

Global Innovation Index 2023

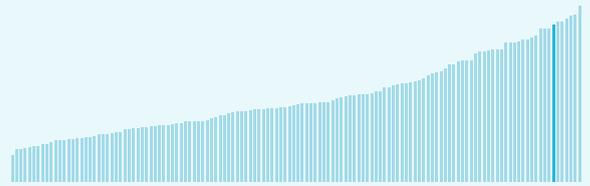


The Global Innovation Index (GII) **ranks world economies according to their innovation capabilities.**

Consisting of **roughly 80 indicators**, grouped into innovation inputs and outputs, the GII **aims to capture the multi-dimensional facets of innovation.**

Netherlands (Kingdom of the) ranking in the Global Innovation Index 2023

> Netherlands (Kingdom of the) ranks **7th** among the 132 economies featured in the GII 2023.



> Netherlands (Kingdom of the) ranks **7th** among the 50 high-income group economies.



> Netherlands (Kingdom of the) ranks **5th** among the 39 economies in Europe.



> Netherlands (Kingdom of the) GII Ranking (2020-2023)

The table shows the rankings of Netherlands (Kingdom of the) over the past four years. Data availability and changes to the GII model framework influence year-on-year comparisons of the GII rankings. The statistical confidence interval for the ranking of Netherlands (Kingdom of the) in the GII 2023 is between ranks 5 and 8.

	GII Position	Innovation Inputs	Innovation Outputs
2020	5th	11th	4th
2021	6th	12th	3rd
2022	5th	10th	6th
2023	7th	10th	5th

Netherlands (Kingdom of the) performs better in innovation **outputs** than innovation **inputs** in 2023.

This year Netherlands (Kingdom of the) ranks 10th in innovation inputs. This position is the same as last year.

Netherlands (Kingdom of the) ranks 5th in innovation outputs. This position is higher than last year.

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→ Expected vs. observed innovation performance

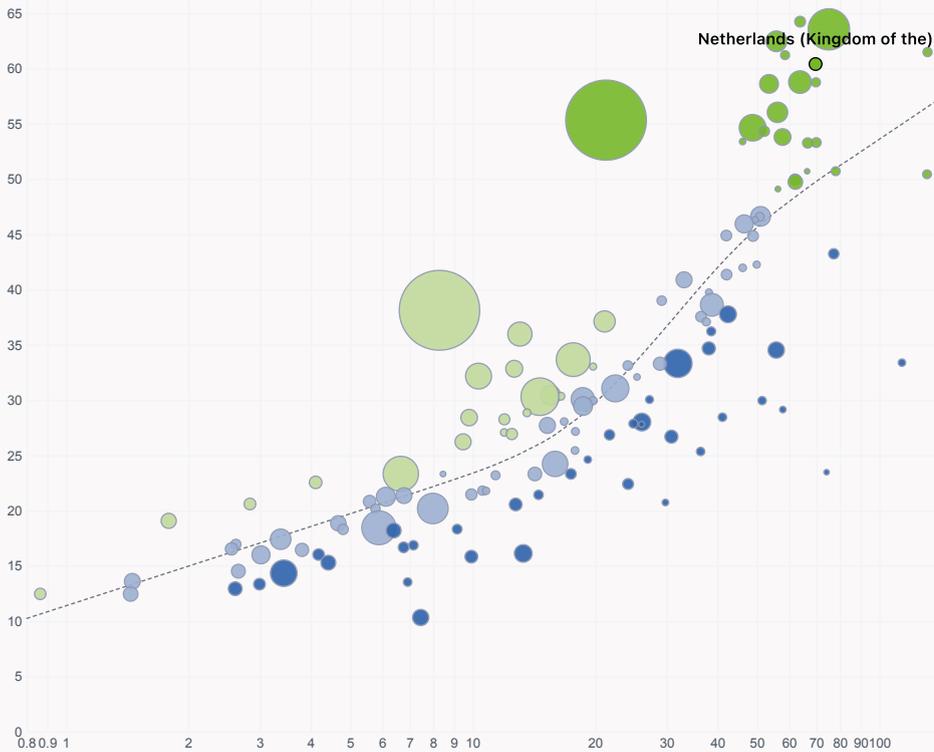
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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



> Netherlands (Kingdom of the) is an innovation leader, ranking in the top 25 of the GII.

> Innovation overperformers relative to their economic development

↑ GII Score



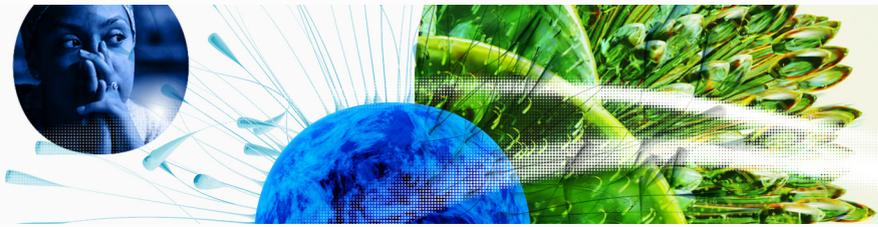
- Innovation leader
- Performing above expectations for level of development
- Performing at expectations for level of development
- Performing below expectations for level of development

Size legend (Population)



→ GDP per capita, PPP logarithmic scale (thousands of \$)

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→ Effectively translating innovation investments into innovation outputs

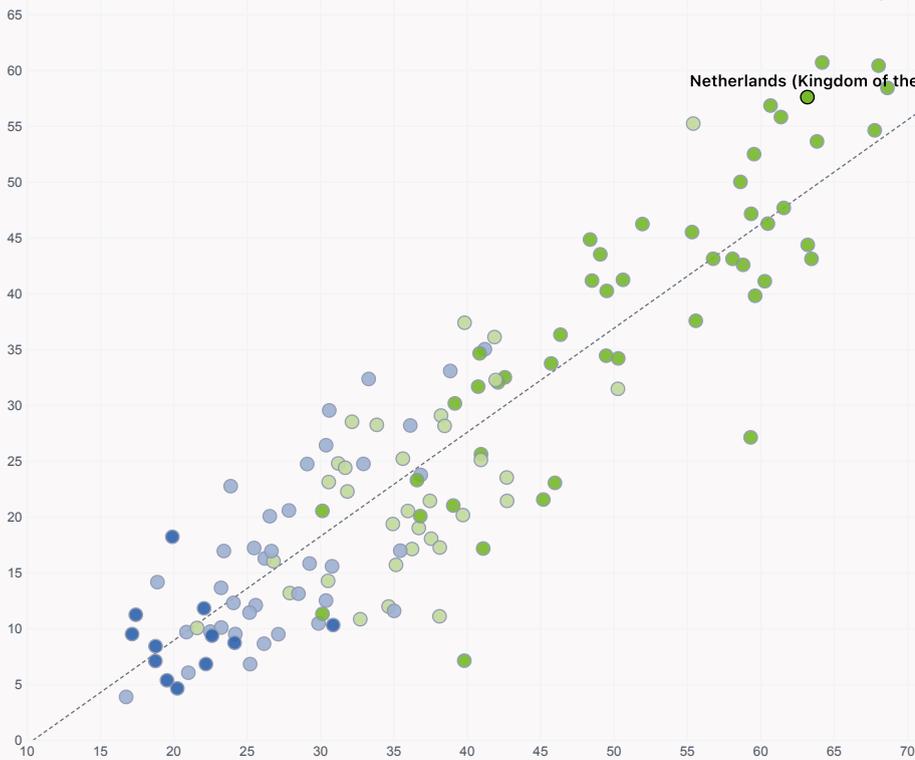
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.



> Netherlands (Kingdom of the) produces more innovation outputs relative to its level of innovation investments.

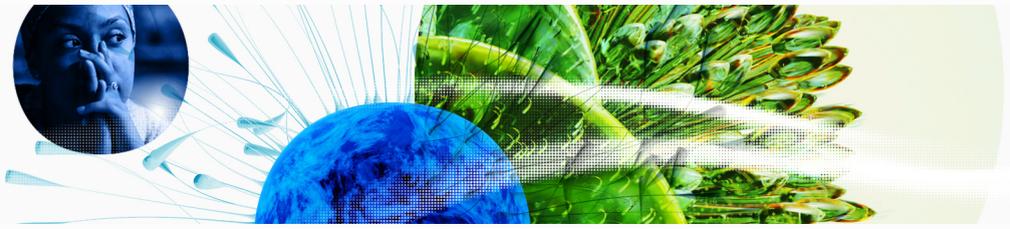
> Relationship between innovation inputs and outputs

↑ Output score



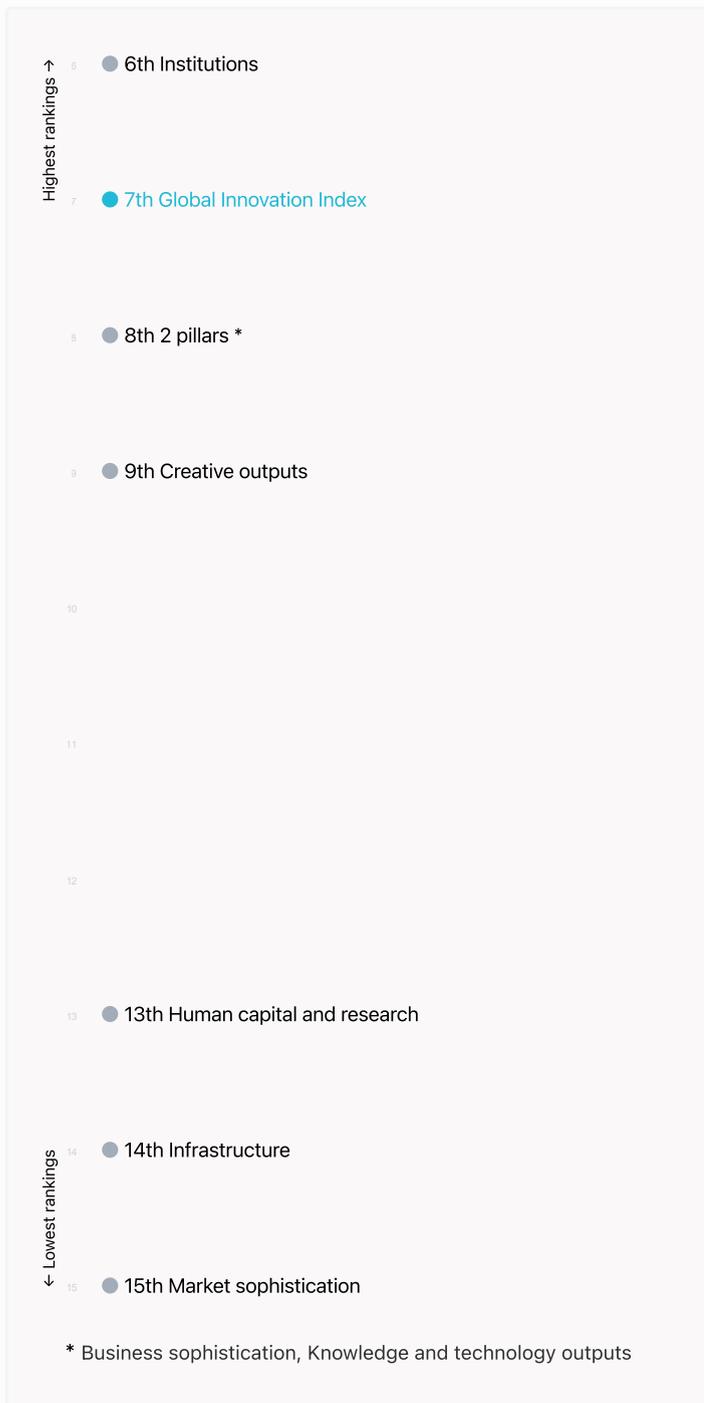
→Input score

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→ Overview of Netherlands (Kingdom of the)'s rankings in the seven areas of the GII in 2023

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



> Highest rankings



Netherlands (Kingdom of the) ranks highest in Institutions (6th).

> Lowest rankings

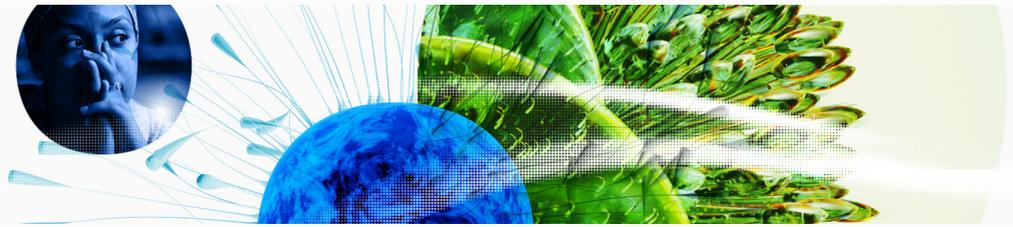


Netherlands (Kingdom of the) ranks lowest in Market sophistication (15th), Infrastructure (14th) and Human capital and research (13th).



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

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→ Benchmark of Netherlands (Kingdom of the) against other country groupings for each of the seven areas of the GII Index

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

> High-Income economies

Netherlands (Kingdom of the) performs above the high-income group average in all the pillars.

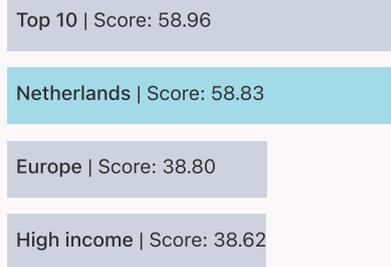


> Europe

Netherlands (Kingdom of the) performs above the regional average in all the pillars.



Knowledge and technology outputs



Creative outputs



Business sophistication



Market sophistication



Human capital and research



Infrastructure



Institutions





→ Innovation strengths and weaknesses in Netherlands (Kingdom of the)

The table below gives an overview of the indicator strengths and weaknesses of Netherlands (Kingdom of the) in the GII 2023.



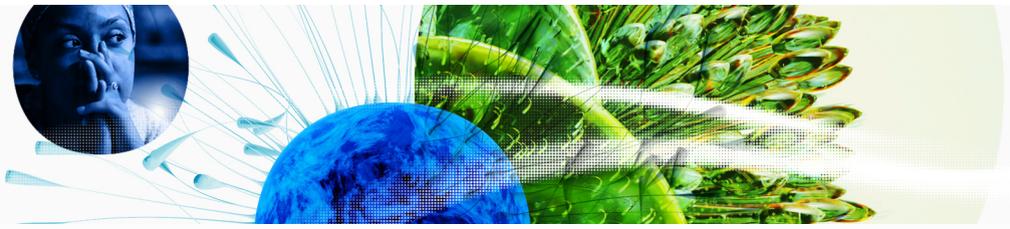
> Netherlands (Kingdom of the)'s main innovation strengths are **Country-code TLDs/th pop. 15-69 (rank 1)**, **Intellectual property payments, % total trade (rank 1)** and **Intellectual property receipts, % total trade (rank 1)**.

Strengths

Weaknesses

Rank	Code	Indicator name	Rank	Code	Indicator name
1	7.3.2	Country-code TLDs/th pop. 15-69	132	5.3.4	FDI net inflows, % GDP
1	5.3.1	Intellectual property payments, % total trade	104	6.2.1	Labor productivity growth, %
1	6.3.1	Intellectual property receipts, % total trade	87	3.2.3	Gross capital formation, % GDP
3	4.1.1	Finance for startups and scaleups	82	2.2.2	Graduates in science and engineering, %
3	3.2.2	Logistics performance	70	2.1.5	Pupil-teacher ratio, secondary
4	1.3.2	Entrepreneurship policies and culture	65	1.2.3	Cost of redundancy dismissal
4	7.3.3	GitHub commits/mn pop. 15-69	46	7.1.2	Trademarks by origin/bn PPP\$ GDP
4	5.1.1	Knowledge-intensive employment, %	41	2.1.2	Government funding/pupil, secondary, % GDP/cap
4	5.2.1	University-industry R&D collaboration	38	7.2.2	National feature films/mn pop. 15-69
5	3.1.4	E-participation	20	4.3.1	Applied tariff rate, weighted avg., %
5	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69			
6	6.1.5	Citable documents H-index			
6	1.1.2	Government effectiveness			

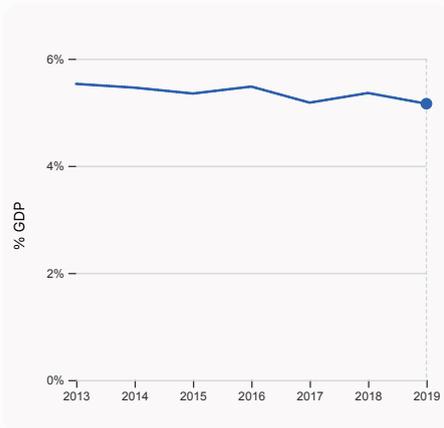
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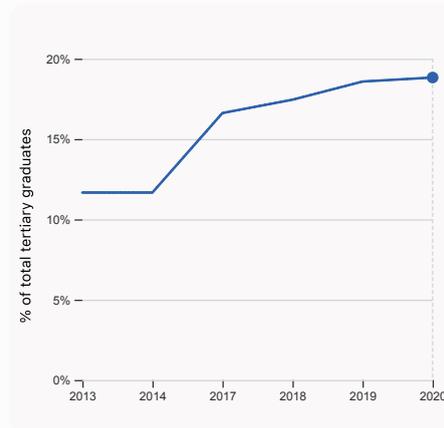
→ Netherlands (Kingdom of the)'s innovation system

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

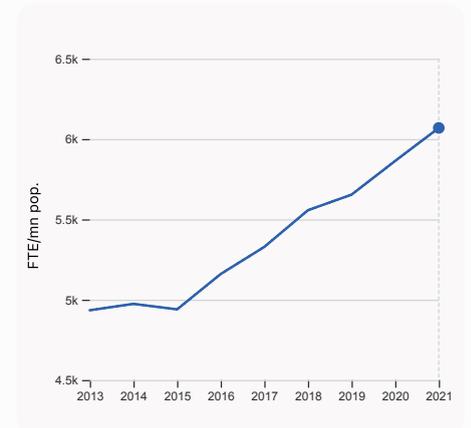
> Innovation inputs in Netherlands (Kingdom of the)



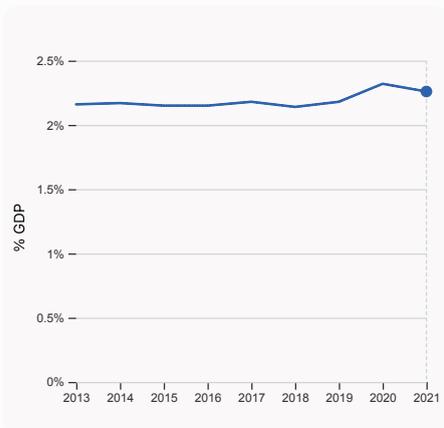
2.1.1 Expenditure on education, % GDP
was equal to 5.16% GDP in 2019, down by 0.2 percentage points from the year prior – and equivalent to an indicator rank of 34.



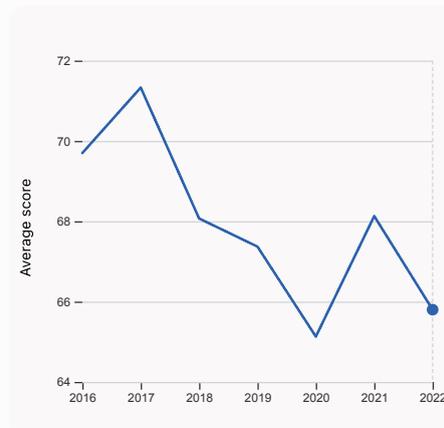
2.2.2 Graduates in science and engineering, %
was equal to 18.83% of total tertiary graduates in 2020, up by 0.25 percentage points from the year prior – and equivalent to an indicator rank of 82.



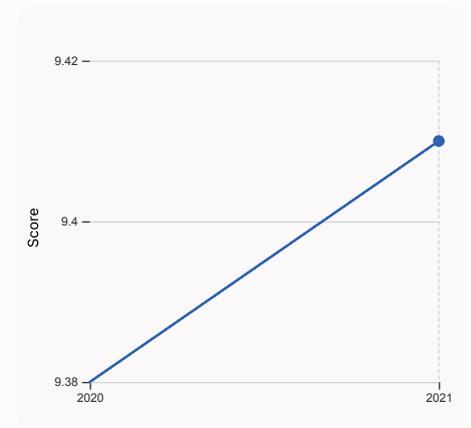
2.3.1 Researchers, FTE/mn pop.
was equal to 6,069.33 FTE/mn pop. in 2021, up by 3.5% from the year prior – and equivalent to an indicator rank of 10.



2.3.2 Gross expenditure on R&D, % GDP
was equal to 2.26% GDP in 2021, down by 0.06 percentage points from the year prior – and equivalent to an indicator rank of 15.

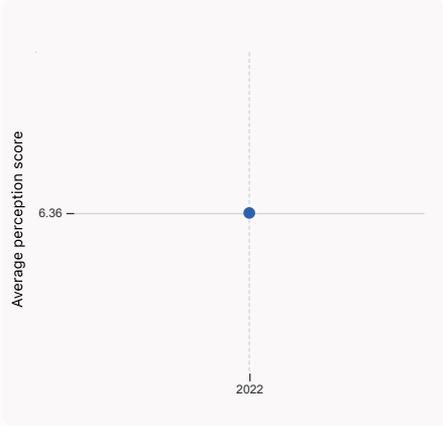


2.3.4 QS university ranking, top 3
was equal to an average score of 65.8 for the top 3 universities in 2022, down by 3.42% from the year prior – and equivalent to an indicator rank of 13.

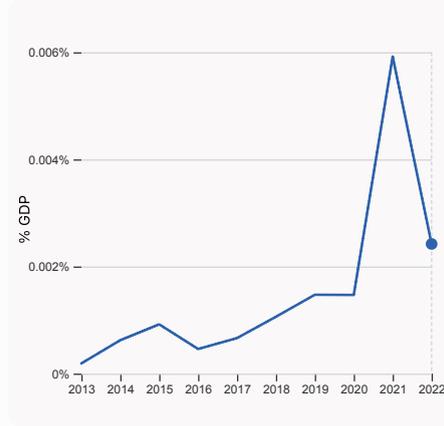


3.1.1 ICT access
was equal to a score of 9.41 in 2021, up by 0.32% from the year prior – and equivalent to an indicator rank of 19.

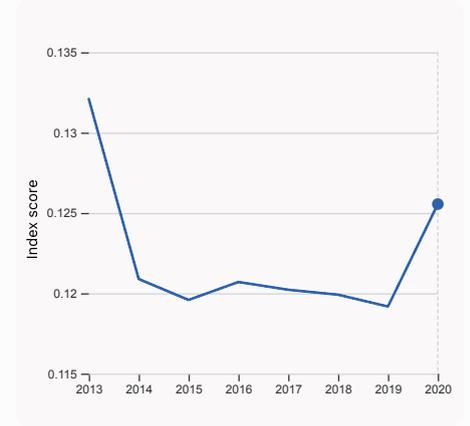
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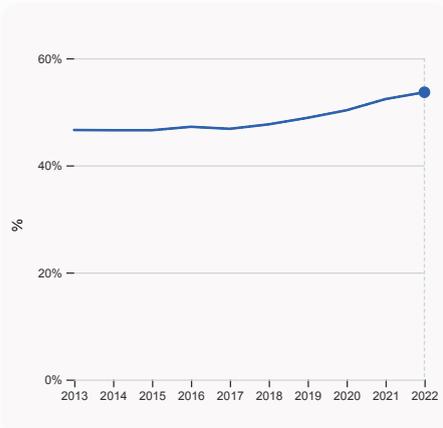
4.1.1 Finance for startups and scaleups was equal to an average perception score of 6.36 in 2022, equivalent to an indicator rank of 3.



4.2.4 VC received, value, % GDP was equal to 0.00242% GDP in 2022, down by 0.0035 percentage points from the year prior – and equivalent to an indicator rank of 20.



4.3.2 Domestic industry diversification was equal to an index score of 0.126 in 2020, up by 5.35% from the year prior – and equivalent to an indicator rank of 37.

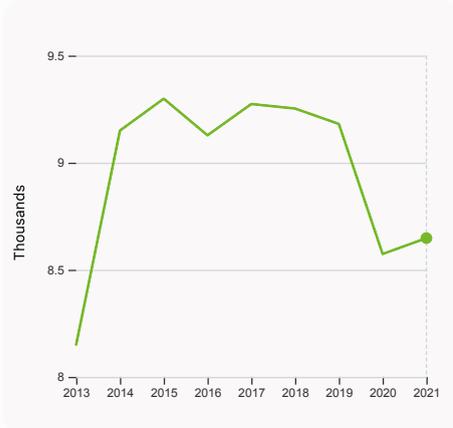


5.1.1 Knowledge-intensive employment, % was equal to 53.65% in 2022, up by 1.27 percentage points from the year prior – and equivalent to an indicator rank of 4.

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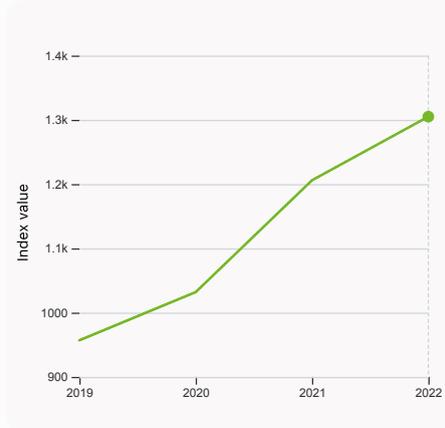


> Innovation outputs in Netherlands (Kingdom of the)



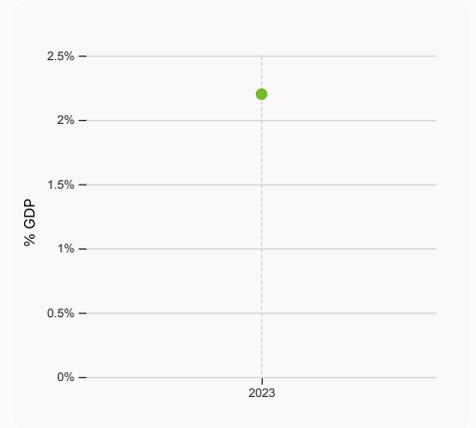
6.1.1 Patents by origin

was equal to 8.65 Thousands in 2021, up by 0.86% from the year prior – and equivalent to an indicator rank of 10.



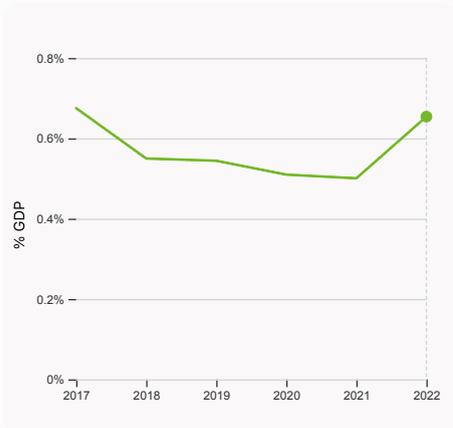
6.1.5 Citable documents H-index

was equal to an index value of 1,305 in 2022, up by 8.21% from the year prior – and equivalent to an indicator rank of 6.



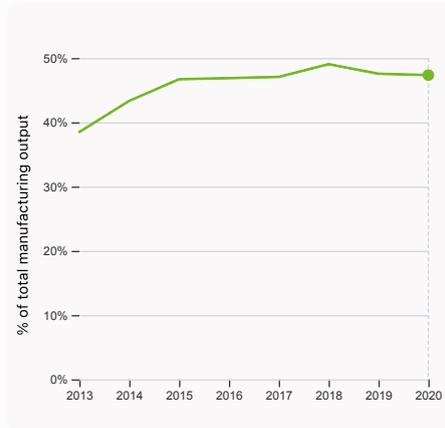
6.2.2 Unicorn valuation, % GDP

was equal to 2.2 % GDP in 2023 – and equivalent to an indicator rank of 16.



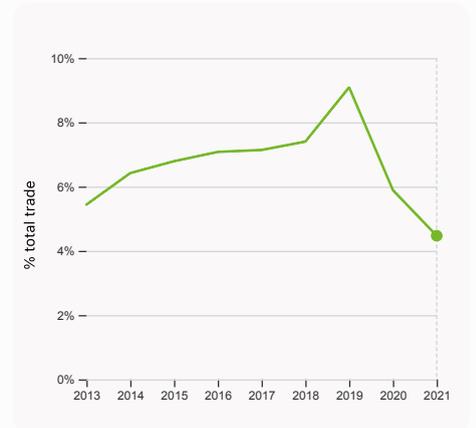
6.2.3 Software spending, % GDP

was equal to 0.654% GDP in 2022, up by 0.15 percentage points from the year prior – and equivalent to an indicator rank of 11.



6.2.4 High-tech manufacturing, %

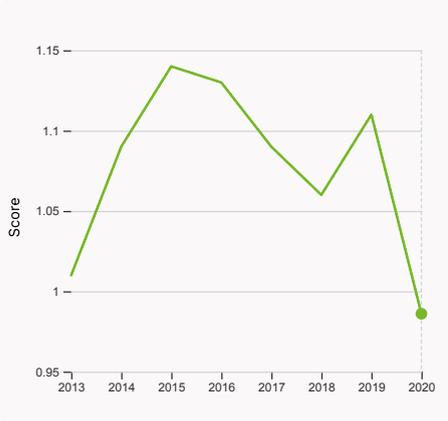
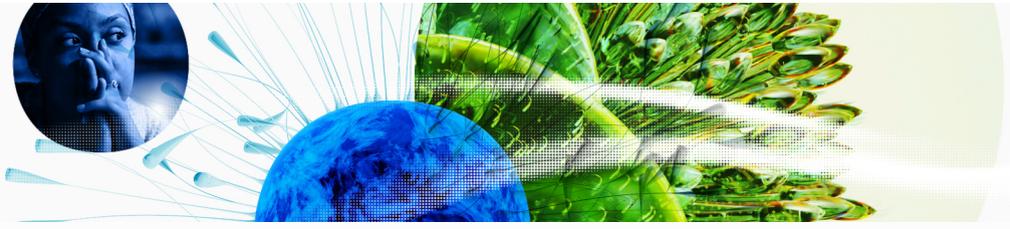
was equal to 47.35% of total manufacturing output in 2020, down by 0.21 percentage points from the year prior – and equivalent to an indicator rank of 15.



6.3.1 Intellectual property receipts, % total trade

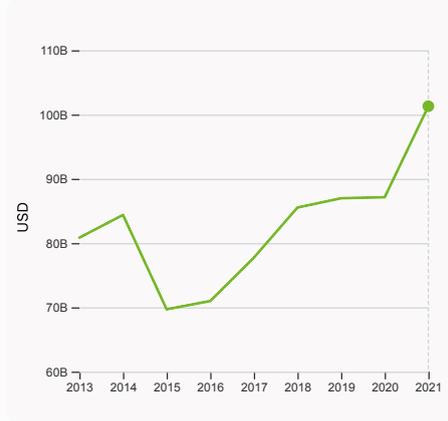
was equal to 4.47% total trade in 2021, down by 1.42 percentage points from the year prior – and equivalent to an indicator rank of 1.

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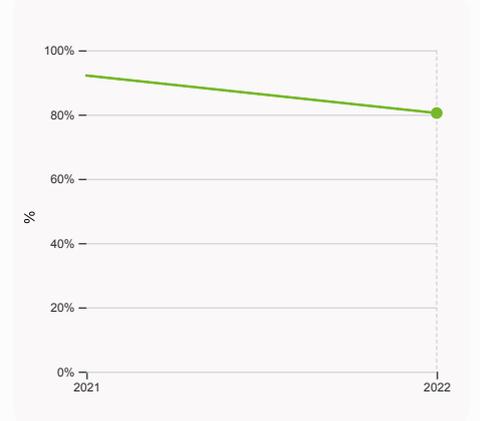
6.3.2 Production and export complexity

was equal to a score of 0.986 in 2020, down by 11.17% from the year prior – and equivalent to an indicator rank of 28.



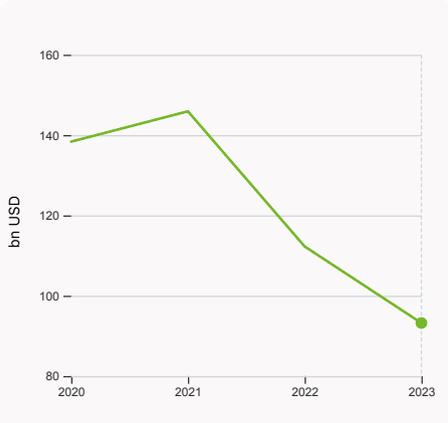
6.3.3 High-tech exports

was equal to 101,298,569,859 USD in 2021, up by 16.24% from the year prior – and equivalent to an indicator rank of 14.



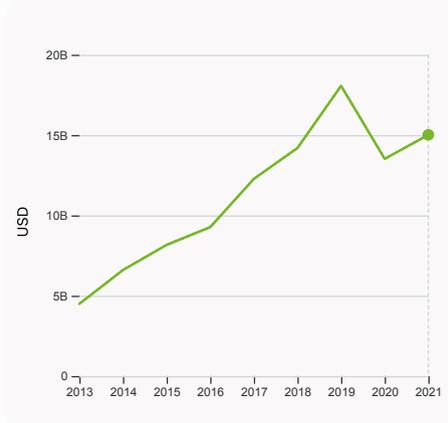
7.1.1 Intangible asset intensity, top 15, %

was equal to 80.48% in 2022, down by 11.67 percentage points from the year prior – and equivalent to an indicator rank of 6.



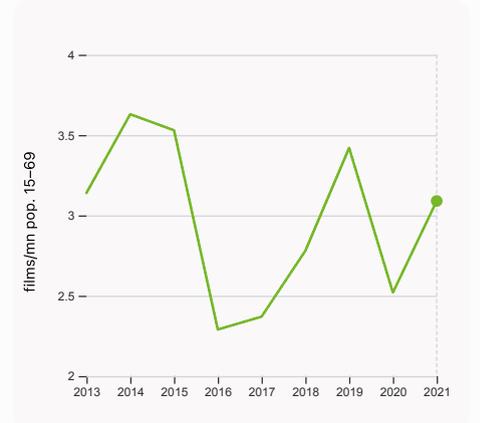
7.1.3 Global brand value, top 5,000

was equal to 93.216 bn USD in 2023, down by 16.97% from the year prior – and equivalent to an indicator rank of 21.



7.2.1 Cultural and creative services exports

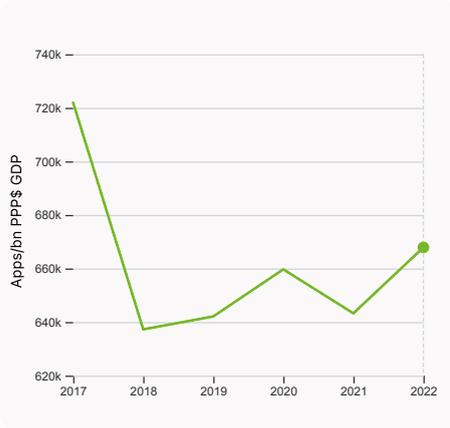
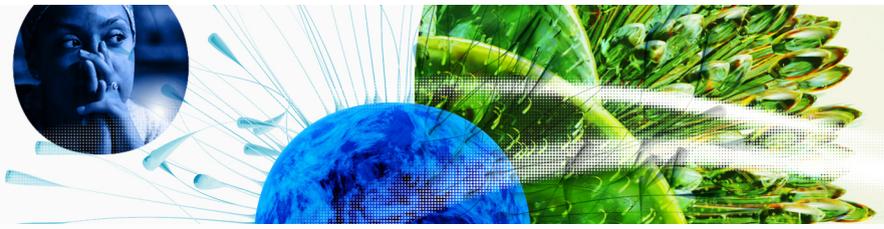
was equal to 15,017,098,000 USD in 2021, up by 11.053% from the year prior – and equivalent to an indicator rank of 14.



7.2.2 National feature films/mn pop. 15-69

was equal to 3.09 films/mn pop. 15-69 in 2021, up by 22.62% from the year prior – and equivalent to an indicator rank of 38.

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7.3.4 Mobile app creation/bn PPP\$ GDP

was equal to 667,881.74 Apps/bn PPP\$ GDP in 2022, up by 3.83% from the year prior – and equivalent to an indicator rank of 34.

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→ Netherlands (Kingdom of the)'s innovation top performers

> 2.3.3 Global corporate R&D investors from Netherlands (Kingdom of the)

Rank	Firm	Industry	R&D	R&D Growth	R&D Intensity
			[mn EUR]	[%]	[%]
29	STELLANTIS	Automobiles & Parts	5,889	52	4
60	AIRBUS	Aerospace & Defence	2,898	-2	6
72	ASML HOLDING	Technology Hardware & Equipment	2,431	18	13
109	NXP SEMICONDUCTORS	Technology Hardware & Equipment	1,708	15	17

Source: European Commission's Joint Research Centre (<https://iri.jrc.ec.europa.eu/scoreboard/2022-eu-industrial-rd-investment-scoreboard>).

Note: European Commission's Joint Research Centre ranks the top 2,500 firms by R&D investment annually.

> 2.3.4 QS university ranking of Netherlands (Kingdom of the)'s top universities

Rank	University	Score
58	UNIVERSITY OF AMSTERDAM	71.10
61	DELFT UNIVERSITY OF TECHNOLOGY	70.00
112	UTRECHT UNIVERSITY	56.30

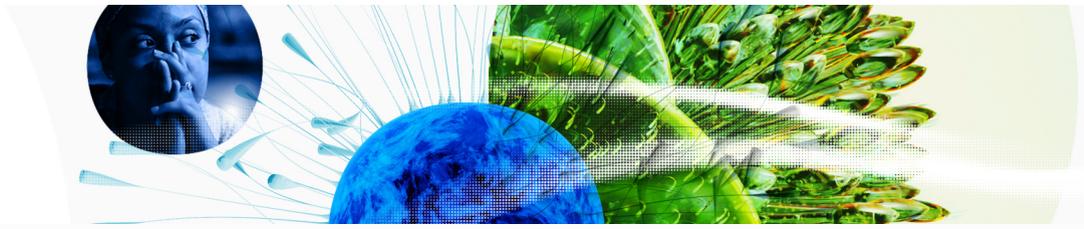
Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2023>).

Note: QS Quacquarelli Symonds Ltd annually assesses over 1,200 universities across the globe and scores them between [0,100]. Ranks can represent a single value "x", a tie "x=" or a range "x-y".

> 6.2.2 Top Unicorn Companies in Netherlands (Kingdom of the)

Rank	Unicorn Company	Industry	City	Valuation, bn USD
1	MOLLIE	Fintech	Amsterdam	7
2	MAMBU	Fintech	Amsterdam	6
3	MESSAGEBIRD	Mobile & telecommunications	Amsterdam	4

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



> 7.1.1 Top 15 intangible-asset intensive companies in Netherlands (Kingdom of the)

Rank	Firm	Intensity, %
1	ASML HOLDING NV	97.21
2	HEINEKEN NV	80.97
3	NXP SEMICONDUCTORS NV	94.57

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

> 7.1.3 Top 5,000 companies in Netherlands (Kingdom of the) with highest global brand value

Rank	Brand	Industry	Brand Value, mn USD
1	ING	Banking	9,711.9
2	PHILIPS	Pharma	8,468.7
3	HEINEKEN	Beers	7,593.6

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

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GII 2023 rank

7

Netherlands (Kingdom of the)

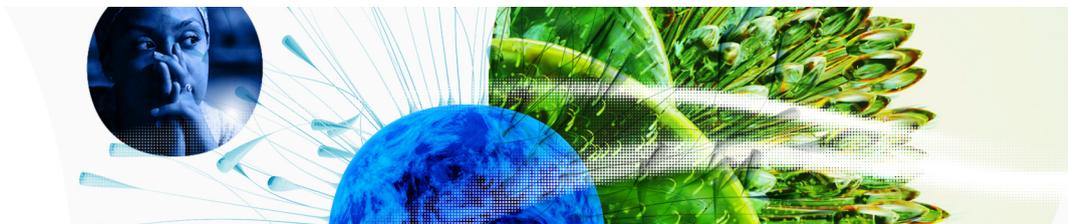
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
5	10	High	EUR	17.6	1,226.7	69,714.5

Score / Value Rank

Score / Value Rank

Institutions	82.3	6	◆◆	Business sophistication	62.3	8
1.1 Institutional environment	79.2	12		5.1 Knowledge workers	65.8	13
1.1.1 Operational stability for businesses*	72.9	20		5.1.1 Knowledge-intensive employment, %	53.6	4 ◆◆
1.1.2 Government effectiveness*	85.5	6	◆◆	5.1.2 Firms offering formal training, %	54.1	14
1.2 Regulatory environment	86.8	15		5.1.3 GERD performed by business, % GDP	1.5	16
1.2.1 Regulatory quality*	87.6	7		5.1.4 GERD financed by business, %	56.9	18
1.2.2 Rule of law*	90.7	10		5.1.5 Females employed w/advanced degrees, %	23.2	24
1.2.3 Cost of redundancy dismissal	15.9	65	○	5.2 Innovation linkages	65.5	7
1.3 Business environment	80.8	5	◆◆	5.2.1 University-industry R&D collaboration†	87.9	4 ◆◆
1.3.1 Policies for doing business†	77.7	13		5.2.2 State of cluster development†	83.9	6
1.3.2 Entrepreneurship policies and culture†	83.9	4	◆◆	5.2.3 GERD financed by abroad, % GDP	0.2	14
Human capital and research	55.7	13		5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	22
2.1 Education	62.9	19		5.2.5 Patent families/bn PPP\$ GDP	4.4	9
2.1.1 Expenditure on education, % GDP	5.2	34	●	5.3 Knowledge absorption	55.6	10
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.1	41	○	5.3.1 Intellectual property payments, % total trade	6.1	1 ◆◆
2.1.3 School life expectancy, years	18.9	8		5.3.2 High-tech imports, % total trade	12.0	21
2.1.4 PISA scales in reading, maths and science	502.5	15		5.3.3 ICT services imports, % total trade	2.9	21
2.1.5 Pupil-teacher ratio, secondary	13.9	70	○◇	5.3.4 FDI net inflows, % GDP	-13.2	132 ○◇
2.2 Tertiary education	41.3	32		5.3.5 Research talent, % in businesses	70.2	6
2.2.1 Tertiary enrolment, % gross	92.0	11		Knowledge and technology outputs	58.8	8
2.2.2 Graduates in science and engineering, %	18.8	82	○◇	6.1 Knowledge creation	66.7	4 ◆◆
2.2.3 Tertiary inbound mobility, %	13.3	16		6.1.1 Patents by origin/bn PPP\$ GDP	7.9	10
2.3 Research and development (R&D)	63.0	11		6.1.2 PCT patents by origin/bn PPP\$ GDP	3.3	9
2.3.1 Researchers, FTE/mn pop.	6,069.3	10		6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.2 Gross expenditure on R&D, % GDP	2.3	15		6.1.4 Scientific and technical articles/bn PPP\$ GDP	n/a	n/a
2.3.3 Global corporate R&D investors, top 3, mn US\$	82.0	8		6.1.5 Citable documents H-index	70.2	6 ◆◆
2.3.4 QS university ranking, top 3*	66.7	13		6.2 Knowledge impact	50.9	14
Infrastructure	60.2	14		6.2.1 Labor productivity growth, %	-0.1	104 ○
3.1 Information and communication technologies (ICTs)	92.1	8		6.2.2 Unicorn valuation, % GDP	2.2	16
3.1.1 ICT access*	91.3	19		6.2.3 Software spending, % GDP	0.7	11
3.1.2 ICT use*	91.4	18		6.2.4 High-tech manufacturing, %	47.4	15
3.1.3 Government's online service*	89.2	11		6.3 Knowledge diffusion	58.9	7
3.1.4 E-participation*	96.5	5	◆◆	6.3.1 Intellectual property receipts, % total trade	6.5	1 ◆◆
3.2 General infrastructure	47.3	24		6.3.2 Production and export complexity	73.2	28
3.2.1 Electricity output, GWh/mn pop.	6,930.9	28		6.3.3 High-tech exports, % total trade	11.8	14
3.2.2 Logistics performance*	90.9	3	◆◆	6.3.4 ICT services exports, % total trade	4.2	25
3.2.3 Gross capital formation, % GDP	21.4	87	○	6.3.5 ISO 9001 quality/bn PPP\$ GDP	8.4	32
3.3 Ecological sustainability	41.3	29		Creative outputs	56.3	9
3.3.1 GDP/unit of energy use	13.3	35		7.1 Intangible assets	50.7	24
3.3.2 Environmental performance*	74.1	11		7.1.1 Intangible asset intensity, top 15, %	80.5	6
3.3.3 ISO 14001 environment/bn PPP\$ GDP	2.2	41		7.1.2 Trademarks by origin/bn PPP\$ GDP	49.7	46 ○
Market sophistication	55.6	15		7.1.3 Global brand value, top 5,000	9.1	21
4.1 Credit	63.1	13		7.1.4 Industrial designs by origin/bn PPP\$ GDP	3.6	27
4.1.1 Finance for startups and scaleups†	88.4	3	◆◆	7.2 Creative goods and services	36.6	19
4.1.2 Domestic credit to private sector, % GDP	101.3	28		7.2.1 Cultural and creative services exports, % total trade	1.8	14
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a		7.2.2 National feature films/mn pop. 15-69	3.1	38 ○
4.2 Investment	33.5	19		7.2.3 Entertainment and media market/th pop. 15-69	49.8	18
4.2.1 Market capitalization, % GDP	109.9	12	●	7.2.4 Creative goods exports, % total trade	3.5	16
4.2.2 Venture capital (VC) investors, deals/bn PPP\$ GDP	0.4	16		7.3 Online creativity	87.2	1 ◆◆
4.2.3 VC recipients, deals/bn PPP\$ GDP	0.1	23		7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	92.4	5 ◆◆
4.2.4 VC received, value, % GDP	0.0	20		7.3.2 Country-code TLDs/th pop. 15-69	100.0	1 ◆◆
4.3 Trade, diversification, and market scale	70.1	20		7.3.3 GitHub commits/mn pop. 15-69	82.8	4 ◆◆
4.3.1 Applied tariff rate, weighted avg., %	1.5	20	○	7.3.4 Mobile app creation/bn PPP\$ GDP	73.7	34
4.3.2 Domestic industry diversification	93.7	37				
4.3.3 Domestic market scale, bn PPP\$	1,226.7	27				

NOTES: ● indicates a strength; ○ a weakness; ◆ an income group strength; ◇ an income group weakness; * an index; † a survey question; ● indicates that the economy's data are older than the base year; see appendices for details, including the year of the data, at <https://www.wipo.int/gii-ranking>. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.



→ Data availability

The following tables list indicators that are either missing or outdated for Netherlands (Kingdom of the).



> Netherlands (Kingdom of the) has missing data for two indicators and outdated data for two indicators.

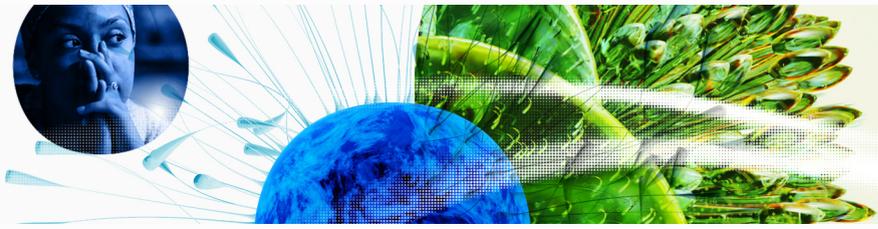
> Missing data for Netherlands (Kingdom of the)

Code	Indicator name	Economy Year	Model Year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2021	International Monetary Fund, Financial Access Survey (FAS)
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2021	World Intellectual Property Organization; International Monetary Fund

> Outdated data for Netherlands (Kingdom of the)

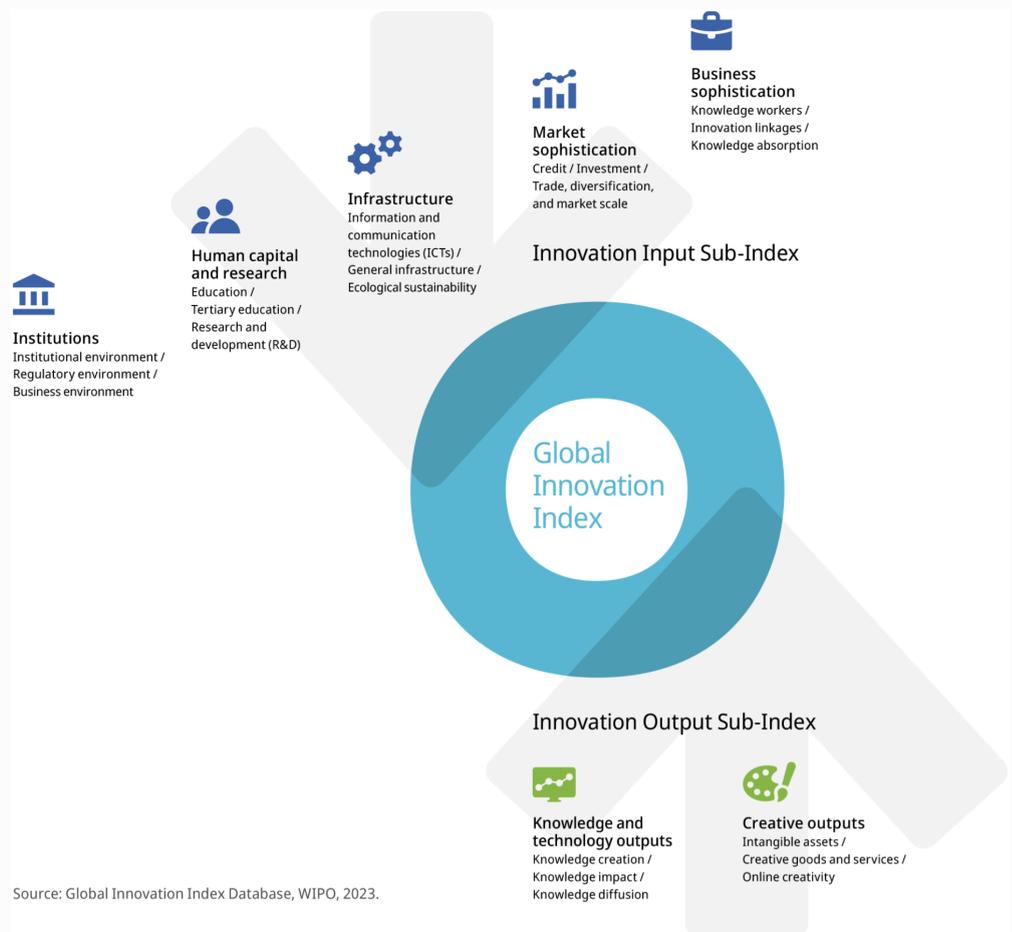
Code	Indicator name	Economy Year	Model Year	Source
2.1.1	Expenditure on education, % GDP	2019	2021	UNESCO Institute for Statistics
4.2.1	Market capitalization, % GDP	2017	2020	World Federation of Exchanges; World Bank

Global Innovation Index 2023



→ About the Global Innovation Index

- The Global Innovation Index (GII) is published by the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations.
- Recognizing that innovation is a key driver of economic development, the GII aims to provide an innovation ranking and rich analysis referencing around 130 economies. Over the last decade, the GII has established itself as both a leading reference on innovation and a “tool for action” for economies that incorporate the GII into their innovation agendas.



The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that include institutions, human capital and research, infrastructure, credit, investment, linkages; the creation, absorption and diffusion of knowledge; and creative outputs.

The GII has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, and seven pillars, each consisting of three sub-pillars.