
4.3 Proportion of high-tech products in total manufacturing exports	55.4	5
4.4 Labor productivity	55.5	12
4.5 Economic output per unit of energy consumption	50.2	6
4.6 Economic output per unit of CO ₂ emission	31.2	15

 Innovation Governance	84.0	23
5.1 Rule-of-law environment	71.3	31
5.2 Policy environment for doing business	80.6	13
5.3 E-government services	85.4	30
5.4 Level of ICT development	89.2	13
5.5 Availability of venture capital for startups and scaleups	74.7	18
5.6 Industry-university R&D collaboration	100.0	1
5.7 Proportion of international co-authored papers in all domestic papers	62.7	48
5.8 Number of technical (sub) committees of the International Organization for Standardization	1.7	23
5.9 Ratio of international investment to GDP	13.9	15
5.10 Entrepreneurial culture	68.7	22

Population/10,000 persons	5,895.3
Area/10,000 square kilometers	30
GDP/USD 100 million	23,727.7
GDP per capita/USD	40,226.0
Economic output per unit of energy consumption/(USD/KGOE)	17.0
R&D expenditure/USD 100 million	317.9
R&D expenditure intensity	1.37%
SCI indexed papers/pieces	96,809
Invention patents in force/pieces	415,504
Proportion of high-tech products in total manufacturing exports	10.0%



	Score	Ranking
Innovation Resources	37.4	20
1.1 R&D expenditure as a percentage of GDP	21.6	34
1.2 Share of global R&D expenditure	3.3	10
1.3 Proportion of basic research expenditure in total R&D expenditure	54.9	13
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	43.0	14
1.5 Number of the world's first-tier research institutions	14.1	10
1.6 Proportion of STEM graduates in all college graduates	50.3	35
1.7 R&D personnel per 10,000 employed individuals	57.7	26
1.8 Number of highly cited scientists	4.3	9
1.9 Gross enrollment ratio in higher education	46.0	31
1.10 Average score of the top three domestic universities in the world university rankings top 500	56.8	17
1.11 Number of students enrolled in postgraduate education	13.8	7
1.12 Proportion of international students in total higher education enrollment	6.9	34

Knowledge Creation	46.6	8
2.1 Number of S&T papers per USD 1 million of R&D expenditure	17.3	29
2.2 Invention patents in force per 10,000 employed individuals	20.9	4
2.3 Number of industrial design applications per USD 100 million of industrial value-added	7.8	18
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	37.2	26
2.5 Proportion of highly cited papers in all domestic papers	52.8	29
2.6 Number of major international S&T awards won	2.7	9

Enterprise Innovation	24.1	33
3.1 Ratio of enterprise R&D expenditure to value-added	10.6	31
3.2 Enterprise researchers as a share of total researchers	52.4	30

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	16.5	33
3.4 Triadic patents as a share of the world's total	5.8	10
3.5 PCT applications per 10,000 enterprise researchers	13.7	11
3.6 Proportion of intellectual property royalty income in service exports	15.2	20
3.7 Economic growth rate	11.2	49
3.8 Number of newly registered companies per 10 million labor force	11.7	37
3.9 Number of high-growth technology companies	0.5	22

Innovation Performance	35.7	21
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	50.9	22
4.2 Proportion of ICT service exports in total service exports	9.5	46
4.3 Proportion of high-tech products in total manufacturing exports	16.8	37
4.4 Labor productivity	42.7	22
4.5 Economic output per unit of energy consumption	40.4	10
4.6 Economic output per unit of CO ₂ emission	25.3	18

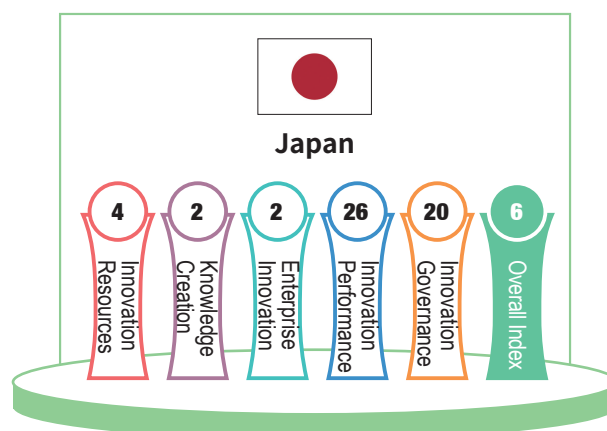
Innovation Governance	70.8	36
5.1 Rule-of-law environment	61.7	39
5.2 Policy environment for doing business	63.3	32
5.3 E-government services	76.2	45
5.4 Level of ICT development	80.5	26
5.5 Availability of venture capital for startups and scaleups	66.1	32
5.6 Industry-university R&D collaboration	65.7	31
5.7 Proportion of international co-authored papers in all domestic papers	64.7	47
5.8 Number of technical (sub) committees of the International Organization for Standardization	21.5	7
5.9 Ratio of international investment to GDP	7.2	37
5.10 Entrepreneurial culture	58.2	36

Japan

2025 Overall Index Ranking

6

Population/10,000 persons	12,397.5
Area/10,000 square kilometers	38
GDP/USD 100 million	40,262.1
GDP per capita/USD	32,475.9
Economic output per unit of energy consumption/(USD/KGOE)	11.1
R&D expenditure/USD 100 million	1,449.9
R&D expenditure intensity	3.44 %
SCI indexed papers/pieces	86,571
Invention patents in force/pieces	3 148,446
Proportion of high-tech products in total manufacturing exports	17.1%



	Score	Ranking
Innovation Resources	53.4	4
1.1 R&D expenditure as a percentage of GDP	54.2	5
1.2 Share of global R&D expenditure	15.2	3
1.3 Proportion of basic research expenditure in total R&D expenditure	25.2	43
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	76.4	4
1.5 Number of the world's first-tier research institutions	19.2	6
1.6 Proportion of STEM graduates in all college graduates	67.0	10
1.7 R&D personnel per 10,000 employed individuals	61.2	23
1.8 Number of highly cited scientists	3.0	14
1.9 Gross enrollment ratio in higher education	39.3	39
1.10 Average score of the top three domestic universities in the world university rankings top 500	75.7	9
1.11 Number of students enrolled in postgraduate education	6.8	15
1.12 Proportion of international students in total higher education enrollment	6.7	36

Knowledge Creation	63.2	2
2.1 Number of S&T papers per USD 1 million of R&D expenditure	3.4	58
2.2 Invention patents in force per 10,000 employed individuals	70.2	2
2.3 Number of industrial design applications per USD 100 million of industrial value-added	16.6	8
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	11.1	57
2.5 Proportion of highly cited papers in all domestic papers	34.1	54
2.6 Number of major international S&T awards won	8.1	4

Enterprise Innovation	63.6	2
3.1 Ratio of enterprise R&D expenditure to value-added	29.8	8
3.2 Enterprise researchers as a share of total researchers	91.4	5

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	37.7	20
3.4 Triadic patents as a share of the world's total	100.0	1
3.5 PCT applications per 10,000 enterprise researchers	27.5	4
3.6 Proportion of intellectual property royalty income in service exports	100.0	1
3.7 Economic growth rate	1.3	53
3.8 Number of newly registered companies per 10 million labor force	2.1	55
3.9 Number of high-growth technology companies	1.3	12

Innovation Performance	33.6	26
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	66.4	7
4.2 Proportion of ICT service exports in total service exports	7.5	50
4.3 Proportion of high-tech products in total manufacturing exports	28.8	25
4.4 Labor productivity	27.9	31
4.5 Economic output per unit of energy consumption	26.4	26
4.6 Economic output per unit of CO ₂ emission	16.2	30

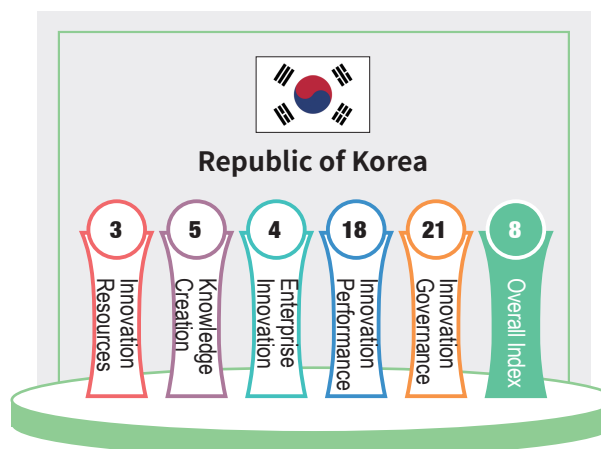
Innovation Governance	85.5	20
5.1 Rule-of-law environment	89.5	14
5.2 Policy environment for doing business	69.7	27
5.3 E-government services	94.3	9
5.4 Level of ICT development	89.9	12
5.5 Availability of venture capital for startups and scaleups	68.0	30
5.6 Industry-university R&D collaboration	71.7	24
5.7 Proportion of international co-authored papers in all domestic papers	43.3	56
5.8 Number of technical (sub) committees of the International Organization for Standardization	62.2	3
5.9 Ratio of international investment to GDP	14.9	12
5.10 Entrepreneurial culture	56.7	40

Republic of Korea

2025 Overall Index Ranking

8

Population/10,000 persons	5,175.1
Area/10,000 square kilometers	10
GDP/USD 100 million	18,753.9
GDP per capita/USD	36,238.6
Economic output per unit of energy consumption/(USD/KGOE)	6.2
R&D expenditure/USD 100 million	912.0
R&D expenditure intensity	4.96%
SCI indexed papers/pieces	78,703
Invention patents in force/pieces	1 007,339
Proportion of high-tech products in total manufacturing exports	30.0%



	Score	Ranking
 Innovation Resources	56.2	3
1.1 R&D expenditure as a percentage of GDP	78.1	2
1.2 Share of global R&D expenditure	9.5	5
1.3 Proportion of basic research expenditure in total R&D expenditure	31.7	37
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	95.4	2
1.5 Number of the world's first-tier research institutions	0.0	55
1.6 Proportion of STEM graduates in all college graduates	66.7	11
1.7 R&D personnel per 10,000 employed individuals	97.2	3
1.8 Number of highly cited scientists	3.0	14
1.9 Gross enrollment ratio in higher education	64.6	5
1.10 Average score of the top three domestic universities in the world university rankings top 500	78.8	8
1.11 Number of students enrolled in postgraduate education	5.3	19
1.12 Proportion of international students in total higher education enrollment	6.6	37

 Knowledge Creation	48.8	5
2.1 Number of S&T papers per USD 1 million of R&D expenditure	4.7	57
2.2 Invention patents in force per 10,000 employed individuals	100.0	1
2.3 Number of industrial design applications per USD 100 million of industrial value-added	74.8	2
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	20.0	48
2.5 Proportion of highly cited papers in all domestic papers	40.2	49
2.6 Number of major international S&T awards won	0.0	26

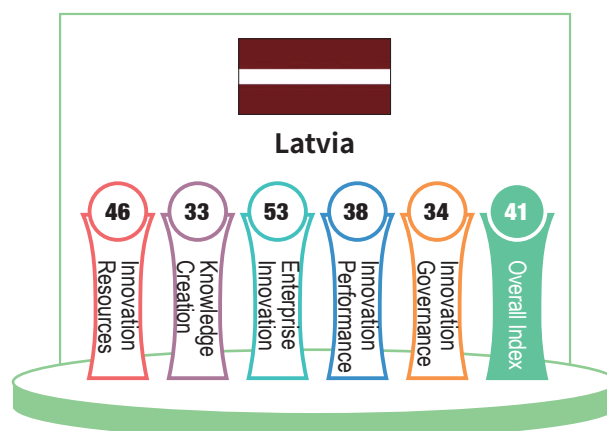
 Enterprise Innovation	55.7	4
3.1 Ratio of enterprise R&D expenditure to value-added	37.7	3
3.2 Enterprise researchers as a share of total researchers	100.0	1

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	44.1	16
3.4 Triadic patents as a share of the world's total	25.9	5
3.5 PCT applications per 10,000 enterprise researchers	1.6	33
3.6 Proportion of intellectual property royalty income in service exports	29.9	9
3.7 Economic growth rate	30.8	30
3.8 Number of newly registered companies per 10 million labor force	12.7	33
3.9 Number of high-growth technology companies	2.5	9

 Innovation Performance	40.6	18
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	79.6	3
4.2 Proportion of ICT service exports in total service exports	16.1	27
4.3 Proportion of high-tech products in total manufacturing exports	50.5	6
4.4 Labor productivity	31.3	27
4.5 Economic output per unit of energy consumption	14.7	44
4.6 Economic output per unit of CO ₂ emission	11.6	37

 Innovation Governance	85.0	21
5.1 Rule-of-law environment	82.6	22
5.2 Policy environment for doing business	66.8	30
5.3 E-government services	100.0	1
5.4 Level of ICT development	94.8	5
5.5 Availability of venture capital for startups and scaleups	78.3	15
5.6 Industry-university R&D collaboration	72.0	22
5.7 Proportion of international co-authored papers in all domestic papers	44.4	55
5.8 Number of technical (sub) committees of the International Organization for Standardization	19.8	8
5.9 Ratio of international investment to GDP	9.4	30
5.10 Entrepreneurial culture	80.8	11

Population/10,000 persons	186.6
Area/10,000 square kilometers	7
GDP/USD 100 million	435.2
GDP per capita/USD	23,367.6
Economic output per unit of energy consumption/(USD/KGOE)	10.1
R&D expenditure/USD 100 million	3.5
R&D expenditure intensity	0.82%
SCI indexed papers/pieces	1,557
Invention patents in force/pieces	1,131
Proportion of high-tech products in total manufacturing exports	18.5%



	Score	Ranking
 Innovation Resources	19.1	46
1.1 R&D expenditure as a percentage of GDP	13.0	43
1.2 Share of global R&D expenditure	0.0	58
1.3 Proportion of basic research expenditure in total R&D expenditure	56.6	11
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	8.8	38
1.5 Number of the world's first-tier research institutions	0.0	55
1.6 Proportion of STEM graduates in all college graduates	41.9	49
1.7 R&D personnel per 10,000 employed individuals	32.3	41
1.8 Number of highly cited scientists	—	—
1.9 Gross enrollment ratio in higher education	51.9	14
1.10 Average score of the top three domestic universities in the world university rankings top 500	—	—
1.11 Number of students enrolled in postgraduate education	0.3	52
1.12 Proportion of international students in total higher education enrollment	19.2	15

 Knowledge Creation	29.6	33
2.1 Number of S&T papers per USD 1 million of R&D expenditure	27.6	13
2.2 Invention patents in force per 10,000 employed individuals	1.3	30
2.3 Number of industrial design applications per USD 100 million of industrial value-added	9.8	13
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	31.8	36
2.5 Proportion of highly cited papers in all domestic papers	57.0	25
2.6 Number of major international S&T awards won	0.0	26

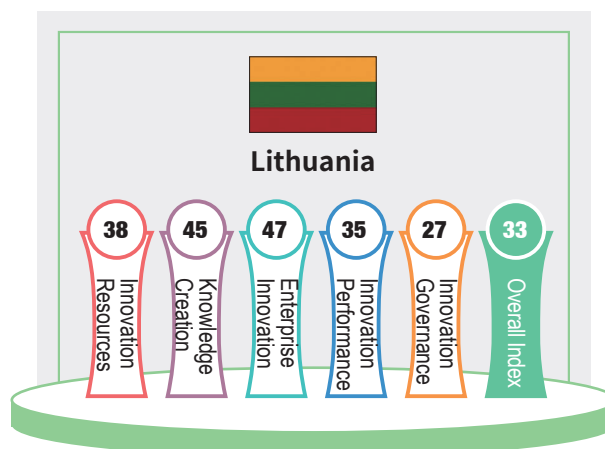
 Enterprise Innovation	14.4	53
3.1 Ratio of enterprise R&D expenditure to value-added	4.6	40
3.2 Enterprise researchers as a share of total researchers	38.9	41

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	5.4	21
3.6 Proportion of intellectual property royalty income in service exports	0.7	50
3.7 Economic growth rate	-6.8	58
3.8 Number of newly registered companies per 10 million labor force	27.7	19
3.9 Number of high-growth technology companies	0.1	37

 Innovation Performance	27.2	38
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	25.4	54
4.2 Proportion of ICT service exports in total service exports	27.0	13
4.3 Proportion of high-tech products in total manufacturing exports	31.1	19
4.4 Labor productivity	23.1	37
4.5 Economic output per unit of energy consumption	24.0	27
4.6 Economic output per unit of CO ₂ emission	21.0	25

 Innovation Governance	71.7	34
5.1 Rule-of-law environment	77.5	26
5.2 Policy environment for doing business	41.9	56
5.3 E-government services	80.9	36
5.4 Level of ICT development	73.0	35
5.5 Availability of venture capital for startups and scaleups	71.7	24
5.6 Industry-university R&D collaboration	60.7	38
5.7 Proportion of international co-authored papers in all domestic papers	80.3	25
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	8.6	33
5.10 Entrepreneurial culture	68.0	23

Population/10,000 persons	288.8
Area/10,000 square kilometers	7
GDP/USD 100 million	848.7
GDP per capita/USD	29,386.3
Economic output per unit of energy consumption/(USD/KGOE)	11.4
R&D expenditure/USD 100 million	8.4
R&D expenditure intensity	1.05 %
SCI indexed papers/pieces	3,738
Invention patents in force/pieces	1,914
Proportion of high-tech products in total manufacturing exports	14.4%



	Score	Ranking
Innovation Resources	24.7	38
1.1 R&D expenditure as a percentage of GDP	16.5	38
1.2 Share of global R&D expenditure	0.1	50
1.3 Proportion of basic research expenditure in total R&D expenditure	49.0	18
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	11.4	35
1.5 Number of the world's first-tier research institutions	0.9	39
1.6 Proportion of STEM graduates in all college graduates	51.1	34
1.7 R&D personnel per 10,000 employed individuals	44.2	36
1.8 Number of highly cited scientists	0.0	45
1.9 Gross enrollment ratio in higher education	46.6	25
1.10 Average score of the top three domestic universities in the world university rankings top 500	27.8	47
1.11 Number of students enrolled in postgraduate education	0.5	49
1.12 Proportion of international students in total higher education enrollment	15.3	20

Knowledge Creation	23.2	45
2.1 Number of S&T papers per USD 1 million of R&D expenditure	25.9	15
2.2 Invention patents in force per 10,000 employed individuals	0.8	34
2.3 Number of industrial design applications per USD 100 million of industrial value-added	7.0	22
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	32.7	35
2.5 Proportion of highly cited papers in all domestic papers	48.4	40
2.6 Number of major international S&T awards won	0.0	26

Enterprise Innovation	17.2	47
3.1 Ratio of enterprise R&D expenditure to value-added	5.6	38
3.2 Enterprise researchers as a share of total researchers	37.2	43

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	0.1	38
3.5 PCT applications per 10,000 enterprise researchers	1.2	38
3.6 Proportion of intellectual property royalty income in service exports	0.3	53
3.7 Economic growth rate	42.8	22
3.8 Number of newly registered companies per 10 million labor force	12.1	36
3.9 Number of high-growth technology companies	0.2	33

Innovation Performance	28.8	35
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	43.3	34
4.2 Proportion of ICT service exports in total service exports	17.7	23
4.3 Proportion of high-tech products in total manufacturing exports	24.2	31
4.4 Labor productivity	27.0	33
4.5 Economic output per unit of energy consumption	27.1	24
4.6 Economic output per unit of CO ₂ emission	16.2	29

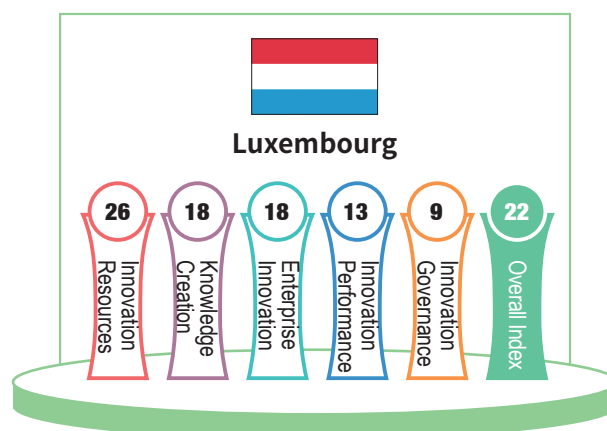
Innovation Governance	81.6	27
5.1 Rule-of-law environment	83.0	21
5.2 Policy environment for doing business	65.6	31
5.3 E-government services	88.4	23
5.4 Level of ICT development	75.9	30
5.5 Availability of venture capital for startups and scaleups	85.7	9
5.6 Industry-university R&D collaboration	69.3	28
5.7 Proportion of international co-authored papers in all domestic papers	65.7	46
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	10.6	25
5.10 Entrepreneurial culture	85.5	3

Luxembourg

2025 Overall Index Ranking

22

Population/10,000 persons	67.7
Area/10,000 square kilometers	0.3
GDP/USD 100 million	932.0
GDP per capita/USD	137,516.6
Economic output per unit of energy consumption/(USD/KGOE)	28.6
R&D expenditure/USD 100 million	9.4
R&D expenditure intensity	1.06%
SCI indexed papers/pieces	1,902
Invention patents in force/pieces	25,825
Proportion of high-tech products in total manufacturing exports	6.0%



	Score	Ranking
 Innovation Resources	33.5	26
1.1 R&D expenditure as a percentage of GDP	16.6	37
1.2 Share of global R&D expenditure	0.1	49
1.3 Proportion of basic research expenditure in total R&D expenditure	99.0	2
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	26.4	23
1.5 Number of the world's first-tier research institutions	0.9	39
1.6 Proportion of STEM graduates in all college graduates	52.3	31
1.7 R&D personnel per 10,000 employed individuals	53.8	29
1.8 Number of highly cited scientists	0.2	31
1.9 Gross enrollment ratio in higher education	13.0	60
1.10 Average score of the top three domestic universities in the world university rankings top 500	32.9	41
1.11 Number of students enrolled in postgraduate education	0.1	60
1.12 Proportion of international students in total higher education enrollment	75.0	2

 Knowledge Creation	35.2	18
2.1 Number of S&T papers per USD 1 million of R&D expenditure	11.7	41
2.2 Invention patents in force per 10,000 employed individuals	7.0	12
2.3 Number of industrial design applications per USD 100 million of industrial value-added	10.2	12
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	21.2	47
2.5 Proportion of highly cited papers in all domestic papers	69.1	10
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	35.6	18
3.1 Ratio of enterprise R&D expenditure to value-added	16.5	19
3.2 Enterprise researchers as a share of total researchers	40.2	40

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	18.1	30
3.4 Triadic patents as a share of the world's total	0.2	28
3.5 PCT applications per 10,000 enterprise researchers	65.7	2
3.6 Proportion of intellectual property royalty income in service exports	4.1	35
3.7 Economic growth rate	15.9	43
3.8 Number of newly registered companies per 10 million labor force	77.7	2
3.9 Number of high-growth technology companies	0.1	37

 Innovation Performance	47.0	13
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	28.7	53
4.2 Proportion of ICT service exports in total service exports	5.0	54
4.3 Proportion of high-tech products in total manufacturing exports	10.2	51
4.4 Labor productivity	86.2	2
4.5 Economic output per unit of energy consumption	68.0	3
4.6 Economic output per unit of CO ₂ emission	43.2	9

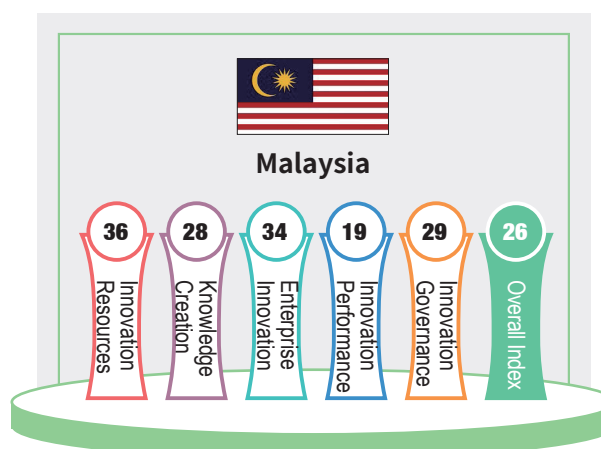
 Innovation Governance	92.1	9
5.1 Rule-of-law environment	94.8	6
5.2 Policy environment for doing business	95.5	2
5.3 E-government services	75.6	47
5.4 Level of ICT development	82.9	23
5.5 Availability of venture capital for startups and scaleups	65.2	35
5.6 Industry-university R&D collaboration	75.8	17
5.7 Proportion of international co-authored papers in all domestic papers	96.2	3
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	63.5	2
5.10 Entrepreneurial culture	67.9	24

Malaysia

2025 Overall Index Ranking

26

Population/10,000 persons	3,555.8
Area/10,000 square kilometers	33
GDP/USD 100 million	4,219.7
GDP per capita/USD	11,867.3
Economic output per unit of energy consumption/(USD/KGOE)	4.1
R&D expenditure/USD 100 million	39.8
R&D expenditure intensity	0.95%
SCI indexed papers/pieces	17,992
Invention patents in force/pieces	8,955
Proportion of high-tech products in total manufacturing exports	59.4%



	Score	Ranking
 Innovation Resources	26.4	36
1.1 R&D expenditure as a percentage of GDP	15.0	41
1.2 Share of global R&D expenditure	0.4	36
1.3 Proportion of basic research expenditure in total R&D expenditure	31.5	38
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	4.8	41
1.5 Number of the world's first-tier research institutions	0.5	46
1.6 Proportion of STEM graduates in all college graduates	88.6	2
1.7 R&D personnel per 10,000 employed individuals	15.5	46
1.8 Number of highly cited scientists	0.2	31
1.9 Gross enrollment ratio in higher education	22.6	56
1.10 Average score of the top three domestic universities in the world university rankings top 500	61.6	15
1.11 Number of students enrolled in postgraduate education	2.5	28
1.12 Proportion of international students in total higher education enrollment	13.8	26

 Knowledge Creation	31.3	28
2.1 Number of S&T papers per USD 1 million of R&D expenditure	26.6	14
2.2 Invention patents in force per 10,000 employed individuals	0.7	36
2.3 Number of industrial design applications per USD 100 million of industrial value-added	2.7	49
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	54.7	12
2.5 Proportion of highly cited papers in all domestic papers	57.4	24
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	24.0	34
3.1 Ratio of enterprise R&D expenditure to value-added	4.3	41
3.2 Enterprise researchers as a share of total researchers	36.8	44

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	18.3	29
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	0.7	48
3.6 Proportion of intellectual property royalty income in service exports	2.9	40
3.7 Economic growth rate	78.9	2
3.8 Number of newly registered companies per 10 million labor force	9.0	44
3.9 Number of high-growth technology companies	0.2	33

 Innovation Performance	37.2	19
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	54.2	19
4.2 Proportion of ICT service exports in total service exports	13.4	35
4.3 Proportion of high-tech products in total manufacturing exports	100.0	1
4.4 Labor productivity	11.5	49
4.5 Economic output per unit of energy consumption	9.7	52
4.6 Economic output per unit of CO ₂ emission	4.7	55

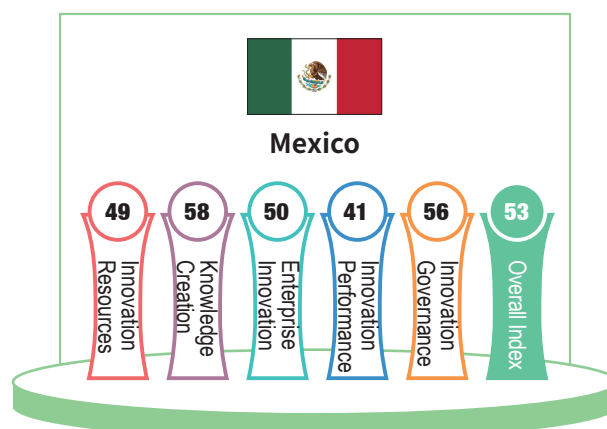
 Innovation Governance	79.5	29
5.1 Rule-of-law environment	66.1	34
5.2 Policy environment for doing business	74.8	21
5.3 E-government services	72.8	49
5.4 Level of ICT development	73.3	34
5.5 Availability of venture capital for startups and scaleups	95.5	2
5.6 Industry-university R&D collaboration	66.3	30
5.7 Proportion of international co-authored papers in all domestic papers	86.0	14
5.8 Number of technical (sub) committees of the International Organization for Standardization	1.2	26
5.9 Ratio of international investment to GDP	12.2	23
5.10 Entrepreneurial culture	81.5	9

Mexico

2025 Overall Index Ranking

53

Population/10,000 persons	13,086.1
Area/10,000 square kilometers	196
GDP/USD 100 million	18,527.2
GDP per capita/USD	14,157.9
Economic output per unit of energy consumption/(USD/KGOE)	8.9
R&D expenditure/USD 100 million	40.6
R&D expenditure intensity	0.27%
SCI indexed papers/pieces	19,719
Invention patents in force/pieces	12,200
Proportion of high-tech products in total manufacturing exports	17.2%



	Score	Ranking
 Innovation Resources	18.5	49
1.1 R&D expenditure as a percentage of GDP	4.2	60
1.2 Share of global R&D expenditure	0.4	35
1.3 Proportion of basic research expenditure in total R&D expenditure	67.5	7
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	7.3	39
1.5 Number of the world's first-tier research institutions	2.3	25
1.6 Proportion of STEM graduates in all college graduates	51.3	33
1.7 R&D personnel per 10,000 employed individuals	6.1	54
1.8 Number of highly cited scientists	0.2	31
1.9 Gross enrollment ratio in higher education	28.8	51
1.10 Average score of the top three domestic universities in the world university rankings top 500	55.5	19
1.11 Number of students enrolled in postgraduate education	7.0	14
1.12 Proportion of international students in total higher education enrollment	2.0	52

 Knowledge Creation	9.5	58
2.1 Number of S&T papers per USD 1 million of R&D expenditure	28.1	11
2.2 Invention patents in force per 10,000 employed individuals	0.3	47
2.3 Number of industrial design applications per USD 100 million of industrial value-added	1.2	54
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	22.4	46
2.5 Proportion of highly cited papers in all domestic papers	29.7	57
2.6 Number of major international S&T awards won	0.9	17

 Enterprise Innovation	16.0	50
3.1 Ratio of enterprise R&D expenditure to value-added	0.5	54
3.2 Enterprise researchers as a share of total researchers	47.6	34

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	8.1	41
3.4 Triadic patents as a share of the world's total	0.1	31
3.5 PCT applications per 10,000 enterprise researchers	1.6	34
3.6 Proportion of intellectual property royalty income in service exports	2.8	41
3.7 Economic growth rate	22.4	36
3.8 Number of newly registered companies per 10 million labor force	3.6	53
3.9 Number of high-growth technology companies	0.8	17

 Innovation Performance	24.7	41
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	51.5	21
4.2 Proportion of ICT service exports in total service exports	5.9	52
4.3 Proportion of high-tech products in total manufacturing exports	28.9	24
4.4 Labor productivity	14.9	45
4.5 Economic output per unit of energy consumption	21.1	33
4.6 Economic output per unit of CO ₂ emission	12.6	36

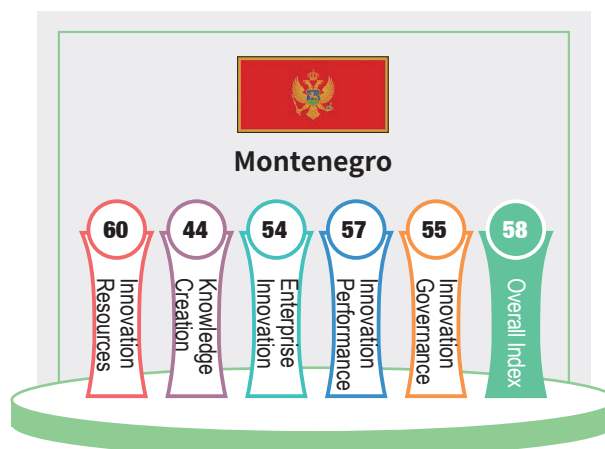
 Innovation Governance	53.9	56
5.1 Rule-of-law environment	32.7	56
5.2 Policy environment for doing business	48.9	49
5.3 E-government services	76.4	44
5.4 Level of ICT development	63.7	52
5.5 Availability of venture capital for startups and scaleups	55.4	45
5.6 Industry-university R&D collaboration	58.0	43
5.7 Proportion of international co-authored papers in all domestic papers	54.0	51
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	6.3	42
5.10 Entrepreneurial culture	52.1	46

Montenegro

2025 Overall Index Ranking

58

Population/10,000 persons	62.4
Area/10,000 square kilometers	1
GDP/USD 100 million	80.7
GDP per capita/USD	12,935.5
Economic output per unit of energy consumption/(USD/KGOE)	7.0
R&D expenditure/USD 100 million	0.3
R&D expenditure intensity	0.36%
SCI indexed papers/pieces	537
Invention patents in force/pieces	33
Proportion of high-tech products in total manufacturing exports	8.0%



	Score	Ranking
Innovation Resources	6.0	60
1.1 R&D expenditure as a percentage of GDP	5.7	55
1.2 Share of global R&D expenditure	0.0	60
1.3 Proportion of basic research expenditure in total R&D expenditure	—	—
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	0.0	55
1.6 Proportion of STEM graduates in all college graduates	44.1	45
1.7 R&D personnel per 10,000 employed individuals	—	—
1.8 Number of highly cited scientists	—	—
1.9 Gross enrollment ratio in higher education	33.4	47
1.10 Average score of the top three domestic universities in the world university rankings top 500	—	—
1.11 Number of students enrolled in postgraduate education	0.1	59
1.12 Proportion of international students in total higher education enrollment	—	—

Knowledge Creation	24.7	44
2.1 Number of S&T papers per USD 1 million of R&D expenditure	100.0	1
2.2 Invention patents in force per 10,000 employed individuals	—	—
2.3 Number of industrial design applications per USD 100 million of industrial value-added	3.3	48
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	54.7	13
2.5 Proportion of highly cited papers in all domestic papers	42.8	46
2.6 Number of major international S&T awards won	0.0	26

Enterprise Innovation	14.1	54
3.1 Ratio of enterprise R&D expenditure to value-added	—	—
3.2 Enterprise researchers as a share of total researchers	—	—

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	—	—
3.6 Proportion of intellectual property royalty income in service exports	0.1	55
3.7 Economic growth rate	46.9	16
3.8 Number of newly registered companies per 10 million labor force	32.9	16
3.9 Number of high-growth technology companies	0.0	47

Innovation Performance	13.0	57
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	18.0	58
4.2 Proportion of ICT service exports in total service exports	11.6	42
4.3 Proportion of high-tech products in total manufacturing exports	13.5	48
4.4 Labor productivity	18.3	42
4.5 Economic output per unit of energy consumption	16.7	41
4.6 Economic output per unit of CO ₂ emission	8.5	44

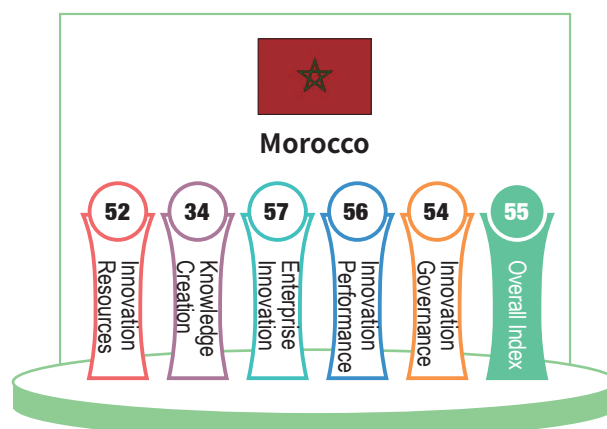
Innovation Governance	55.0	55
5.1 Rule-of-law environment	51.2	48
5.2 Policy environment for doing business	42.0	55
5.3 E-government services	52.1	59
5.4 Level of ICT development	62.8	54
5.5 Availability of venture capital for startups and scaleups	—	—
5.6 Industry-university R&D collaboration	51.8	56
5.7 Proportion of international co-authored papers in all domestic papers	90.4	9
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	22.7	6
5.10 Entrepreneurial culture	—	—

Morocco

2025 Overall Index Ranking

55

Population/10,000 persons	3,808.1
Area/10,000 square kilometers	46
GDP/USD 100 million	1,544.3
GDP per capita/USD	3,993.4
Economic output per unit of energy consumption/(USD/KGOE)	6.3
R&D expenditure/USD 100 million	7.7
R&D expenditure intensity	0.66%
SCI indexed papers/pieces	6,819
Invention patents in force/pieces	1,307
Proportion of high-tech products in total manufacturing exports	5.4%



	Score	Ranking
 Innovation Resources	15.1	52
1.1 R&D expenditure as a percentage of GDP	10.4	47
1.2 Share of global R&D expenditure	0.1	53
1.3 Proportion of basic research expenditure in total R&D expenditure	73.7	5
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	0.0	55
1.6 Proportion of STEM graduates in all college graduates	53.0	28
1.7 R&D personnel per 10,000 employed individuals	14.0	50
1.8 Number of highly cited scientists	0.0	45
1.9 Gross enrollment ratio in higher education	28.7	52
1.10 Average score of the top three domestic universities in the world university rankings top 500	—	—
1.11 Number of students enrolled in postgraduate education	3.9	22
1.12 Proportion of international students in total higher education enrollment	2.6	48

 Knowledge Creation	29.4	34
2.1 Number of S&T papers per USD 1 million of R&D expenditure	44.4	7
2.2 Invention patents in force per 10,000 employed individuals	0.2	48
2.3 Number of industrial design applications per USD 100 million of industrial value-added	28.7	4
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	61.7	6
2.5 Proportion of highly cited papers in all domestic papers	45.3	43
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	13.3	57
3.1 Ratio of enterprise R&D expenditure to value-added	2.5	48
3.2 Enterprise researchers as a share of total researchers	11.7	52

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	0.6	50
3.6 Proportion of intellectual property royalty income in service exports	0.1	54
3.7 Economic growth rate	49.9	13
3.8 Number of newly registered companies per 10 million labor force	10.6	39
3.9 Number of high-growth technology companies	0.0	47

 Innovation Performance	13.5	56
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	34.3	44
4.2 Proportion of ICT service exports in total service exports	14.4	32
4.3 Proportion of high-tech products in total manufacturing exports	9.1	54
4.4 Labor productivity	6.5	55
4.5 Economic output per unit of energy consumption	14.9	43
4.6 Economic output per unit of CO ₂ emission	6.9	50

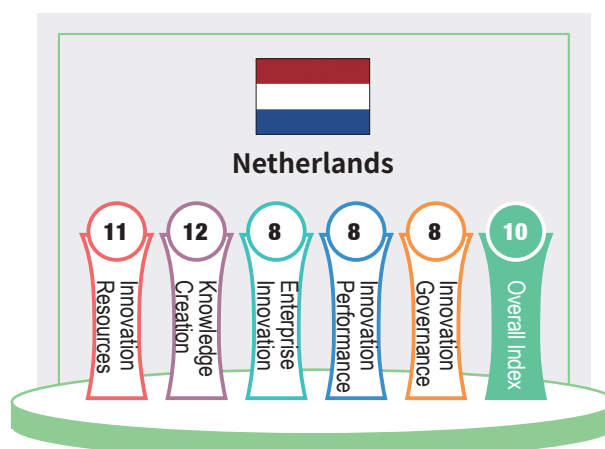
 Innovation Governance	56.7	54
5.1 Rule-of-law environment	49.1	49
5.2 Policy environment for doing business	77.9	16
5.3 E-government services	56.2	58
5.4 Level of ICT development	58.2	57
5.5 Availability of venture capital for startups and scaleups	54.0	48
5.6 Industry-university R&D collaboration	51.9	55
5.7 Proportion of international co-authored papers in all domestic papers	68.4	41
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	4.2	50
5.10 Entrepreneurial culture	56.1	42

Netherlands

2025 Overall Index Ranking

10

Population/10,000 persons	1,799.3
Area/10,000 square kilometers	4
GDP/USD 100 million	12,275.4
GDP per capita/USD	68,218.7
Economic output per unit of energy consumption/(USD/KGOE)	18.9
R&D expenditure/USD 100 million	261.7
R&D expenditure intensity	2.30%
SCI indexed papers/pieces	49,689
Invention patents in force/pieces	23,738
Proportion of high-tech products in total manufacturing exports	24.5%



	Score	Ranking
 Innovation Resources	45.2	11
1.1 R&D expenditure as a percentage of GDP	36.3	15
1.2 Share of global R&D expenditure	2.7	12
1.3 Proportion of basic research expenditure in total R&D expenditure	54.0	14
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	49.8	10
1.5 Number of the world's first-tier research institutions	8.9	12
1.6 Proportion of STEM graduates in all college graduates	43.7	46
1.7 R&D personnel per 10,000 employed individuals	85.9	7
1.8 Number of highly cited scientists	7.4	7
1.9 Gross enrollment ratio in higher education	52.4	13
1.10 Average score of the top three domestic universities in the world university rankings top 500	71.6	11
1.11 Number of students enrolled in postgraduate education	3.8	23
1.12 Proportion of international students in total higher education enrollment	19.7	14

 Knowledge Creation	40.8	12
2.1 Number of S&T papers per USD 1 million of R&D expenditure	10.7	44
2.2 Invention patents in force per 10,000 employed individuals	6.7	15
2.3 Number of industrial design applications per USD 100 million of industrial value-added	5.0	34
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	35.4	31
2.5 Proportion of highly cited papers in all domestic papers	69.1	9
2.6 Number of major international S&T awards won	0.9	17

 Enterprise Innovation	48.9	8
3.1 Ratio of enterprise R&D expenditure to value-added	27.5	11
3.2 Enterprise researchers as a share of total researchers	86.1	7

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	46.3	14
3.4 Triadic patents as a share of the world's total	6.4	9
3.5 PCT applications per 10,000 enterprise researchers	13.2	12
3.6 Proportion of intellectual property royalty income in service exports	89.3	2
3.7 Economic growth rate	15.1	45
3.8 Number of newly registered companies per 10 million labor force	14.1	32
3.9 Number of high-growth technology companies	1.0	15

 Innovation Performance	50.8	8
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	65.4	9
4.2 Proportion of ICT service exports in total service exports	14.7	30
4.3 Proportion of high-tech products in total manufacturing exports	41.2	13
4.4 Labor productivity	57.1	10
4.5 Economic output per unit of energy consumption	44.9	7
4.6 Economic output per unit of CO ₂ emission	29.9	16

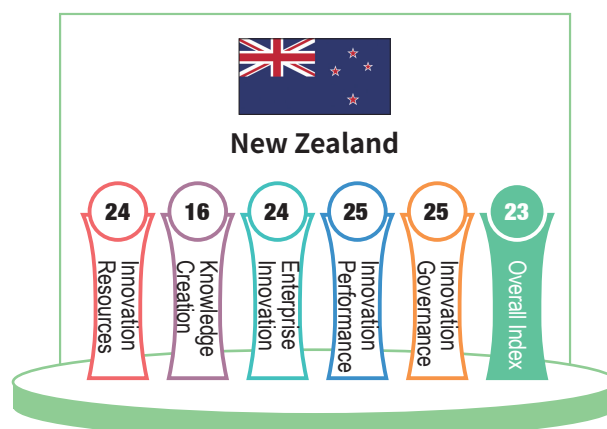
 Innovation Governance	92.9	8
5.1 Rule-of-law environment	92.1	10
5.2 Policy environment for doing business	72.3	22
5.3 E-government services	92.1	14
5.4 Level of ICT development	93.6	6
5.5 Availability of venture capital for startups and scaleups	90.6	6
5.6 Industry-university R&D collaboration	80.6	5
5.7 Proportion of international co-authored papers in all domestic papers	80.7	21
5.8 Number of technical (sub) committees of the International Organization for Standardization	7.0	14
5.9 Ratio of international investment to GDP	14.4	14
5.10 Entrepreneurial culture	83.5	4

New Zealand

2025 Overall Index Ranking

23

Population/10,000 persons	528.8
Area/10,000 square kilometers	27
GDP/USD 100 million	2,602.4
GDP per capita/USD	48,747.0
Economic output per unit of energy consumption/(USD/KGOE)	13.3
R&D expenditure/USD 100 million	39.5
R&D expenditure intensity	1.55%
SCI indexed papers/pieces	11,278
Invention patents in force/pieces	15,680
Proportion of high-tech products in total manufacturing exports	12.6%



	Score	Ranking
 Innovation Resources	34.5	24
1.1 R&D expenditure as a percentage of GDP	24.4	26
1.2 Share of global R&D expenditure	0.4	37
1.3 Proportion of basic research expenditure in total R&D expenditure	46.3	22
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	44.2	13
1.5 Number of the world's first-tier research institutions	2.8	21
1.6 Proportion of STEM graduates in all college graduates	49.6	37
1.7 R&D personnel per 10,000 employed individuals	63.7	21
1.8 Number of highly cited scientists	0.9	22
1.9 Gross enrollment ratio in higher education	46.3	29
1.10 Average score of the top three domestic universities in the world university rankings top 500	53.5	21
1.11 Number of students enrolled in postgraduate education	0.6	48
1.12 Proportion of international students in total higher education enrollment	21.3	12

 Knowledge Creation	36.3	16
2.1 Number of S&T papers per USD 1 million of R&D expenditure	16.5	30
2.2 Invention patents in force per 10,000 employed individuals	1.9	26
2.3 Number of industrial design applications per USD 100 million of industrial value-added	4.7	38
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	39.8	22
2.5 Proportion of highly cited papers in all domestic papers	67.3	14
2.6 Number of major international S&T awards won	0.9	17

 Enterprise Innovation	30.3	24
3.1 Ratio of enterprise R&D expenditure to value-added	15.9	20
3.2 Enterprise researchers as a share of total researchers	52.3	31

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	12.3	36
3.4 Triadic patents as a share of the world's total	0.5	25
3.5 PCT applications per 10,000 enterprise researchers	1.3	35
3.6 Proportion of intellectual property royalty income in service exports	27.0	12
3.7 Economic growth rate	-2.0	54
3.8 Number of newly registered companies per 10 million labor force	67.1	5
3.9 Number of high-growth technology companies	0.1	37

 Innovation Performance	33.7	25
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	28.9	52
4.2 Proportion of ICT service exports in total service exports	9.8	45
4.3 Proportion of high-tech products in total manufacturing exports	21.3	33
4.4 Labor productivity	42.7	21
4.5 Economic output per unit of energy consumption	31.6	18
4.6 Economic output per unit of CO ₂ emission	46.1	7

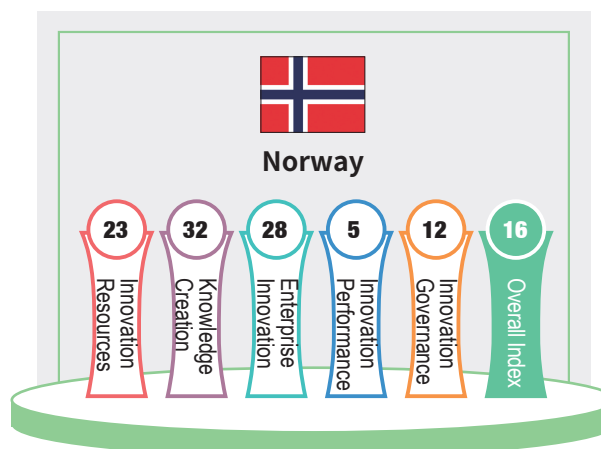
 Innovation Governance	82.5	25
5.1 Rule-of-law environment	93.7	9
5.2 Policy environment for doing business	79.0	15
5.3 E-government services	94.5	8
5.4 Level of ICT development	83.4	22
5.5 Availability of venture capital for startups and scaleups	—	—
5.6 Industry-university R&D collaboration	74.7	19
5.7 Proportion of international co-authored papers in all domestic papers	80.7	22
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.6	30
5.9 Ratio of international investment to GDP	1.8	59
5.10 Entrepreneurial culture	—	—

Norway

2025 Overall Index Ranking

16

Population/10,000 persons	557.2
Area/10,000 square kilometers	39
GDP/USD 100 million	4,837.3
GDP per capita/USD	86,809.7
Economic output per unit of energy consumption/(USD/KGOE)	17.9
R&D expenditure/USD 100 million	89.4
R&D expenditure intensity	1.85%
SCI indexed papers/pieces	19,742
Invention patents in force/pieces	43,437
Proportion of high-tech products in total manufacturing exports	25.6%



	Score	Ranking
 Innovation Resources	35.9	23
1.1 R&D expenditure as a percentage of GDP	29.2	19
1.2 Share of global R&D expenditure	0.9	27
1.3 Proportion of basic research expenditure in total R&D expenditure	35.2	34
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	25.9	24
1.5 Number of the world's first-tier research institutions	7.0	15
1.6 Proportion of STEM graduates in all college graduates	48.7	39
1.7 R&D personnel per 10,000 employed individuals	83.2	9
1.8 Number of highly cited scientists	0.7	23
1.9 Gross enrollment ratio in higher education	57.6	9
1.10 Average score of the top three domestic universities in the world university rankings top 500	45.2	30
1.11 Number of students enrolled in postgraduate education	1.7	38
1.12 Proportion of international students in total higher education enrollment	6.5	38

 Knowledge Creation	29.7	32
2.1 Number of S&T papers per USD 1 million of R&D expenditure	12.8	38
2.2 Invention patents in force per 10,000 employed individuals	6.0	16
2.3 Number of industrial design applications per USD 100 million of industrial value-added	1.1	55
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	26.2	43
2.5 Proportion of highly cited papers in all domestic papers	55.8	27
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	27.6	28
3.1 Ratio of enterprise R&D expenditure to value-added	8.4	35
3.2 Enterprise researchers as a share of total researchers	66.3	21

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	5.7	42
3.4 Triadic patents as a share of the world's total	0.8	22
3.5 PCT applications per 10,000 enterprise researchers	9.1	17
3.6 Proportion of intellectual property royalty income in service exports	3.6	36
3.7 Economic growth rate	32.4	28
3.8 Number of newly registered companies per 10 million labor force	37.7	14
3.9 Number of high-growth technology companies	0.6	20

 Innovation Performance	65.8	5
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	49.6	26
4.2 Proportion of ICT service exports in total service exports	12.8	36
4.3 Proportion of high-tech products in total manufacturing exports	43.1	11
4.4 Labor productivity	77.4	5
4.5 Economic output per unit of energy consumption	42.5	9
4.6 Economic output per unit of CO ₂ emission	100.0	1

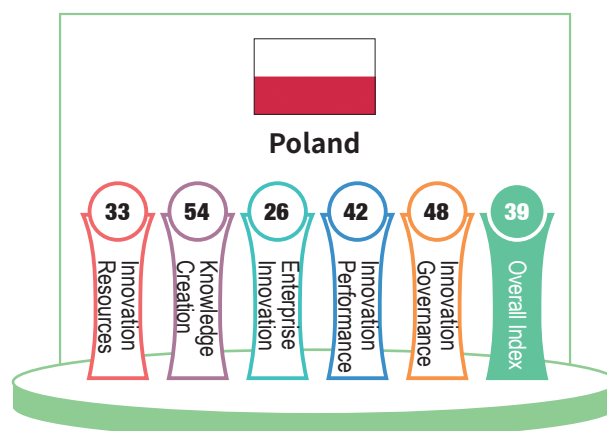
 Innovation Governance	89.6	12
5.1 Rule-of-law environment	96.8	3
5.2 Policy environment for doing business	75.9	18
5.3 E-government services	91.2	17
5.4 Level of ICT development	88.3	14
5.5 Availability of venture capital for startups and scaleups	73.1	23
5.6 Industry-university R&D collaboration	82.3	3
5.7 Proportion of international co-authored papers in all domestic papers	82.2	19
5.8 Number of technical (sub) committees of the International Organization for Standardization	6.4	16
5.9 Ratio of international investment to GDP	7.6	36
5.10 Entrepreneurial culture	75.2	15

Poland

2025 Overall Index Ranking

39

Population/10,000 persons	3,655.9
Area/10,000 square kilometers	31
GDP/USD 100 million	9,147.0
GDP per capita/USD	25,022.7
Economic output per unit of energy consumption/(USD/KGOE)	8.4
R&D expenditure/USD 100 million	126.4
R&D expenditure intensity	1.56%
SCI indexed papers/pieces	39,978
Invention patents in force/pieces	27,844
Proportion of high-tech products in total manufacturing exports	9.9%



	Score	Ranking
 Innovation Resources	28.6	33
1.1 R&D expenditure as a percentage of GDP	24.5	25
1.2 Share of global R&D expenditure	1.3	23
1.3 Proportion of basic research expenditure in total R&D expenditure	56.9	10
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	20.9	26
1.5 Number of the world's first-tier research institutions	2.3	25
1.6 Proportion of STEM graduates in all college graduates	41.3	52
1.7 R&D personnel per 10,000 employed individuals	51.6	30
1.8 Number of highly cited scientists	—	—
1.9 Gross enrollment ratio in higher education	46.6	26
1.10 Average score of the top three domestic universities in the world university rankings top 500	38.3	36
1.11 Number of students enrolled in postgraduate education	7.5	13
1.12 Proportion of international students in total higher education enrollment	9.5	32

 Knowledge Creation	17.8	54
2.1 Number of S&T papers per USD 1 million of R&D expenditure	17.5	28
2.2 Invention patents in force per 10,000 employed individuals	2.4	23
2.3 Number of industrial design applications per USD 100 million of industrial value-added	9.3	14
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	38.2	25
2.5 Proportion of highly cited papers in all domestic papers	37.6	51
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	29.0	26
3.1 Ratio of enterprise R&D expenditure to value-added	10.7	30
3.2 Enterprise researchers as a share of total researchers	68.9	17

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	35.5	22
3.4 Triadic patents as a share of the world's total	0.5	24
3.5 PCT applications per 10,000 enterprise researchers	0.8	46
3.6 Proportion of intellectual property royalty income in service exports	5.6	33
3.7 Economic growth rate	45.1	18
3.8 Number of newly registered companies per 10 million labor force	8.9	45
3.9 Number of high-growth technology companies	0.0	47

 Innovation Performance	24.6	42
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	40.1	37
4.2 Proportion of ICT service exports in total service exports	25.5	15
4.3 Proportion of high-tech products in total manufacturing exports	16.7	38
4.4 Labor productivity	25.1	34
4.5 Economic output per unit of energy consumption	19.9	34
4.6 Economic output per unit of CO ₂ emission	9.2	41

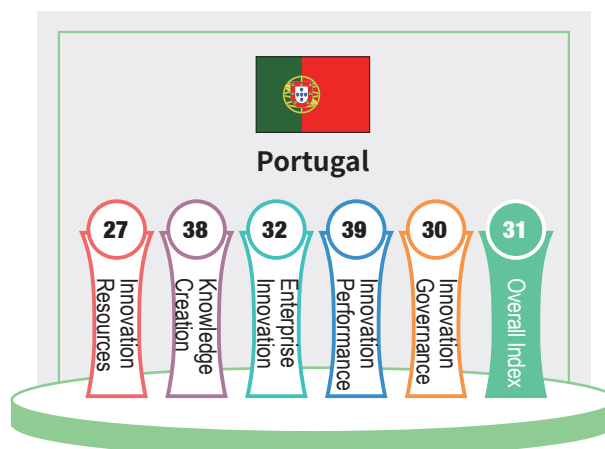
 Innovation Governance	63.2	48
5.1 Rule-of-law environment	63.4	35
5.2 Policy environment for doing business	48.0	51
5.3 E-government services	80.4	37
5.4 Level of ICT development	75.9	31
5.5 Availability of venture capital for startups and scaleups	62.7	38
5.6 Industry-university R&D collaboration	57.3	44
5.7 Proportion of international co-authored papers in all domestic papers	54.8	50
5.8 Number of technical (sub) committees of the International Organization for Standardization	1.7	23
5.9 Ratio of international investment to GDP	4.5	49
5.10 Entrepreneurial culture	52.8	44

Portugal

2025 Overall Index Ranking

31

Population/10,000 persons	1,069.5
Area/10,000 square kilometers	9
GDP/USD 100 million	3,086.8
GDP per capita/USD	28,844.5
Economic output per unit of energy consumption/(USD/KGOE)	14.8
R&D expenditure/USD 100 million	49.1
R&D expenditure intensity	1.69%
SCI indexed papers/pieces	20,998
Invention patents in force/pieces	8,821
Proportion of high-tech products in total manufacturing exports	6.7%



	Score	Ranking
 Innovation Resources	33.4	27
1.1 R&D expenditure as a percentage of GDP	26.7	24
1.2 Share of global R&D expenditure	0.5	33
1.3 Proportion of basic research expenditure in total R&D expenditure	35.5	32
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	19.7	27
1.5 Number of the world's first-tier research institutions	2.8	21
1.6 Proportion of STEM graduates in all college graduates	59.0	19
1.7 R&D personnel per 10,000 employed individuals	69.3	18
1.8 Number of highly cited scientists	0.7	23
1.9 Gross enrollment ratio in higher education	47.0	24
1.10 Average score of the top three domestic universities in the world university rankings top 500	37.5	38
1.11 Number of students enrolled in postgraduate education	2.2	31
1.12 Proportion of international students in total higher education enrollment	19.0	16

 Knowledge Creation	27.6	38
2.1 Number of S&T papers per USD 1 million of R&D expenditure	24.8	16
2.2 Invention patents in force per 10,000 employed individuals	0.9	33
2.3 Number of industrial design applications per USD 100 million of industrial value-added	5.9	28
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	58.4	9
2.5 Proportion of highly cited papers in all domestic papers	50.2	36
2.6 Number of major international S&T awards won	0.0	26

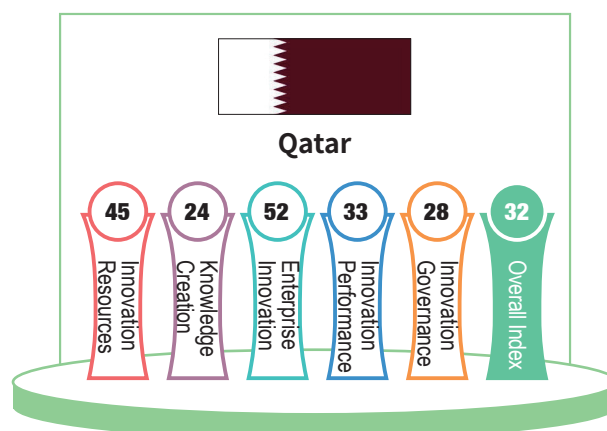
 Enterprise Innovation	24.6	32
3.1 Ratio of enterprise R&D expenditure to value-added	17.6	16
3.2 Enterprise researchers as a share of total researchers	55.4	29

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	9.9	38
3.4 Triadic patents as a share of the world's total	0.2	30
3.5 PCT applications per 10,000 enterprise researchers	2.0	31
3.6 Proportion of intellectual property royalty income in service exports	1.4	48
3.7 Economic growth rate	29.7	31
3.8 Number of newly registered companies per 10 million labor force	28.6	18
3.9 Number of high-growth technology companies	0.0	47

 Innovation Performance	25.9	39
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	32.2	47
4.2 Proportion of ICT service exports in total service exports	12.6	37
4.3 Proportion of high-tech products in total manufacturing exports	11.3	49
4.4 Labor productivity	27.9	30
4.5 Economic output per unit of energy consumption	35.1	14
4.6 Economic output per unit of CO ₂ emission	24.6	21

 Innovation Governance	76.3	30
5.1 Rule-of-law environment	78.2	25
5.2 Policy environment for doing business	57.8	37
5.3 E-government services	78.8	40
5.4 Level of ICT development	78.2	29
5.5 Availability of venture capital for startups and scaleups	78.0	16
5.6 Industry-university R&D collaboration	63.3	34
5.7 Proportion of international co-authored papers in all domestic papers	74.5	33
5.8 Number of technical (sub) committees of the International Organization for Standardization	1.2	26
5.9 Ratio of international investment to GDP	19.5	9
5.10 Entrepreneurial culture	69.4	20

Population/10,000 persons	285.8
Area/10,000 square kilometers	1
GDP/USD 100 million	2,179.8
GDP per capita/USD	76,275.9
Economic output per unit of energy consumption/(USD/KGOE)	5.3
R&D expenditure/USD 100 million	12.2
R&D expenditure intensity	0.68%
SCI indexed papers/pieces	3,881
Invention patents in force/pieces	284
Proportion of high-tech products in total manufacturing exports	2.8%



	Score	Ranking
 Innovation Resources	19.4	45
1.1 R&D expenditure as a percentage of GDP	10.7	46
1.2 Share of global R&D expenditure	0.1	47
1.3 Proportion of basic research expenditure in total R&D expenditure	—	—
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	0.5	46
1.6 Proportion of STEM graduates in all college graduates	43.4	47
1.7 R&D personnel per 10,000 employed individuals	32.4	40
1.8 Number of highly cited scientists	0.1	35
1.9 Gross enrollment ratio in higher education	21.2	57
1.10 Average score of the top three domestic universities in the world university rankings top 500	53.3	23
1.11 Number of students enrolled in postgraduate education	0.1	58
1.12 Proportion of international students in total higher education enrollment	58.1	3

 Knowledge Creation	33.0	24
2.1 Number of S&T papers per USD 1 million of R&D expenditure	18.6	24
2.2 Invention patents in force per 10,000 employed individuals	0.0	57
2.3 Number of industrial design applications per USD 100 million of industrial value-added	—	—
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	25.0	44
2.5 Proportion of highly cited papers in all domestic papers	69.4	8
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	15.2	52
3.1 Ratio of enterprise R&D expenditure to value-added	0.4	55
3.2 Enterprise researchers as a share of total researchers	17.0	49

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	0.5	51
3.6 Proportion of intellectual property royalty income in service exports	—	—
3.7 Economic growth rate	42.7	23
3.8 Number of newly registered companies per 10 million labor force	26.0	23
3.9 Number of high-growth technology companies	0.0	47

 Innovation Performance	30.5	33
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	75.9	4
4.2 Proportion of ICT service exports in total service exports	5.3	53
4.3 Proportion of high-tech products in total manufacturing exports	4.7	58
4.4 Labor productivity	49.1	19
4.5 Economic output per unit of energy consumption	12.6	47
4.6 Economic output per unit of CO ₂ emission	9.1	42

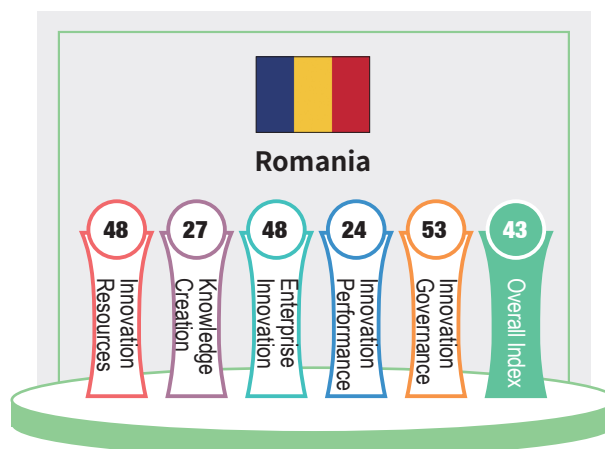
 Innovation Governance	81.3	28
5.1 Rule-of-law environment	74.9	28
5.2 Policy environment for doing business	84.8	5
5.3 E-government services	76.5	43
5.4 Level of ICT development	72.6	36
5.5 Availability of venture capital for startups and scaleups	71.2	26
5.6 Industry-university R&D collaboration	77.3	10
5.7 Proportion of international co-authored papers in all domestic papers	93.9	6
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	2.6	56
5.10 Entrepreneurial culture	81.4	10

Romania

2025 Overall Index Ranking

43

Population/10,000 persons	1,905.2
Area/10,000 square kilometers	24
GDP/USD 100 million	3,827.7
GDP per capita/USD	20,072.4
Economic output per unit of energy consumption/(USD/KGOE)	11.5
R&D expenditure/USD 100 million	18.1
R&D expenditure intensity	0.52%
SCI indexed papers/pieces	12,302
Invention patents in force/pieces	3,946
Proportion of high-tech products in total manufacturing exports	12.7%



	Score	Ranking
Innovation Resources	18.5	48
1.1 R&D expenditure as a percentage of GDP	8.1	53
1.2 Share of global R&D expenditure	0.2	43
1.3 Proportion of basic research expenditure in total R&D expenditure	43.0	26
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	30.5	21
1.5 Number of the world's first-tier research institutions	2.3	25
1.6 Proportion of STEM graduates in all college graduates	62.4	15
1.7 R&D personnel per 10,000 employed individuals	18.8	45
1.8 Number of highly cited scientists	—	—
1.9 Gross enrollment ratio in higher education	33.4	48
1.10 Average score of the top three domestic universities in the world university rankings top 500	—	—
1.11 Number of students enrolled in postgraduate education	3.0	24
1.12 Proportion of international students in total higher education enrollment	9.6	31

Knowledge Creation	31.5	27
2.1 Number of S&T papers per USD 1 million of R&D expenditure	39.2	9
2.2 Invention patents in force per 10,000 employed individuals	0.6	38
2.3 Number of industrial design applications per USD 100 million of industrial value-added	4.5	39
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	81.5	2
2.5 Proportion of highly cited papers in all domestic papers	49.4	37
2.6 Number of major international S&T awards won	0.0	26

Enterprise Innovation	17.0	48
3.1 Ratio of enterprise R&D expenditure to value-added	3.7	43
3.2 Enterprise researchers as a share of total researchers	35.4	45

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	0.1	35
3.5 PCT applications per 10,000 enterprise researchers	1.1	40
3.6 Proportion of intellectual property royalty income in service exports	1.2	49
3.7 Economic growth rate	12.5	48
3.8 Number of newly registered companies per 10 million labor force	37.8	13
3.9 Number of high-growth technology companies	0.0	47

Innovation Performance	34.4	24
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	48.6	28
4.2 Proportion of ICT service exports in total service exports	39.5	9
4.3 Proportion of high-tech products in total manufacturing exports	21.3	32
4.4 Labor productivity	21.2	39
4.5 Economic output per unit of energy consumption	27.3	23
4.6 Economic output per unit of CO ₂ emission	22.9	22

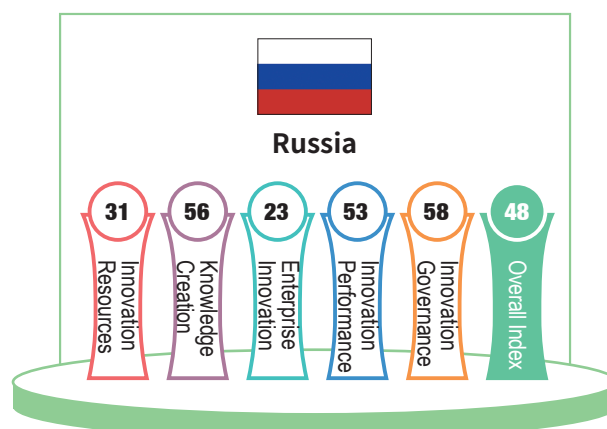
Innovation Governance	57.1	53
5.1 Rule-of-law environment	62.9	36
5.2 Policy environment for doing business	47.1	53
5.3 E-government services	65.5	56
5.4 Level of ICT development	66.8	49
5.5 Availability of venture capital for startups and scaleups	59.1	42
5.6 Industry-university R&D collaboration	54.9	48
5.7 Proportion of international co-authored papers in all domestic papers	55.2	49
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	4.5	48
5.10 Entrepreneurial culture	51.9	47

Russia

2025 Overall Index Ranking

48

Population/10,000 persons	14,353.4
Area/10,000 square kilometers	1,710
GDP/USD 100 million	21,738.4
GDP per capita/USD	14,889.0
Economic output per unit of energy consumption/(USD/KGOE)	2.8
R&D expenditure/USD 100 million	193.7
R&D expenditure intensity	0.93%
SCI indexed papers/pieces	39,435
Invention patents in force/pieces	182,935
Proportion of high-tech products in total manufacturing exports	9.7%



	Score	Ranking
 Innovation Resources	30.3	31
1.1 R&D expenditure as a percentage of GDP	14.6	42
1.2 Share of global R&D expenditure	2.0	18
1.3 Proportion of basic research expenditure in total R&D expenditure	33.1	36
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	17.5	29
1.5 Number of the world's first-tier research institutions	3.8	20
1.6 Proportion of STEM graduates in all college graduates	67.6	9
1.7 R&D personnel per 10,000 employed individuals	42.7	37
1.8 Number of highly cited scientists	0.2	31
1.9 Gross enrollment ratio in higher education	56.8	11
1.10 Average score of the top three domestic universities in the world university rankings top 500	45.3	29
1.11 Number of students enrolled in postgraduate education	11.6	9
1.12 Proportion of international students in total higher education enrollment	6.9	35

 Knowledge Creation	12.6	56
2.1 Number of S&T papers per USD 1 million of R&D expenditure	12.9	37
2.2 Invention patents in force per 10,000 employed individuals	6.9	14
2.3 Number of industrial design applications per USD 100 million of industrial value-added	6.9	23
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	13.5	55
2.5 Proportion of highly cited papers in all domestic papers	23.9	60
2.6 Number of major international S&T awards won	5.4	6

 Enterprise Innovation	30.8	23
3.1 Ratio of enterprise R&D expenditure to value-added	5.4	39
3.2 Enterprise researchers as a share of total researchers	61.1	24

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	41.5	17
3.4 Triadic patents as a share of the world's total	0.4	26
3.5 PCT applications per 10,000 enterprise researchers	1.0	42
3.6 Proportion of intellectual property royalty income in service exports	5.7	32
3.7 Economic growth rate	67.0	6
3.8 Number of newly registered companies per 10 million labor force	10.4	40
3.9 Number of high-growth technology companies	0.1	37

 Innovation Performance	15.9	53
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	42.4	35
4.2 Proportion of ICT service exports in total service exports	8.6	49
4.3 Proportion of high-tech products in total manufacturing exports	16.4	40
4.4 Labor productivity	14.7	47
4.5 Economic output per unit of energy consumption	6.6	59
4.6 Economic output per unit of CO ₂ emission	7.2	48

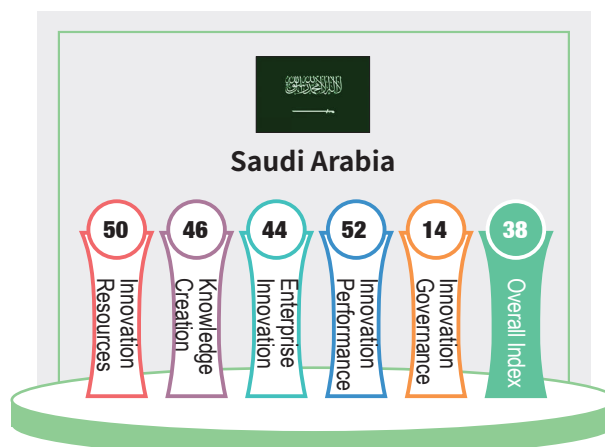
 Innovation Governance	51.4	58
5.1 Rule-of-law environment	23.4	59
5.2 Policy environment for doing business	54.7	40
5.3 E-government services	77.7	41
5.4 Level of ICT development	70.6	38
5.5 Availability of venture capital for startups and scaleups	53.1	49
5.6 Industry-university R&D collaboration	56.5	47
5.7 Proportion of international co-authored papers in all domestic papers	36.5	59
5.8 Number of technical (sub) committees of the International Organization for Standardization	4.1	19
5.9 Ratio of international investment to GDP	1.9	58
5.10 Entrepreneurial culture	52.5	45

Saudi Arabia

2025 Overall Index Ranking

38

Population/10,000 persons	3,530.0
Area/10,000 square kilometers	225
GDP/USD 100 million	12,375.3
GDP per capita/USD	35,057.2
Economic output per unit of energy consumption/(USD/KGOE)	5.1
R&D expenditure/USD 100 million	60.3
R&D expenditure intensity	0.56%
SCI indexed papers/pieces	50,479
Invention patents in force/pieces	16,914
Proportion of high-tech products in total manufacturing exports	0.6%



	Score	Ranking
Innovation Resources	17.7	50
1.1 R&D expenditure as a percentage of GDP	8.9	52
1.2 Share of global R&D expenditure	0.6	31
1.3 Proportion of basic research expenditure in total R&D expenditure	—	—
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	0.9	39
1.6 Proportion of STEM graduates in all college graduates	60.5	18
1.7 R&D personnel per 10,000 employed individuals	14.2	49
1.8 Number of highly cited scientists	1.4	20
1.9 Gross enrollment ratio in higher education	42.0	36
1.10 Average score of the top three domestic universities in the world university rankings top 500	53.6	20
1.11 Number of students enrolled in postgraduate education	2.4	29
1.12 Proportion of international students in total higher education enrollment	5.9	40

Knowledge Creation	23.0	46
2.1 Number of S&T papers per USD 1 million of R&D expenditure	44.1	8
2.2 Invention patents in force per 10,000 employed individuals	0.8	35
2.3 Number of industrial design applications per USD 100 million of industrial value-added	1.4	52
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	45.1	18
2.5 Proportion of highly cited papers in all domestic papers	62.0	19
2.6 Number of major international S&T awards won	0.0	26

Enterprise Innovation	19.2	44
3.1 Ratio of enterprise R&D expenditure to value-added	—	—
3.2 Enterprise researchers as a share of total researchers	9.2	53

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	2.5	44
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	100.0	1
3.6 Proportion of intellectual property royalty income in service exports	—	—
3.7 Economic growth rate	27.9	32
3.8 Number of newly registered companies per 10 million labor force	3.7	52
3.9 Number of high-growth technology companies	0.3	28

Innovation Performance	16.0	52
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	35.3	42
4.2 Proportion of ICT service exports in total service exports	4.8	56
4.3 Proportion of high-tech products in total manufacturing exports	1.0	60
4.4 Labor productivity	35.8	25
4.5 Economic output per unit of energy consumption	12.1	48
4.6 Economic output per unit of CO ₂ emission	8.0	46

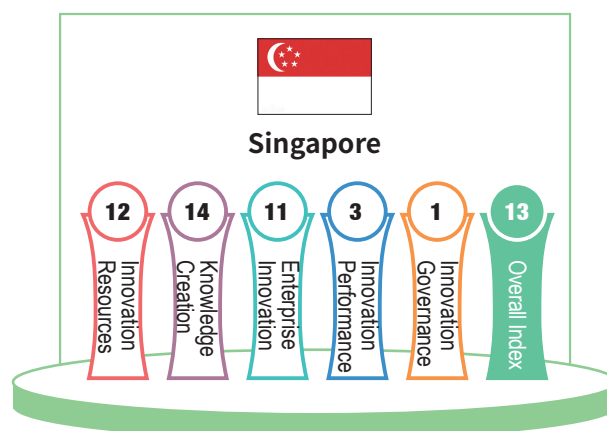
Innovation Governance	88.0	14
5.1 Rule-of-law environment	62.3	38
5.2 Policy environment for doing business	83.6	8
5.3 E-government services	99.0	4
5.4 Level of ICT development	74.4	33
5.5 Availability of venture capital for startups and scaleups	92.7	4
5.6 Industry-university R&D collaboration	69.1	29
5.7 Proportion of international co-authored papers in all domestic papers	96.2	2
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.6	30
5.9 Ratio of international investment to GDP	8.4	34
5.10 Entrepreneurial culture	89.1	2

Singapore

2025 Overall Index Ranking

13

Population/10,000 persons	603.7
Area/10,000 square kilometers	0.1
GDP/USD 100 million	5,473.9
GDP per capita/USD	90,674.1
Economic output per unit of energy consumption/(USD/KGOE)	16.2
R&D expenditure/USD 100 million	94.5
R&D expenditure intensity	1.85%
SCI indexed papers/pieces	19,718
Invention patents in force/pieces	43,096
Proportion of high-tech products in total manufacturing exports	56.1%



	Score	Ranking
 Innovation Resources	45.0	12
1.1 R&D expenditure as a percentage of GDP	29.1	20
1.2 Share of global R&D expenditure	1.0	25
1.3 Proportion of basic research expenditure in total R&D expenditure	50.6	17
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	88.0	3
1.5 Number of the world's first-tier research institutions	1.9	31
1.6 Proportion of STEM graduates in all college graduates	76.8	5
1.7 R&D personnel per 10,000 employed individuals	63.6	22
1.8 Number of highly cited scientists	4.3	10
1.9 Gross enrollment ratio in higher education	58.9	8
1.10 Average score of the top three domestic universities in the world university rankings top 500	71.4	12
1.11 Number of students enrolled in postgraduate education	0.3	53
1.12 Proportion of international students in total higher education enrollment	27.5	9

 Knowledge Creation	38.3	14
2.1 Number of S&T papers per USD 1 million of R&D expenditure	11.0	43
2.2 Invention patents in force per 10,000 employed individuals	2.2	25
2.3 Number of industrial design applications per USD 100 million of industrial value-added	4.1	42
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	44.6	19
2.5 Proportion of highly cited papers in all domestic papers	100.0	1
2.6 Number of major international S&T awards won	0.0	26

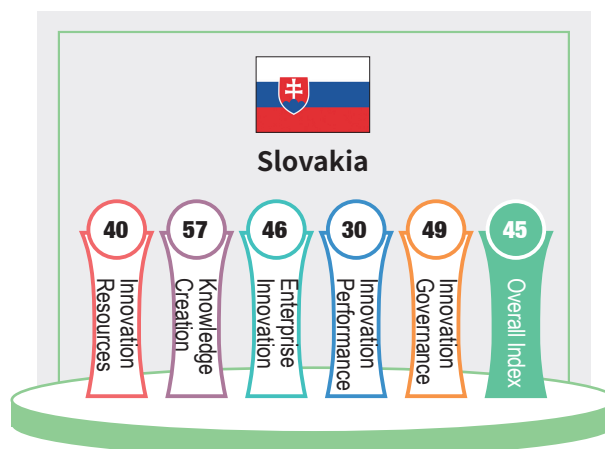
 Enterprise Innovation	46.4	11
3.1 Ratio of enterprise R&D expenditure to value-added	17.0	18
3.2 Enterprise researchers as a share of total researchers	66.2	22

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	66.7	7
3.4 Triadic patents as a share of the world's total	1.4	20
3.5 PCT applications per 10,000 enterprise researchers	3.8	26
3.6 Proportion of intellectual property royalty income in service exports	22.0	14
3.7 Economic growth rate	67.7	5
3.8 Number of newly registered companies per 10 million labor force	46.6	7
3.9 Number of high-growth technology companies	2.4	10

 Innovation Performance	72.7	3
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	100.0	1
4.2 Proportion of ICT service exports in total service exports	12.0	39
4.3 Proportion of high-tech products in total manufacturing exports	94.5	2
4.4 Labor productivity	64.6	7
4.5 Economic output per unit of energy consumption	38.4	13
4.6 Economic output per unit of CO ₂ emission	39.9	10

 Innovation Governance	100	1
5.1 Rule-of-law environment	94.8	5
5.2 Policy environment for doing business	100.0	1
5.3 E-government services	98.3	6
5.4 Level of ICT development	97.4	2
5.5 Availability of venture capital for startups and scaleups	—	—
5.6 Industry-university R&D collaboration	78.9	7
5.7 Proportion of international co-authored papers in all domestic papers	93.0	7
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	100.0	1
5.10 Entrepreneurial culture	—	—

Population/10,000 persons	542.2
Area/10,000 square kilometers	5
GDP/USD 100 million	1,417.8
GDP per capita/USD	26,147.9
Economic output per unit of energy consumption/(USD/KGOE)	8.1
R&D expenditure/USD 100 million	13.8
R&D expenditure intensity	1.03%
SCI indexed papers/pieces	5,178
Invention patents in force/pieces	519
Proportion of high-tech products in total manufacturing exports	9.6%



	Score	Ranking
Innovation Resources	23.9	40
1.1 R&D expenditure as a percentage of GDP	16.3	39
1.2 Share of global R&D expenditure	0.1	46
1.3 Proportion of basic research expenditure in total R&D expenditure	82.4	3
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	33.5	20
1.5 Number of the world's first-tier research institutions	0.0	55
1.6 Proportion of STEM graduates in all college graduates	44.3	44
1.7 R&D personnel per 10,000 employed individuals	45.2	32
1.8 Number of highly cited scientists	—	—
1.9 Gross enrollment ratio in higher education	32.4	50
1.10 Average score of the top three domestic universities in the world university rankings top 500	—	—
1.11 Number of students enrolled in postgraduate education	0.8	46
1.12 Proportion of international students in total higher education enrollment	21.8	11

Knowledge Creation	11.6	57
2.1 Number of S&T papers per USD 1 million of R&D expenditure	22.1	19
2.2 Invention patents in force per 10,000 employed individuals	0.6	41
2.3 Number of industrial design applications per USD 100 million of industrial value-added	3.6	46
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	33.4	34
2.5 Proportion of highly cited papers in all domestic papers	31.7	55
2.6 Number of major international S&T awards won	0.0	26

Enterprise Innovation	18.4	46
3.1 Ratio of enterprise R&D expenditure to value-added	6.2	37
3.2 Enterprise researchers as a share of total researchers	40.6	39

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	—	—
3.4 Triadic patents as a share of the world's total	0.1	36
3.5 PCT applications per 10,000 enterprise researchers	1.3	36
3.6 Proportion of intellectual property royalty income in service exports	2.5	42
3.7 Economic growth rate	31.8	29
3.8 Number of newly registered companies per 10 million labor force	22.5	27
3.9 Number of high-growth technology companies	0.0	47

Innovation Performance	31.4	30
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	56.8	16
4.2 Proportion of ICT service exports in total service exports	30.2	11
4.3 Proportion of high-tech products in total manufacturing exports	16.2	42
4.4 Labor productivity	27.8	32
4.5 Economic output per unit of energy consumption	19.2	37
4.6 Economic output per unit of CO ₂ emission	14.8	31

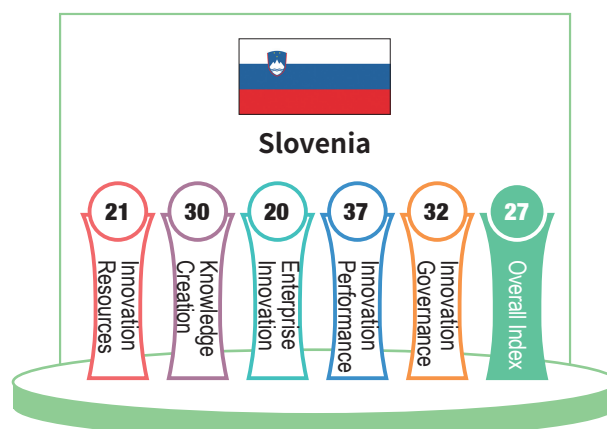
Innovation Governance	62.2	49
5.1 Rule-of-law environment	66.9	33
5.2 Policy environment for doing business	46.2	54
5.3 E-government services	71.0	53
5.4 Level of ICT development	69.5	42
5.5 Availability of venture capital for startups and scaleups	64.0	36
5.6 Industry-university R&D collaboration	52.5	53
5.7 Proportion of international co-authored papers in all domestic papers	77.1	28
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	4.7	47
5.10 Entrepreneurial culture	46.8	51

Slovenia

2025 Overall Index Ranking

27

Population/10,000 persons	212.7
Area/10,000 square kilometers	2
GDP/USD 100 million	724.9
GDP per capita/USD	34,089.4
Economic output per unit of energy consumption/(USD/KGOE)	11.3
R&D expenditure/USD 100 million	14.8
R&D expenditure intensity	2.13%
SCI indexed papers/pieces	5,421
Invention patents in force/pieces	5,517
Proportion of high-tech products in total manufacturing exports	8.2%



	Score	Ranking
 Innovation Resources	36.3	21
1.1 R&D expenditure as a percentage of GDP	33.6	17
1.2 Share of global R&D expenditure	0.2	44
1.3 Proportion of basic research expenditure in total R&D expenditure	48.5	20
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	34.5	19
1.5 Number of the world's first-tier research institutions	1.4	34
1.6 Proportion of STEM graduates in all college graduates	64.6	13
1.7 R&D personnel per 10,000 employed individuals	73.6	16
1.8 Number of highly cited scientists	—	50
1.9 Gross enrollment ratio in higher education	48.5	20
1.10 Average score of the top three domestic universities in the world university rankings top 500	21.3	52
1.11 Number of students enrolled in postgraduate education	0.4	51
1.12 Proportion of international students in total higher education enrollment	15.2	21

 Knowledge Creation	29.8	30
2.1 Number of S&T papers per USD 1 million of R&D expenditure	20.4	21
2.2 Invention patents in force per 10,000 employed individuals	3.3	21
2.3 Number of industrial design applications per USD 100 million of industrial value-added	5.3	31
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	55.7	11
2.5 Proportion of highly cited papers in all domestic papers	51.5	33
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	33.2	20
3.1 Ratio of enterprise R&D expenditure to value-added	15.5	23
3.2 Enterprise researchers as a share of total researchers	68.7	18

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	71.1	4
3.4 Triadic patents as a share of the world's total	0.1	33
3.5 PCT applications per 10,000 enterprise researchers	2.3	28
3.6 Proportion of intellectual property royalty income in service exports	5.7	31
3.7 Economic growth rate	24.5	34
3.8 Number of newly registered companies per 10 million labor force	11.3	38
3.9 Number of high-growth technology companies	0.0	47

 Innovation Performance	27.3	37
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	45.2	31
4.2 Proportion of ICT service exports in total service exports	13.7	34
4.3 Proportion of high-tech products in total manufacturing exports	13.8	47
4.4 Labor productivity	31.3	26
4.5 Economic output per unit of energy consumption	26.7	25
4.6 Economic output per unit of CO ₂ emission	17.1	27

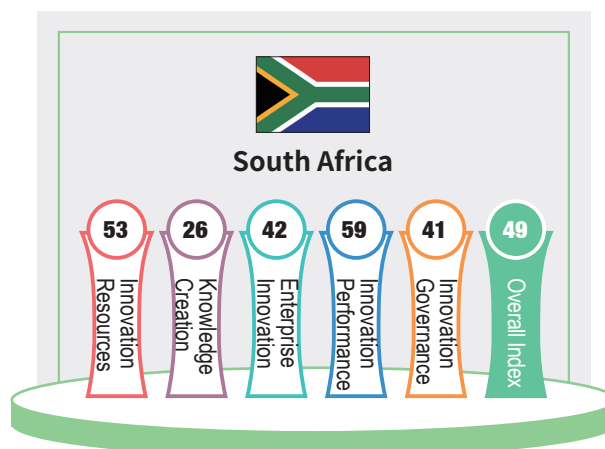
 Innovation Governance	72.2	32
5.1 Rule-of-law environment	77.5	27
5.2 Policy environment for doing business	49.9	47
5.3 E-government services	86.4	27
5.4 Level of ICT development	75.2	32
5.5 Availability of venture capital for startups and scaleups	66.1	33
5.6 Industry-university R&D collaboration	64.0	32
5.7 Proportion of international co-authored papers in all domestic papers	73.9	34
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	7.8	35
5.10 Entrepreneurial culture	59.6	33

South Africa

2025 Overall Index Ranking

49

Population/10,000 persons	6,400.7
Area/10,000 square kilometers	122
GDP/USD 100 million	4,002.6
GDP per capita/USD	6,253.4
Economic output per unit of energy consumption/(USD/KGOE)	3.1
R&D expenditure/USD 100 million	23.5
R&D expenditure intensity	0.61%
SCI indexed papers/pieces	19,456
Invention patents in force/pieces	6,084
Proportion of high-tech products in total manufacturing exports	5.0%



	Score	Ranking
 Innovation Resources	15.0	53
1.1 R&D expenditure as a percentage of GDP	9.7	49
1.2 Share of global R&D expenditure	0.2	42
1.3 Proportion of basic research expenditure in total R&D expenditure	56.5	12
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	19.5	28
1.5 Number of the world's first-tier research institutions	2.3	25
1.6 Proportion of STEM graduates in all college graduates	37.5	55
1.7 R&D personnel per 10,000 employed individuals	12.1	51
1.8 Number of highly cited scientists	0.4	27
1.9 Gross enrollment ratio in higher education	14.2	59
1.10 Average score of the top three domestic universities in the world university rankings top 500	42.8	32
1.11 Number of students enrolled in postgraduate education	1.4	41
1.12 Proportion of international students in total higher education enrollment	4.6	45

 Knowledge Creation	32.0	26
2.1 Number of S&T papers per USD 1 million of R&D expenditure	46.4	6
2.2 Invention patents in force per 10,000 employed individuals	1.8	28
2.3 Number of industrial design applications per USD 100 million of industrial value-added	6.2	24
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	57.1	10
2.5 Proportion of highly cited papers in all domestic papers	51.9	32
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	19.6	42
3.1 Ratio of enterprise R&D expenditure to value-added	2.7	47
3.2 Enterprise researchers as a share of total researchers	13.8	50

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	4.2	43
3.4 Triadic patents as a share of the world's total	0.1	34
3.5 PCT applications per 10,000 enterprise researchers	26.3	5
3.6 Proportion of intellectual property royalty income in service exports	6.0	29
3.7 Economic growth rate	8.9	50
3.8 Number of newly registered companies per 10 million labor force	45.5	8
3.9 Number of high-growth technology companies	0.1	37

 Innovation Performance	11.0	59
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	29.7	50
4.2 Proportion of ICT service exports in total service exports	14.6	31
4.3 Proportion of high-tech products in total manufacturing exports	8.3	55
4.4 Labor productivity	11.3	50
4.5 Economic output per unit of energy consumption	7.4	57
4.6 Economic output per unit of CO ₂ emission	3.7	59

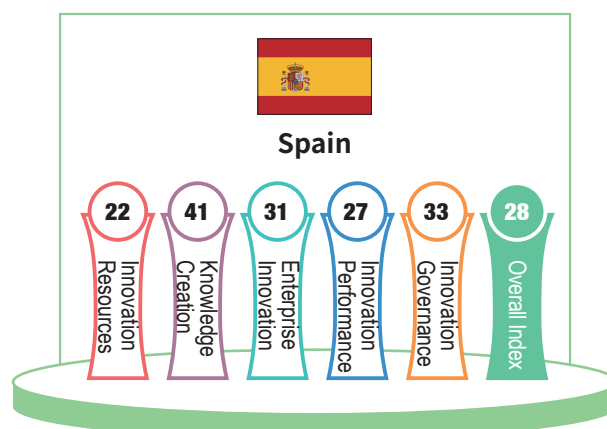
 Innovation Governance	64.9	41
5.1 Rule-of-law environment	54.3	45
5.2 Policy environment for doing business	52.4	44
5.3 E-government services	88.7	22
5.4 Level of ICT development	60.5	56
5.5 Availability of venture capital for startups and scaleups	57.7	44
5.6 Industry-university R&D collaboration	63.3	35
5.7 Proportion of international co-authored papers in all domestic papers	76.0	30
5.8 Number of technical (sub) committees of the International Organization for Standardization	7.0	14
5.9 Ratio of international investment to GDP	2.6	55
5.10 Entrepreneurial culture	50.0	49

Spain

2025 Overall Index Ranking

28

Population/10,000 persons	4,884.9
Area/10,000 square kilometers	51
GDP/USD 100 million	17,227.5
GDP per capita/USD	35,297.0
Economic output per unit of energy consumption/(USD/KGOE)	14.6
R&D expenditure/USD 100 million	242.0
R&D expenditure intensity	1.49%
SCI indexed papers/pieces	77,860
Invention patents in force/pieces	82,777
Proportion of high-tech products in total manufacturing exports	9.6%



	Score	Ranking
 Innovation Resources	36.0	22
1.1 R&D expenditure as a percentage of GDP	23.5	30
1.2 Share of global R&D expenditure	2.5	15
1.3 Proportion of basic research expenditure in total R&D expenditure	43.7	25
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	23.2	25
1.5 Number of the world's first-tier research institutions	19.2	6
1.6 Proportion of STEM graduates in all college graduates	45.8	43
1.7 R&D personnel per 10,000 employed individuals	59.7	25
1.8 Number of highly cited scientists	3.9	12
1.9 Gross enrollment ratio in higher education	56.8	10
1.10 Average score of the top three domestic universities in the world university rankings top 500	51.5	25
1.11 Number of students enrolled in postgraduate education	8.2	12
1.12 Proportion of international students in total higher education enrollment	6.2	39

 Knowledge Creation	26.8	41
2.1 Number of S&T papers per USD 1 million of R&D expenditure	18.4	25
2.2 Invention patents in force per 10,000 employed individuals	2.9	22
2.3 Number of industrial design applications per USD 100 million of industrial value-added	7.7	19
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	36.9	28
2.5 Proportion of highly cited papers in all domestic papers	51.2	35
2.6 Number of major international S&T awards won	0.0	26

 Enterprise Innovation	26.1	31
3.1 Ratio of enterprise R&D expenditure to value-added	13.2	25
3.2 Enterprise researchers as a share of total researchers	49.7	33

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	17.1	31
3.4 Triadic patents as a share of the world's total	2.1	18
3.5 PCT applications per 10,000 enterprise researchers	4.1	24
3.6 Proportion of intellectual property royalty income in service exports	9.8	26
3.7 Economic growth rate	48.6	15
3.8 Number of newly registered companies per 10 million labor force	12.7	34
3.9 Number of high-growth technology companies	0.8	17

 Innovation Performance	33.3	27
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	45.9	30
4.2 Proportion of ICT service exports in total service exports	15.9	28
4.3 Proportion of high-tech products in total manufacturing exports	16.1	44
4.4 Labor productivity	37.6	23
4.5 Economic output per unit of energy consumption	34.7	15
4.6 Economic output per unit of CO ₂ emission	25.1	19

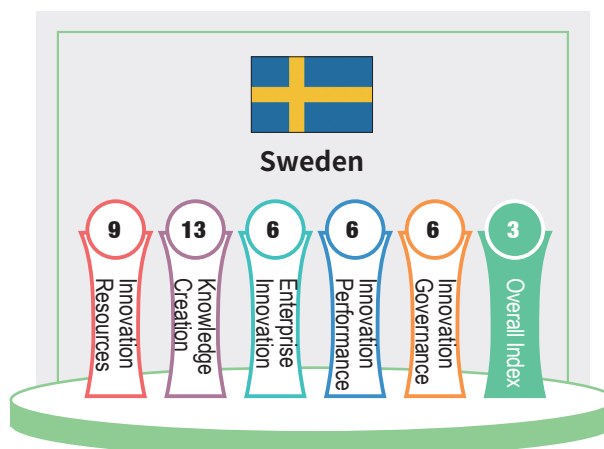
 Innovation Governance	71.8	33
5.1 Rule-of-law environment	72.2	30
5.2 Policy environment for doing business	52.6	42
5.3 E-government services	90.5	21
5.4 Level of ICT development	82.5	24
5.5 Availability of venture capital for startups and scaleups	59.0	43
5.6 Industry-university R&D collaboration	57.0	46
5.7 Proportion of international co-authored papers in all domestic papers	68.3	42
5.8 Number of technical (sub) committees of the International Organization for Standardization	4.7	17
5.9 Ratio of international investment to GDP	12.8	18
5.10 Entrepreneurial culture	58.4	34

Sweden

2025 Overall Index Ranking

3

Population/10,000 persons	1,057.0
Area/10,000 square kilometers	45
GDP/USD 100 million	6,101.2
GDP per capita/USD	57,723.2
Economic output per unit of energy consumption/(USD/KGOE)	13.0
R&D expenditure/USD 100 million	210.8
R&D expenditure intensity	3.64%
SCI indexed papers/pieces	34,739
Invention patents in force/pieces	210,016
Proportion of high-tech products in total manufacturing exports	17.6%



	Score	Ranking
 Innovation Resources	48.0	9
1.1 R&D expenditure as a percentage of GDP	57.4	3
1.2 Share of global R&D expenditure	2.2	17
1.3 Proportion of basic research expenditure in total R&D expenditure	28.6	40
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	47.4	11
1.5 Number of the world's first-tier research institutions	4.7	17
1.6 Proportion of STEM graduates in all college graduates	61.8	17
1.7 R&D personnel per 10,000 employed individuals	87.9	6
1.8 Number of highly cited scientists	2.3	16
1.9 Gross enrollment ratio in higher education	49.3	16
1.10 Average score of the top three domestic universities in the world university rankings top 500	65.1	14
1.11 Number of students enrolled in postgraduate education	2.7	26
1.12 Proportion of international students in total higher education enrollment	10.4	29

 Knowledge Creation	40.6	13
2.1 Number of S&T papers per USD 1 million of R&D expenditure	9.2	48
2.2 Invention patents in force per 10,000 employed individuals	8.2	11
2.3 Number of industrial design applications per USD 100 million of industrial value-added	6.1	26
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	36.7	29
2.5 Proportion of highly cited papers in all domestic papers	65.5	16
2.6 Number of major international S&T awards won	1.8	12

 Enterprise Innovation	52.4	6
3.1 Ratio of enterprise R&D expenditure to value-added	37.5	5
3.2 Enterprise researchers as a share of total researchers	89.2	6

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	54.6	11
3.4 Triadic patents as a share of the world's total	4.8	11
3.5 PCT applications per 10,000 enterprise researchers	15.7	6
3.6 Proportion of intellectual property royalty income in service exports	43.1	7
3.7 Economic growth rate	15.0	46
3.8 Number of newly registered companies per 10 million labor force	38.0	12
3.9 Number of high-growth technology companies	1.1	14

 Innovation Performance	60.8	6
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	60.6	13
4.2 Proportion of ICT service exports in total service exports	32.0	10
4.3 Proportion of high-tech products in total manufacturing exports	29.7	21
4.4 Labor productivity	53.4	13
4.5 Economic output per unit of energy consumption	30.8	20
4.6 Economic output per unit of CO ₂ emission	94.4	3

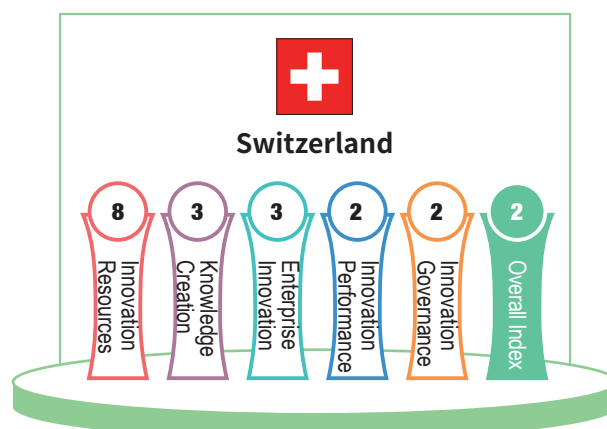
 Innovation Governance	93.1	6
5.1 Rule-of-law environment	91.2	12
5.2 Policy environment for doing business	80.5	14
5.3 E-government services	88.4	24
5.4 Level of ICT development	95.0	4
5.5 Availability of venture capital for startups and scaleups	78.5	14
5.6 Industry-university R&D collaboration	78.0	8
5.7 Proportion of international co-authored papers in all domestic papers	84.1	15
5.8 Number of technical (sub) committees of the International Organization for Standardization	18.0	9
5.9 Ratio of international investment to GDP	20.6	7
5.10 Entrepreneurial culture	65.4	29

Switzerland

2025 Overall Index Ranking

2

Population/10,000 persons	900.6
Area/10,000 square kilometers	4
GDP/USD 100 million	9,365.6
GDP per capita/USD	103,669.9
Economic output per unit of energy consumption/(USD/KGOE)	40.1
R&D expenditure/USD 100 million	288.2
R&D expenditure intensity	3.22%
SCI indexed papers/pieces	39,237
Invention patents in force/pieces	362,301
Proportion of high-tech products in total manufacturing exports	29.3%



	Score	Ranking
Innovation Resources	50.5	8
1.1 R&D expenditure as a percentage of GDP	50.8	8
1.2 Share of global R&D expenditure	3.0	11
1.3 Proportion of basic research expenditure in total R&D expenditure	58.0	9
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	47.2	12
1.5 Number of the world's first-tier research institutions	8.9	12
1.6 Proportion of STEM graduates in all college graduates	54.5	26
1.7 R&D personnel per 10,000 employed individuals	82.5	10
1.8 Number of highly cited scientists	4.2	11
1.9 Gross enrollment ratio in higher education	44.8	33
1.10 Average score of the top three domestic universities in the world university rankings top 500	80.5	6
1.11 Number of students enrolled in postgraduate education	1.8	37
1.12 Proportion of international students in total higher education enrollment	28.3	8

Knowledge Creation	55.8	3
2.1 Number of S&T papers per USD 1 million of R&D expenditure	7.6	52
2.2 Invention patents in force per 10,000 employed individuals	16.2	6
2.3 Number of industrial design applications per USD 100 million of industrial value-added	4.1	43
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	27.5	41
2.5 Proportion of highly cited papers in all domestic papers	78.1	4
2.6 Number of major international S&T awards won	3.6	8

Enterprise Innovation	55.7	3
3.1 Ratio of enterprise R&D expenditure to value-added	28.4	9
3.2 Enterprise researchers as a share of total researchers	60.1	25

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	70.9	5
3.4 Triadic patents as a share of the world's total	9.7	8
3.5 PCT applications per 10,000 enterprise researchers	49.9	3
3.6 Proportion of intellectual property royalty income in service exports	84.7	3
3.7 Economic growth rate	20.1	38
3.8 Number of newly registered companies per 10 million labor force	19.0	29
3.9 Number of high-growth technology companies	1.3	12

Innovation Performance	89.3	2
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	86.7	2
4.2 Proportion of ICT service exports in total service exports	17.5	24
4.3 Proportion of high-tech products in total manufacturing exports	49.4	7
4.4 Labor productivity	83.7	4
4.5 Economic output per unit of energy consumption	95.2	2
4.6 Economic output per unit of CO ₂ emission	95.3	2

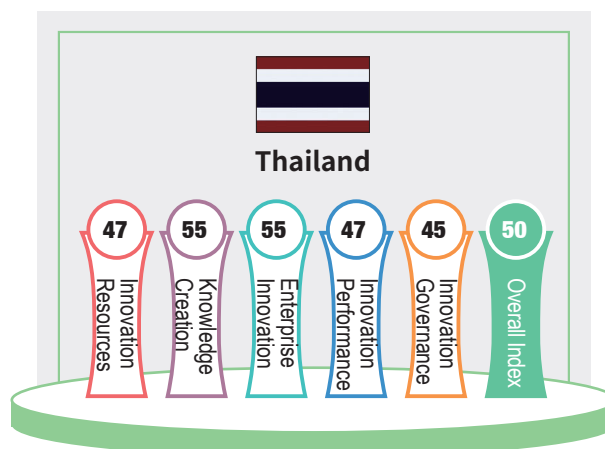
Innovation Governance	95.8	2
5.1 Rule-of-law environment	95.0	4
5.2 Policy environment for doing business	91.4	3
5.3 E-government services	84.1	32
5.4 Level of ICT development	93.3	7
5.5 Availability of venture capital for startups and scaleups	86.2	8
5.6 Industry-university R&D collaboration	84.5	2
5.7 Proportion of international co-authored papers in all domestic papers	90.4	10
5.8 Number of technical (sub) committees of the International Organization for Standardization	12.2	11
5.9 Ratio of international investment to GDP	17.9	11
5.10 Entrepreneurial culture	76.7	13

Thailand

2025 Overall Index Ranking

50

Population/10,000 persons	7,166.8
Area/10,000 square kilometers	51
GDP/USD 100 million	5,264.1
GDP per capita/USD	7,345.1
Economic output per unit of energy consumption/(USD/KGOE)	3.9
R&D expenditure/USD 100 million	59.8
R&D expenditure intensity	1.16%
SCI indexed papers/pieces	15,181
Invention patents in force/pieces	5,061
Proportion of high-tech products in total manufacturing exports	26.1%



	Score	Ranking
Innovation Resources	19.0	47
1.1 R&D expenditure as a percentage of GDP	18.3	35
1.2 Share of global R&D expenditure	0.6	32
1.3 Proportion of basic research expenditure in total R&D expenditure	—	—
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5 Number of the world's first-tier research institutions	2.3	25
1.6 Proportion of STEM graduates in all college graduates	68.4	8
1.7 R&D personnel per 10,000 employed individuals	—	—
1.8 Number of highly cited scientists	0.1	39
1.9 Gross enrollment ratio in higher education	27.5	53
1.10 Average score of the top three domestic universities in the world university rankings top 500	31.1	45
1.11 Number of students enrolled in postgraduate education	2.0	34
1.12 Proportion of international students in total higher education enrollment	2.1	51

Knowledge Creation	12.7	55
2.1 Number of S&T papers per USD 1 million of R&D expenditure	13.7	35
2.2 Invention patents in force per 10,000 employed individuals	0.1	54
2.3 Number of industrial design applications per USD 100 million of industrial value-added	11.2	10
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	10.1	58
2.5 Proportion of highly cited papers in all domestic papers	39.2	50
2.6 Number of major international S&T awards won	0.0	26

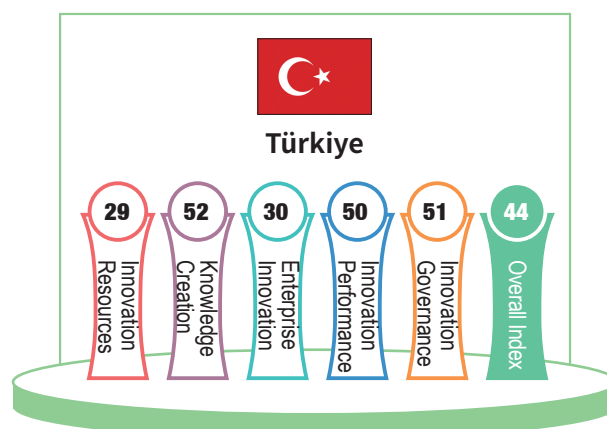
Enterprise Innovation	13.8	55
3.1 Ratio of enterprise R&D expenditure to value-added	—	—
3.2 Enterprise researchers as a share of total researchers	—	—

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	19.0	25
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	—	—
3.6 Proportion of intellectual property royalty income in service exports	2.4	43
3.7 Economic growth rate	39.0	25
3.8 Number of newly registered companies per 10 million labor force	6.3	48
3.9 Number of high-growth technology companies	0.3	28

Innovation Performance	20.7	47
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	50.2	25
4.2 Proportion of ICT service exports in total service exports	1.1	58
4.3 Proportion of high-tech products in total manufacturing exports	43.8	10
4.4 Labor productivity	6.2	56
4.5 Economic output per unit of energy consumption	9.2	53
4.6 Economic output per unit of CO ₂ emission	6.4	51

Innovation Governance	64.5	45
5.1 Rule-of-law environment	58.2	42
5.2 Policy environment for doing business	53.8	41
5.3 E-government services	76.1	46
5.4 Level of ICT development	71.0	37
5.5 Availability of venture capital for startups and scaleups	63.2	37
5.6 Industry-university R&D collaboration	61.8	36
5.7 Proportion of international co-authored papers in all domestic papers	65.9	45
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9 Ratio of international investment to GDP	9.8	29
5.10 Entrepreneurial culture	57.3	39

Population/10,000 persons	8,551.9
Area/10,000 square kilometers	78
GDP/USD 100 million	13,232.5
GDP per capita/USD	15,473.3
Economic output per unit of energy consumption/(USD/KGOE)	7.1
R&D expenditure/USD 100 million	159.0
R&D expenditure intensity	1.42%
SCI indexed papers/pieces	52,128
Invention patents in force/pieces	16,965
Proportion of high-tech products in total manufacturing exports	4.5%



	Score	Ranking
 Innovation Resources	32.6	29
1.1 R&D expenditure as a percentage of GDP	22.4	31
1.2 Share of global R&D expenditure	1.7	21
1.3 Proportion of basic research expenditure in total R&D expenditure	62.3	8
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	63.5	6
1.5 Number of the world's first-tier research institutions	0.5	46
1.6 Proportion of STEM graduates in all college graduates	39.9	54
1.7 R&D personnel per 10,000 employed individuals	41.9	38
1.8 Number of highly cited scientists	0.1	39
1.9 Gross enrollment ratio in higher education	77.3	2
1.10 Average score of the top three domestic universities in the world university rankings top 500	34.4	39
1.11 Number of students enrolled in postgraduate education	10.4	10
1.12 Proportion of international students in total higher education enrollment	4.2	47

 Knowledge Creation	18.5	52
2.1 Number of S&T papers per USD 1 million of R&D expenditure	17.7	26
2.2 Invention patents in force per 10,000 employed individuals	0.6	40
2.3 Number of industrial design applications per USD 100 million of industrial value-added	43.5	3
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	33.5	33
2.5 Proportion of highly cited papers in all domestic papers	34.9	53
2.6 Number of major international S&T awards won	0.9	17

 Enterprise Innovation	26.3	30
3.1 Ratio of enterprise R&D expenditure to value-added	10.1	32
3.2 Enterprise researchers as a share of total researchers	78.1	9

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	8.4	40
3.4 Triadic patents as a share of the world's total	0.5	23
3.5 PCT applications per 10,000 enterprise researchers	1.1	41
3.6 Proportion of intellectual property royalty income in service exports	2.1	45
3.7 Economic growth rate	49.1	14
3.8 Number of newly registered companies per 10 million labor force	10.1	42
3.9 Number of high-growth technology companies	0.3	28

 Innovation Performance	16.8	50
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	41.1	36
4.2 Proportion of ICT service exports in total service exports	6.5	51
4.3 Proportion of high-tech products in total manufacturing exports	7.6	56
4.4 Labor productivity	19.6	41
4.5 Economic output per unit of energy consumption	16.8	40
4.6 Economic output per unit of CO ₂ emission	8.3	45

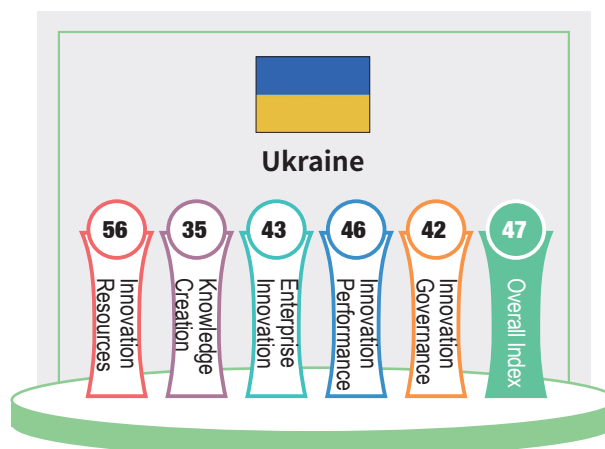
 Innovation Governance	59.0	51
5.1 Rule-of-law environment	39.8	55
5.2 Policy environment for doing business	47.8	52
5.3 E-government services	92.3	12
5.4 Level of ICT development	66.7	50
5.5 Availability of venture capital for startups and scaleups	69.8	28
5.6 Industry-university R&D collaboration	53.6	51
5.7 Proportion of international co-authored papers in all domestic papers	39.2	58
5.8 Number of technical (sub) committees of the International Organization for Standardization	1.2	26
5.9 Ratio of international investment to GDP	3.4	53
5.10 Entrepreneurial culture	58.3	35

Ukraine

2025 Overall Index Ranking

47

Population/10,000 persons	3,786.0
Area/10,000 square kilometers	60
GDP/USD 100 million	1,907.4
GDP per capita/USD	5,389.5
Economic output per unit of energy consumption/(USD/KGOE)	3.4
R&D expenditure/USD 100 million	5.8
R&D expenditure intensity	0.33%
SCI indexed papers/pieces	5,005
Invention patents in force/pieces	9,200
Proportion of high-tech products in total manufacturing exports	6.7%



	Score	Ranking
 Innovation Resources	14.4	56
1.1 R&D expenditure as a percentage of GDP	5.1	57
1.2 Share of global R&D expenditure	0.1	56
1.3 Proportion of basic research expenditure in total R&D expenditure	44.1	23
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	5.7	40
1.5 Number of the world's first-tier research institutions	1.4	34
1.6 Proportion of STEM graduates in all college graduates	51.9	32
1.7 R&D personnel per 10,000 employed individuals	14.3	48
1.8 Number of highly cited scientists	0.0	45
1.9 Gross enrollment ratio in higher education	46.0	32
1.10 Average score of the top three domestic universities in the world university rankings top 500	—	—
1.11 Number of students enrolled in postgraduate education	5.5	18
1.12 Proportion of international students in total higher education enrollment	5.1	42

 Knowledge Creation	28.9	35
2.1 Number of S&T papers per USD 1 million of R&D expenditure	51.1	4
2.2 Invention patents in force per 10,000 employed individuals	1.1	32
2.3 Number of industrial design applications per USD 100 million of industrial value-added	21.5	6
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	80.7	3
2.5 Proportion of highly cited papers in all domestic papers	37.4	52
2.6 Number of major international S&T awards won	1.8	12

 Enterprise Innovation	19.5	43
3.1 Ratio of enterprise R&D expenditure to value-added	3.1	46
3.2 Enterprise researchers as a share of total researchers	45.9	37

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	12.3	35
3.4 Triadic patents as a share of the world's total	—	—
3.5 PCT applications per 10,000 enterprise researchers	—	—
3.6 Proportion of intellectual property royalty income in service exports	1.7	47
3.7 Economic growth rate	44.9	19
3.8 Number of newly registered companies per 10 million labor force	6.9	47
3.9 Number of high-growth technology companies	0.0	47

 Innovation Performance	21.4	46
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	34.4	43
4.2 Proportion of ICT service exports in total service exports	59.2	4
4.3 Proportion of high-tech products in total manufacturing exports	11.3	50
4.4 Labor productivity	4.9	58
4.5 Economic output per unit of energy consumption	8.1	55
4.6 Economic output per unit of CO ₂ emission	5.9	53

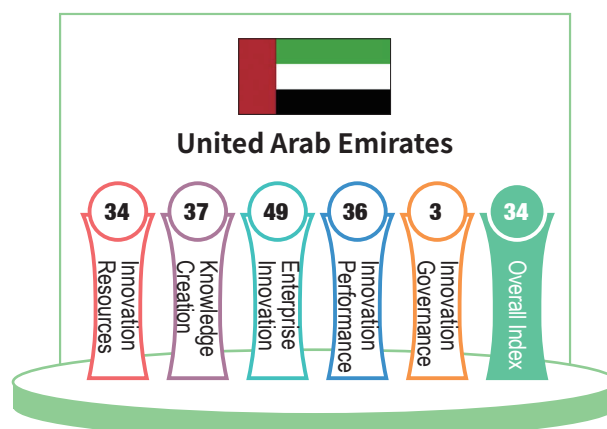
 Innovation Governance	64.9	42
5.1 Rule-of-law environment	30.7	57
5.2 Policy environment for doing business	55.0	39
5.3 E-government services	98.5	5
5.4 Level of ICT development	70.1	40
5.5 Availability of venture capital for startups and scaleups	59.6	41
5.6 Industry-university R&D collaboration	54.7	49
5.7 Proportion of international co-authored papers in all domestic papers	80.4	24
5.8 Number of technical (sub) committees of the International Organization for Standardization	0.6	30
5.9 Ratio of international investment to GDP	5.0	45
5.10 Entrepreneurial culture	59.8	32

United Arab Emirates

2025 Overall Index Ranking

34

Population/10,000 persons	1,098.6
Area/10,000 square kilometers	8
GDP/USD 100 million	5,370.8
GDP per capita/USD	49,377.6
Economic output per unit of energy consumption/(USD/KGOE)	6.0
R&D expenditure/USD 100 million	76.8
R&D expenditure intensity	1.49%
SCI indexed papers/pieces	10,849
Invention patents in force/pieces	3,249
Proportion of high-tech products in total manufacturing exports	9.6%



Innovation Resources Score 27.7 Ranking 34

1.1	R&D expenditure as a percentage of GDP	23.6	28
1.2	Share of global R&D expenditure	0.8	29
1.3	Proportion of basic research expenditure in total R&D expenditure	—	—
1.4	Proportion of enterprise basic research expenditure in national basic research expenditure	—	—
1.5	Number of the world's first-tier research institutions	0.5	46
1.6	Proportion of STEM graduates in all college graduates	78.1	4
1.7	R&D personnel per 10,000 employed individuals	—	—
1.8	Number of highly cited scientists	0.2	29
1.9	Gross enrollment ratio in higher education	37.2	40
1.10	Average score of the top three domestic universities in the world university rankings top 500	40.3	34
1.11	Number of students enrolled in postgraduate education	0.5	50
1.12	Proportion of international students in total higher education enrollment	100.0	1

Knowledge Creation Score 28.0 Ranking 37

2.1	Number of S&T papers per USD 1 million of R&D expenditure	7.9	51
2.2	Invention patents in force per 10,000 employed individuals	0.3	46
2.3	Number of industrial design applications per USD 100 million of industrial value-added	—	59
2.4	Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	13.7	54
2.5	Proportion of highly cited papers in all domestic papers	78.2	3
2.6	Number of major international S&T awards won	0.0	26

Enterprise Innovation Score 16.9 Ranking 49

3.1	Ratio of enterprise R&D expenditure to value-added	3.4	44
3.2	Enterprise researchers as a share of total researchers	—	—

Score 28.0 Ranking 36

3.3	Average R&D expenditure intensity of the top 10 companies	18.3	28
3.4	Triadic patents as a share of the world's total	—	—
3.5	PCT applications per 10,000 enterprise researchers	0.0	54
3.6	Proportion of intellectual property royalty income in service exports	—	—
3.7	Economic growth rate	58.0	10
3.8	Number of newly registered companies per 10 million labor force	10.1	41
3.9	Number of high-growth technology companies	0.0	47

Innovation Performance Score 28.0 Ranking 36

4.1	Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	47.6	29
4.2	Proportion of ICT service exports in total service exports	—	—
4.3	Proportion of high-tech products in total manufacturing exports	16.2	43
4.4	Labor productivity	36.6	24
4.5	Economic output per unit of energy consumption	14.2	46
4.6	Economic output per unit of CO ₂ emission	10.1	39

Innovation Governance Score 95.3 Ranking 3

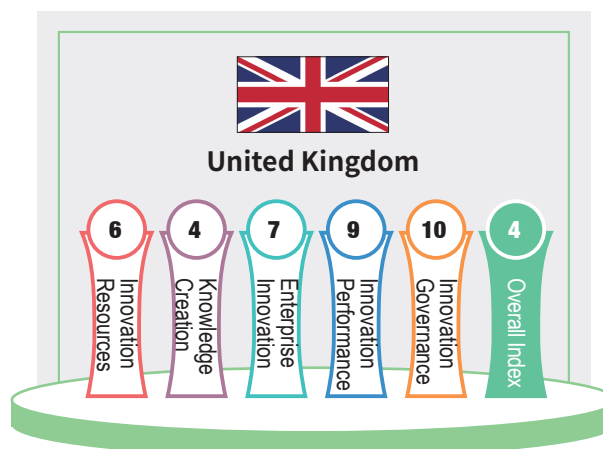
5.1	Rule-of-law environment	73.7	29
5.2	Policy environment for doing business	89.3	4
5.3	E-government services	91.6	15
5.4	Level of ICT development	79.5	28
5.5	Availability of venture capital for startups and scaleups	94.5	3
5.6	Industry-university R&D collaboration	73.1	21
5.7	Proportion of international co-authored papers in all domestic papers	100.0	1
5.8	Number of technical (sub) committees of the International Organization for Standardization	0.0	36
5.9	Ratio of international investment to GDP	35.4	3
5.10	Entrepreneurial culture	100.0	1

United Kingdom

2025 Overall Index Ranking

4

Population/10,000 persons	6,922.6
Area/10,000 square kilometers	24
GDP/USD 100 million	36,438.3
GDP per capita/USD	52,636.8
Economic output per unit of energy consumption/(USD/KGOE)	23.1
R&D expenditure/USD 100 million	901.8
R&D expenditure intensity	2.68%
SCI indexed papers/pieces	150,422
Invention patents in force/pieces	315,931
Proportion of high-tech products in total manufacturing exports	28.9%



	Score	Ranking
 Innovation Resources	52.4	6
1.1 R&D expenditure as a percentage of GDP	42.2	12
1.2 Share of global R&D expenditure	9.4	6
1.3 Proportion of basic research expenditure in total R&D expenditure	38.9	31
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	35.0	18
1.5 Number of the world's first-tier research institutions	21.1	4
1.6 Proportion of STEM graduates in all college graduates	49.2	38
1.7 R&D personnel per 10,000 employed individuals	60.3	24
1.8 Number of highly cited scientists	22.5	3
1.9 Gross enrollment ratio in higher education	48.8	19
1.10 Average score of the top three domestic universities in the world university rankings top 500	99.7	2
1.11 Number of students enrolled in postgraduate education	14.6	6
1.12 Proportion of international students in total higher education enrollment	33.6	5

 Knowledge Creation	54.4	4
2.1 Number of S&T papers per USD 1 million of R&D expenditure	9.5	47
2.2 Invention patents in force per 10,000 employed individuals	5.1	17
2.3 Number of industrial design applications per USD 100 million of industrial value-added	9.0	15
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	28.9	38
2.5 Proportion of highly cited papers in all domestic papers	63.4	18
2.6 Number of major international S&T awards won	21.6	2

 Enterprise Innovation	50.0	7
3.1 Ratio of enterprise R&D expenditure to value-added	32.2	6
3.2 Enterprise researchers as a share of total researchers	94.9	4

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	30.7	23
3.4 Triadic patents as a share of the world's total	12.0	7
3.5 PCT applications per 10,000 enterprise researchers	5.9	20
3.6 Proportion of intellectual property royalty income in service exports	27.7	11
3.7 Economic growth rate	17.0	42
3.8 Number of newly registered companies per 10 million labor force	76.6	3
3.9 Number of high-growth technology companies	9.5	3

 Innovation Performance	50.3	9
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	49.5	27
4.2 Proportion of ICT service exports in total service exports	14.0	33
4.3 Proportion of high-tech products in total manufacturing exports	48.6	8
4.4 Labor productivity	51.8	16
4.5 Economic output per unit of energy consumption	54.9	5
4.6 Economic output per unit of CO ₂ emission	34.8	12

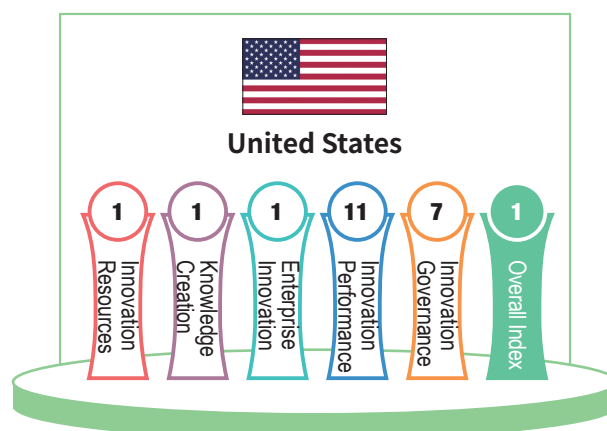
 Innovation Governance	92.0	10
5.1 Rule-of-law environment	86.2	18
5.2 Policy environment for doing business	75.7	20
5.3 E-government services	95.3	7
5.4 Level of ICT development	93.2	8
5.5 Availability of venture capital for startups and scaleups	71.3	25
5.6 Industry-university R&D collaboration	77.0	12
5.7 Proportion of international co-authored papers in all domestic papers	80.7	20
5.8 Number of technical (sub) committees of the International Organization for Standardization	55.2	6
5.9 Ratio of international investment to GDP	4.9	46
5.10 Entrepreneurial culture	65.6	28

United States

2025 Overall Index Ranking

1

Population/10,000 persons	34,011.1
Area/10,000 square kilometers	937
GDP/USD 100 million	291,848.9
GDP per capita/USD	85,809.9
Economic output per unit of energy consumption/(USD/KGOE)	12.9
R&D expenditure/USD 100 million	9,555.8
R&D expenditure intensity	3.45%
SCI indexed papers/pieces	436,355
Invention patents in force/pieces	1 685,406
Proportion of high-tech products in total manufacturing exports	21.8%



	Score	Ranking
Innovation Resources	100	1
1.1 R&D expenditure as a percentage of GDP	54.3	4
1.2 Share of global R&D expenditure	100.0	1
1.3 Proportion of basic research expenditure in total R&D expenditure	30.9	39
1.4 Proportion of enterprise basic research expenditure in national basic research expenditure	55.5	8
1.5 Number of the world's first-tier research institutions	100.0	1
1.6 Proportion of STEM graduates in all college graduates	46.9	42
1.7 R&D personnel per 10,000 employed individuals	75.6	13
1.8 Number of highly cited scientists	100.0	1
1.9 Gross enrollment ratio in higher education	48.1	22
1.10 Average score of the top three domestic universities in the world university rankings top 500	100.0	1
1.11 Number of students enrolled in postgraduate education	50.6	3
1.12 Proportion of international students in total higher education enrollment	7.6	33

Knowledge Creation	100	1
2.1 Number of S&T papers per USD 1 million of R&D expenditure	2.6	60
2.2 Invention patents in force per 10,000 employed individuals	29.4	3
2.3 Number of industrial design applications per USD 100 million of industrial value-added	3.5	47
2.4 Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments	9.8	59
2.5 Proportion of highly cited papers in all domestic papers	46.4	42
2.6 Number of major international S&T awards won	100.0	1

Enterprise Innovation	100	1
3.1 Ratio of enterprise R&D expenditure to value-added	56.3	2
3.2 Enterprise researchers as a share of total researchers	97.0	2

	Score	Ranking
3.3 Average R&D expenditure intensity of the top 10 companies	100.0	1
3.4 Triadic patents as a share of the world's total	92.5	2
3.5 PCT applications per 10,000 enterprise researchers	3.8	27
3.6 Proportion of intellectual property royalty income in service exports	65.3	4
3.7 Economic growth rate	43.1	21
3.8 Number of newly registered companies per 10 million labor force	—	—
3.9 Number of high-growth technology companies	100.0	1

Innovation Performance	47.5	11
4.1 Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector	53.5	20
4.2 Proportion of ICT service exports in total service exports	12.2	38
4.3 Proportion of high-tech products in total manufacturing exports	36.8	16
4.4 Labor productivity	85.2	3
4.5 Economic output per unit of energy consumption	30.7	21
4.6 Economic output per unit of CO ₂ emission	21.4	23

Innovation Governance	93.1	7
5.1 Rule-of-law environment	84.5	19
5.2 Policy environment for doing business	82.5	11
5.3 E-government services	91.4	16
5.4 Level of ICT development	100.0	1
5.5 Availability of venture capital for startups and scaleups	81.6	11
5.6 Industry-university R&D collaboration	82.0	4
5.7 Proportion of international co-authored papers in all domestic papers	50.7	53
5.8 Number of technical (sub) committees of the International Organization for Standardization	68.6	2
5.9 Ratio of international investment to GDP	5.1	44
5.10 Entrepreneurial culture	73.4	16

9

Appendices

Appendix I NII assessment theories and methodology

Appendix II Definition of indicators

Appendix III Data sources

National Innovation Index Report 2025

The NII study draws upon theories and methodologies from both domestic and international research on national competitiveness and innovation assessment. Based on the evaluation objectives and the conceptual connotations of innovative countries, the NII framework is constructed across five dimensions: innovation resources, knowledge creation, enterprise innovation, innovation performance, and innovation governance, providing a comprehensive approach and methodology for evaluation.

1. Evaluation objectives

The NII study has three main objectives.

First, constructing a standardized indicator matrix for the assessment of national innovation capacity, developing scientific indicator interpretations, calculation methods and analytical framework, and constantly refining the system in line with the evaluation practice in order to provide theoretical support for monitoring and assessing China's progress in building an innovative country.

Second, measuring the NII performance of countries worldwide based on the indicator matrix for evaluating national innovation capacity in order to provide a reference for understanding the global STI situation and tracking the dynamics on the innovation landscape.

Third, comprehensively, objectively and accurately depicting China's national innovation capability across different dimensions and levels of the innovation chain through the measurement of national innovation capability, pinpointing China's position on the global innovation landscape, and providing insights and services for China to build itself into an innovative country and a strong S&T nation and improve its STI policies.

2. Theoretical foundation

The construction of the NII is based on the understanding of

innovation and the knowledge of innovative countries.

Innovation is a comprehensive process influenced by external environments and policy frameworks, spanning from the conception of innovation ideas to research and development, knowledge output, and commercial application. National innovation capability should be reflected in the entire process of generating, disseminating, and commercializing scientific and technological knowledge, as well as in the entire innovation ecosystem. Therefore, for the purpose of assessing the national innovation capability, the NII indicators should be constructed across the vital links of the innovation chain, from the input of innovation resources, cultivation of innovation environment and enterprise innovation to the output of innovation results and impact on innovation performance. The world's leading reports on innovation capacity assessment, such as the WIPO *Global Innovation Index* and the *European Innovation Scoreboard*, have all spanned across the whole innovation chain and adopted a composite index approach to examine the comprehensive innovation capacity of each country.

Innovation is the fundamental driving force for the continuous and stable development of countries worldwide, especially large nations. Technological progress in countries often goes hand in hand with economic development. Statistics show that among the 200-plus countries and regions globally, only 44 have seen their R&D expenditure exceeding 1% of GDP. Although these countries represent only about 40% of the world's population, they account for 82% of the world's GDP. This shows that the economic strength of major economies depends primarily on technological advances, rather than on population or natural resources. While some small countries may have been able to achieve economic growth and accumulate national wealth based on their natural resources, no large country has grown into a global economic powerhouse by relying solely on natural resources. As a big country, China does not have too many resources to export, nor can it follow the path of economic dependence. Therefore, the only viable path for China is to pursue innovation-driven development, build itself into an innovative country and strive to become a S&T power.

Combining all the results of the world's major studies on the evaluation of competitiveness and innovation capacity, the most important feature of an innovative country is the fundamental change of its model of economic and social development compared with the traditional model. Whether a country is considered innovative depends on whether its economic and social development is driven primarily by the traditional means of natural resources consumption and capital input or by the innovation activities characterized by the creation, promotion, and application of knowledge. An innovative country should have the following five capabilities:

- (1) Strong comprehensive capability for the input of innovation resources;
- (2) Strong capability in knowledge creation, diffusion, and impact;
- (3) Strong enterprise innovation capability;
- (4) Strong capability in innovation output and impact;
- (5) A favorable innovation environment.

Based on the above theoretical analysis, and with reference to the major global reports on the evaluation of innovation capability and competitiveness, we have constructed a NII indicator matrix underpinned by a set of first-level indicators and the corresponding second-level indicators selected from across the innovation chain, and adopted a system of comprehensive index for calculation, allowing for a holistic analysis, comparison, and assessment of national innovation capabilities.

3. Principles for indicator selection

— Authoritative data sources: Basic data must come from official statistics and surveys of recognized international organizations and national governments, and be regularly collected through formal channels to ensure accuracy, authority, continuity, and timeliness.

— Representative evaluation subjects: The countries selected for evaluation must have a certain scale and intensity of innovation activities. Countries included in the innovation capacity evaluation must first have established a basic innovation system, with a certain

level of R&D activity and economic foundation. The 60 major countries selected for this study account for approximately 98% of the world's R&D input and over 92% of the global GDP.

— International comparability of indicators: The indicator matrix is constructed using internationally recognized indicators, with definitions and statistical scope aligned with international standards.

— Insensitivity to country size: The selected indicators are primarily relative metrics, taking into account the characteristics of countries with different sizes in terms of the efficiency of innovation input and output, scale of innovation activities and scope of innovation.

— Combination of quantitative and qualitative analysis: Both quantitative statistical indicators and authoritative, reliable qualitative survey indicators are used.

— Integration of historical analysis and contemporaneous comparison: Countries are both compared with each other in the current context and analyzed for year-by-year changes.

Additionally, the indicator matrix of this year's report has been adjusted, with content expanded to further underscore the importance of innovation quality, efficiency, and future potential in the new era and context. The selection of indicators also takes into account the relative stability of country rankings compared to previous annual reports.

Indicator matrix

The NII indicator matrix consists of five first-level indicators (innovation resources, knowledge creation, enterprise innovation, innovation performance and innovation governance) and 43 basic indicators.

Innovation resources: This indicator reflects a country's investment of strategic factors and allocation of resources in science and technology, human resources development and education.

Knowledge creation: This indicator reflects a country's capacity to generate scientific and intellectual property and influence.

Enterprise innovation: This indicator reflects the intensity of a country's enterprise innovation activities, as well as the efficiency and effectiveness of its enterprise technological innovation.

Innovation performance: This indicator reflects the economic and social impact of a country's innovation activities, and their role in driving industrial transformation and upgrading.

Innovation governance: This indicator reflects the external soft environment of innovation activities, such as policy, market, system and culture.

National Innovation Index

1	Innovation resources	R&D input	1	R&D expenditure as a percentage of GDP
			2	Share of global R&D expenditure
		Basic research	3	Proportion of basic research expenditure in total R&D expenditure
			4	Proportion of enterprise basic research expenditure in national basic research expenditure
		S&T talent	5	Number of the world's first-tier research institutions
			6	Proportion of STEM graduates in all college graduates
			7	R&D personnel per 10,000 employed individuals
		Higher education	8	Number of highly cited scientists
			9	Gross enrollment ratio in higher education
			10	Average score of the top three domestic universities in the world university rankings top 500
			11	Number of students enrolled in postgraduate education
			12	Proportion of international students in total higher education enrollment
2	Knowledge creation	Knowledge output	13	Number of S&T papers per USD 1 million of R&D expenditure
			14	Invention patents in force per 10,000 employed individuals
			15	Number of industrial design applications per USD 100 million of industrial value-added
		Knowledge impact	16	Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments
			17	Proportion of highly cited papers in all domestic papers
			18	Number of major international S&T awards won
3	Enterprise innovation	R&D intensity	19	Ratio of enterprise R&D expenditure to value-added
			20	Enterprise researchers as a share of total researchers
			21	Average R&D expenditure intensity of the top 10 companies
		Technological innovation	22	Triadic patents as a share of the world's total
			23	PCT applications per 10,000 enterprise researchers
			24	Proportion of intellectual property royalty income in service exports
		Innovation vitality	25	Economic growth rate
			26	Number of newly registered companies per 10 million labor force
			27	Number of high-growth technology companies
4	Innovation performance	Industrial innovation	28	Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector
			29	Proportion of ICT service exports in total service exports
			30	Proportion of high-tech products in total manufacturing exports
		Productivity	31	Labor productivity
			32	Economic output per unit of energy consumption
			33	Economic output per unit of CO ₂ emission
5	Innovation governance	Policy environment	34	Rule-of-law environment
			35	Policy environment for doing business
			36	E-government services
		Market mechanism	37	Level of ICT development
			38	Availability of venture capital for startups and scaleups
			39	Industry-university R&D collaboration
		Innovation ecosystem	40	Proportion of international co-authored papers in all domestic papers
			41	Number of technical (sub) committees of the International Organization for Standardization
			42	Ratio of international investment to GDP
			43	Entrepreneurial culture

Calculation methodology

The NII scores are calculated with the internationally-recognized benchmarking method. The principle of benchmarking is to give a benchmark value to the evaluated subject and use the benchmark to measure all the evaluated subjects, so as to find the gap between the subjects and produce the ranking results.

1. Formula symbols

$i = 1 \sim 60$, refers to the 60 countries evaluated.

$j = 1 \sim 5$, refers to the five first-level indicators.

Each first-level indicator j corresponds to K^j second-level indicators, i.e.

$$\sum_{j=1}^5 K^j = 43 .$$

where K^j refers to the K th indicator in the first-level indicator j .

β_{jk} refers to the weight of the indicator in the first level indicator, and w_j refers to the weight of the first-level indicator in the NII. In this report, the synthetic indicators are all treated as mean values, i.e. $\beta_{jk} = 1, w_j = 1$.

2. Data treatment of second-level indicators

The original values of the 60 countries in the 43 second-level indicators are non-dimensionalized. Non-dimensionalization is used for the purpose of removing the discrepancies in quantitative units and the differences in the order of magnitude and form of relative number and enabling the generalization of indicators in assessment using multiple indicators.

Second-level indicator data are treated using linear non dimensionalization, i. e.

$$y_{ijk} = \frac{x_{ijk} - \min x_{jk}}{\max x_{jk} - \min x_{jk}} .$$

where y = non-dimensionalized value of the second-level indicators, x = actual value of the indicators.

3. Calculation of first-level indicators

Non-dimensionalized second-level indicators are combined into first-level indicator Y_{ij} :

$$Y_{ij} = \sum_{k=1}^{K^j} \beta_{jk} y_{ijk} .$$

The score of the first-level indicator $\bar{Y}_{ij}$ is non-dimensionalized in the same way:

$$\bar{Y}_{ij} = \frac{Y_{ij}}{\max Y_j} \times 100 .$$

4. Calculation of NII score

NII score is calculated to produce the rankings of the 60 countries.

$$Y_i = \sum_{j=1}^5 w_j \bar{Y}_{ij} ,$$

$$\bar{Y}_i = \frac{Y_i}{\max Y_i} .$$

1. R&D expenditure as a percentage of GDP

It refers to the ratio of a country's total Research and Experimental Development (R&D) expenditure to its Gross Domestic Product (GDP), reflecting the intensity of the country's science, technology and innovation (STI) investment.

2. Share of global R&D expenditure

It refers to the share of a country's total R&D expenditure in the world total, reflecting the size of the country's R&D activities and its capacity to allocate innovation resources.

3. Proportion of basic research expenditure in total R&D expenditure

It refers to the share of a country's basic research expenditure in its total R&D expenditure, reflecting the size of the country's basic research and its original innovation capability.

4. Proportion of enterprise basic research expenditure in national basic research expenditure

It refers to the share of basic research expenditure invested by the corporate sector in the national total, reflecting the role and position of market forces in basic research and original innovation.

5. Number of the world's first-tier research institutions

It refers to the sum of government research institutions and non-profit organizations among the top 500 in the Nature Index, reflecting the country's strength and competitiveness in the field of scientific research.

6. Proportion of STEM graduates in all college graduates

It refers to the share of graduates in Science, Technology, Engineering and Mathematics (STEM) fields in the total number of college graduates, reflecting the country's talent cultivation in STEM fields.

7. R&D personnel per 10,000 employed individuals

It refers to the full-time equivalent (FTE) of R&D personnel per 10,000 employed individuals, reflecting the intensity of the country's human resources input in innovation.

8. Number of highly cited scientists

It refers to the number of highly cited scientists in a country, compiled based on Clarivate Analytics' list of global highly cited researchers, reflecting the country's stock of top-tier scientific talents with significant and extensive influence.

9. Gross enrollment ratio in higher education

It refers to the share of the population aged 18-22 enrolled in higher education, reflecting the country's capacity to cultivate and supply scientific and technological human resources.

10. Average score of the top three domestic universities in the world university rankings top 500

It refers to the average score of the top three universities in a country that have made into the top 500 of the world university rankings, reflecting the country's level of scientific and technological talent cultivation and its appeal to talents.

11. Number of students enrolled in postgraduate education

It refers to the number of students enrolled in master's and doctoral programs, reflecting the country's ability to cultivate high-level scientific and technological talents.

12. Proportion of international students in total higher education enrollment

It refers to the share of international students attracted by a country in its total higher education enrollment. Measures a country's appeal to global talents in its higher education system and its international academic influence, reflecting the country's nodal position in the global knowledge network and the competitiveness of its open innovation environment.

13. Number of S&T papers per USD 1 million of R&D expenditure

It refers to the ratio of the number of SCI-indexed papers produced by a country's universities and research institutions to its total R&D expenditure, reflecting the S&T input-output efficiency of the country and the quality of its knowledge output.

14. Invention patents in force per 10,000 employed individuals

It refers to the number of invention patents in force per 10,000 employed individuals, reflecting the country's innovation activity and protection of innovation outcomes.

15. Number of industrial design applications per USD 100 million of industrial value-added

It refers to the number of industrial design applications divided by industrial value-added, reflecting the country's technological creativity.

16. Number of S&T paper citations per USD 1 million of R&D expenditure in academic departments

It refers to the ratio of the number of citations of SCI-indexed S&T papers to the total R&D expenditure of universities and research institutions, reflecting the STI input-output efficiency of the country and the impact of its knowledge output.

17. Proportion of highly cited papers in all domestic papers

It refers to the ratio of the number of papers whose cumulative citations rank in the top 1% of their discipline to the total number of papers published by a country, reflecting the quality and impact of its research output.

18. Number of major international S&T awards won

It refers to the number of recipients of major world-class awards in natural sciences and critical fields, including 12 important awards: Nobel Prizes (Physics, Chemistry, Physiology or Medicine), Fields Medal, Wolf Prize (Mathematics); Dirac Medal, Fermi Award, Ives Medal (Physics); Priestley Medal, Davy/David Medal (Chemistry); Turing Award (Information); Von Karman Award (Aerospace Science), reflecting the country's capacity to produce major original achievements.

19. Ratio of enterprise R&D expenditure to value-added

It refers to the ratio of the R&D expenditure of a country's corporate sector to its industrial value-added, reflecting the innovation investment intensity of the country's enterprises.

20. Enterprise researchers as a share of total researchers

It refers to the share of enterprise researchers in a country's total R&D researchers, reflecting the capacity and level of R&D human resources investment in the country's corporate sector.

21. Average R&D expenditure intensity of the top 10 companies

It refers to the average R&D intensity of the top 10 companies by R&D investment scale in a country, reflecting the innovation capability and international competitiveness of the country's leading enterprises.

22. Triadic patents as a share of the world's total

It refers to a country's share in the global total of triadic patents, i.e., the same invention patent filed with the European Patent Office (EPO), the Japan Patent Office (JPO), and the US Patent and Trademark Office (USPTO), reflecting the country's technological innovation capability and international competitiveness.

23. PCT applications per 10,000 enterprise researchers

It refers to the ratio of the number of PCT applications that have entered the national phase within a given year to the number of enterprise researchers, reflecting the innovation investment efficiency and innovation output quality of the country's enterprises, as well as the international competitiveness of their technologies.

24. Proportion of intellectual property royalty income in service exports

It refers to the ratio of a country's intellectual property royalty income to its service export value, reflecting the intellectual property value of the country's innovation entities and their competitiveness in the international market.

25. Economic growth rate

It refers to the growth rate of the total economic output of a country or region over a certain period, reflecting the overall vitality of the country's economy.

26. Number of newly registered companies per 10 million labor force

It refers to the number of newly registered companies per 10 million labor force in a country, reflecting the country's enterprise innovation activity and business environment.

27. Number of high-growth technology companies

It refers to the sum of the number of unicorn enterprises and technology gazelle enterprises in a country, reflecting the country's enterprise innovation potential and competitiveness.

28. Proportion of high-tech and medium-high-tech industries in the total value-added of the manufacturing sector

It refers to the ratio of a country's value-added from high-tech and medium-high-tech industries to the total value-added of the manufacturing sector, reflecting the country's industrial structure and technological sophistication.

29. Proportion of ICT service exports in total service exports

It refers to the share of exports from the information and communication technology (ICT) service sector in a country's total service exports, reflecting the development level of the country's information and digital industries.

30. Proportion of high-tech products in total manufacturing exports

It refers to the share of a country's high-tech product exports in its total manufacturing exports, reflecting the role of technological innovation in the improvement of economic structure.

31. Labor productivity

It refers to the ratio of a country's GDP to its labor force, reflecting the impact of innovation activities on economic output capacity.

32. Economic output per unit of energy consumption

It refers to GDP output per unit of standard oil energy consumption, reflecting the degree of the country's economic growth.

33. Economic output per unit of CO₂ emission

It refers to GDP output per unit of carbon dioxide emission, reflecting the improvement in energy utilization efficiency and associated carbon emissions in a country's development.

34. Rule-of-law environment

It refers to the index measuring the confidence of a country's market entities in social rules and their compliance with such rules, reflecting the country's overall environment for market operations, intellectual property protection, and legal rights protection.

35. Policy environment for doing business

It refers to the extent to which a country's government ensures a stable business environment, reflecting the government's governing philosophy, stage of economic development, governance capacity, and the overall maturity of the society.

36. E-government services

It refers to how a country's government uses technology at the national level to provide public services, reflecting the government's governance philosophy, administrative efficiency, public service capacity, and digitization level of the whole society.

37. Level of ICT development

It refers to the Network Readiness Index for each country as presented in the *Network Readiness Index* jointly released by the Portulans Institute (US) and the Saïd Business School, University of Oxford, reflecting the country's ICT infrastructure conditions for knowledge creation, communication and dissemination.

38. Availability of venture capital for startups and scaleups

It refers to the general convenience for startups with risky, innovative projects to access venture capital, reflecting the country's innovation capacity, capital market vitality, and future economic growth potential.

39. Industry-university R&D collaboration

It refers to the closeness of R&D collaboration between enterprises and universities, reflecting the capacity of universities to transform STI outcomes.

40. Proportion of international co-authored papers in all domestic papers

Refers to the ratio of the number of papers co-authored with other countries to the total number of papers published by a country during the same period, reflecting the country's level of international cooperation and influence in scientific research.

41. Number of technical (sub) committees of the International Organization for Standardization

It refers to the Number of technical (sub) committees of the International Organization for Standardization that a country participates in or hosts, reflecting the country's level of participation in the formulation of international technical standards.

42. Ratio of international investment to GDP

It refers to the ratio of the sum of a country's foreign direct investment (FDI) inflows and outflows to its GDP, reflecting the country's investment capacity and market attractiveness.

43. Entrepreneurial culture

It refers to a composite indicator integrating factors such as public attitudes towards venture risk, corporate management hierarchy, development status of innovative enterprises, entrepreneurship conditions, and enterprises' acceptance of disruptive innovation, reflecting the innovation and entrepreneurship culture in the society.

Appendix III Data sources

- [1] *World Development Indicators 2025*, World Bank.
- [2] *Main Science and Technology Indicators 2025-9*, Organization for Economic Cooperation and Development.
- [3] Patentscope, World Intellectual Property Organization.
- [4] *Science and Engineering Indicators 2024*, National Science Foundation (US).
- [5] SCI Journal Literature Database, “Highly Cited Researchers” list., Clarivate Analytics.
- [6] *Statistics and Analysis of Chinese Scientific and Technical Papers*, Institute of Scientific and Technical Information of China (ISTIC).
- [7] Scientific Paper Database, Documentation and Information Center, Chinese Academy of Sciences.
- [8] *China Statistical Yearbook 2025*, National Bureau of Statistics of China.
- [9] *China Statistical Yearbook on Science and Technology 2024*, National Bureau of Statistics of China & Ministry of Science and Technology.
- [10] Patent Statistical Yearbook, State Intellectual Property Office of China.
- [11] *Global Innovation Index 2025*, World Intellectual Property Organization et al.
- [12] QS World University Rankings, Quacquarelli Symonds (QS).
- [13] *World Energy Investment 2024*, International Energy Agency.
- [14] Climate Watch, World Resources Institute (WRI).
- [15] *EU Industrial R&D Investment Scoreboard (2024 and 2025)*, European Union.
- [16] *Nature Index 2025*, Nature Publishing Group.
- [17] *Network Readiness Index*, Portulans Institute (US) & Saïd Business School, University of Oxford.
- [18] Institute for Statistics Data Browser, United Nations Educational, Scientific and Cultural Organization (UNESCO).
- [19] *Hurun Future Unicorns and Hurun Global Gazelles*, Hurun Research Institute.
- [20] *World Investment Report 2025*, World Trade Organization.
- [21] Statistical Bulletin of Technical Committees, International Organization for Standardization (ISO) & International Electrotechnical Commission (IEC).
- [22] Science and Technology Offices of Chinese Embassies and Consulates Abroad.

2025

Series report of national innovation survey

National Innovation Index Report

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官方网址：www.stdp.com.cn



ISBN 978-7-5235-3647-6



定价：86.00元