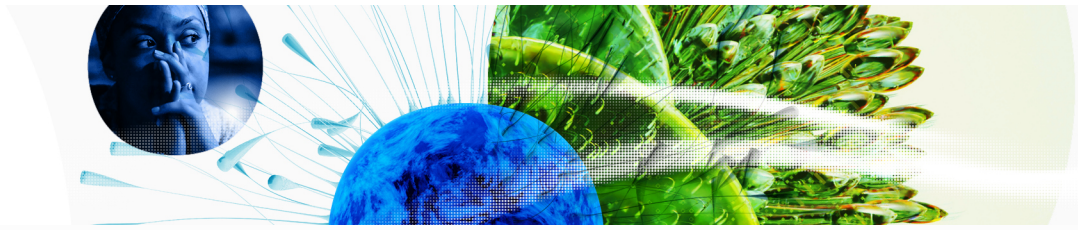
Global Innovation Index 2023



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.

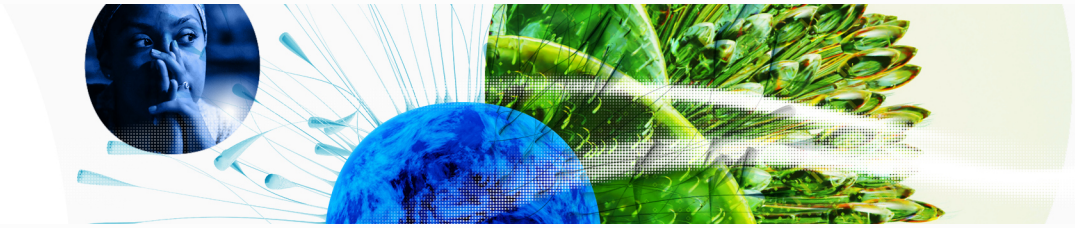
	GII Position	Innovation Inputs	Innovation Outputs
2020	5th	11th	4th
2021	6th	12th	3rd
2022	5th	10th	6th
2023	7th	10th	5th

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.

Global Innovation Index 2023

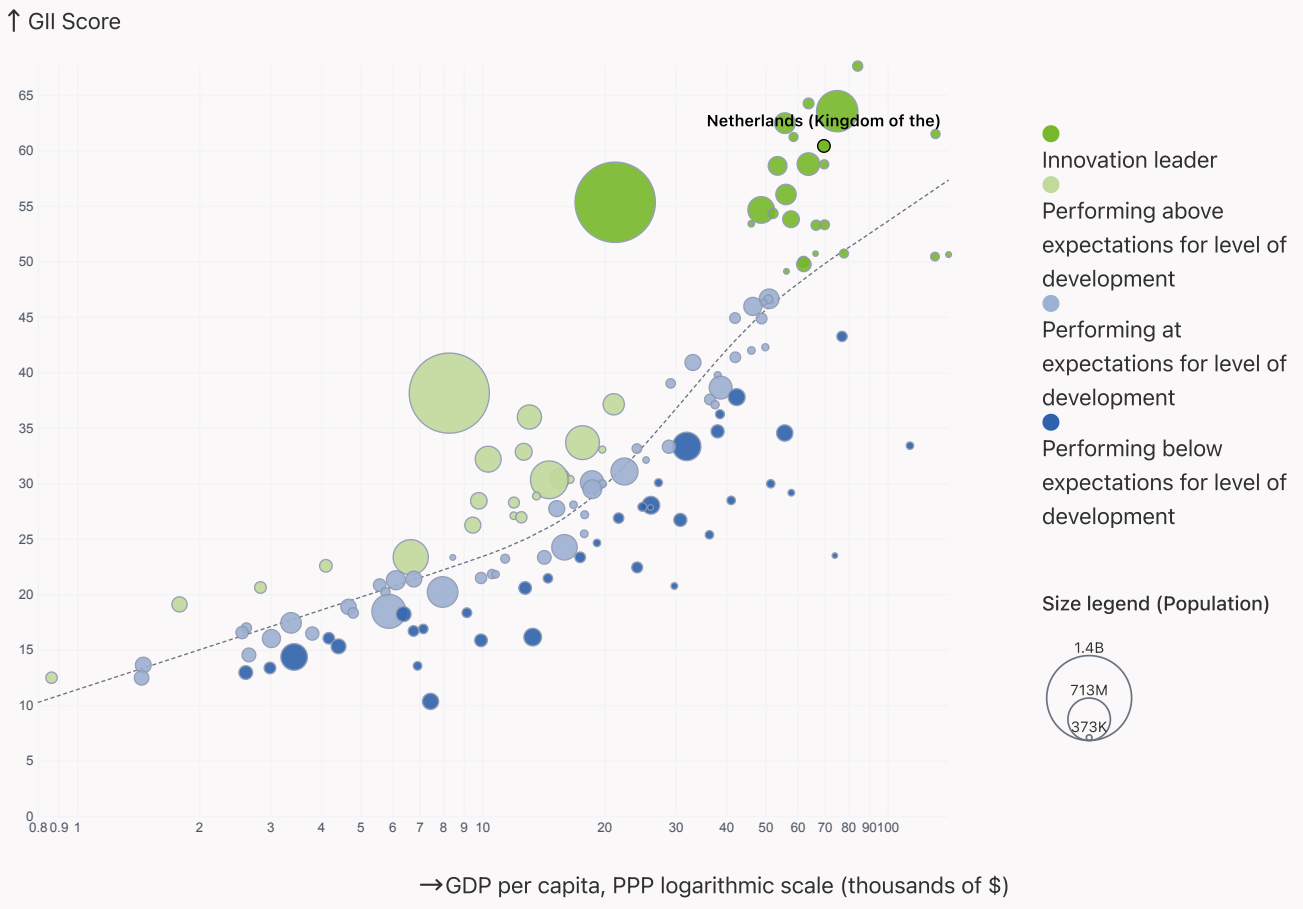


→ Expected vs. observed innovation performance

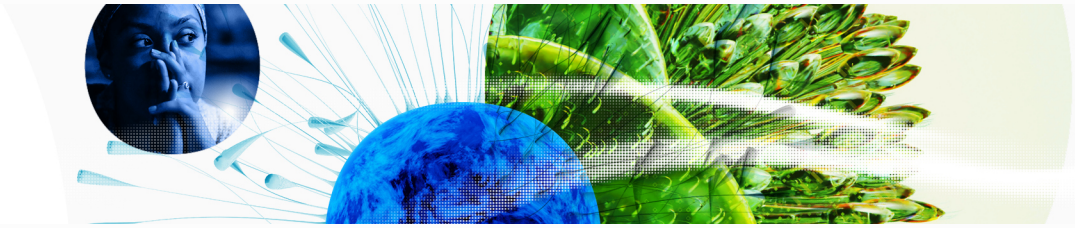
The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected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



Global Innovation Index 2023

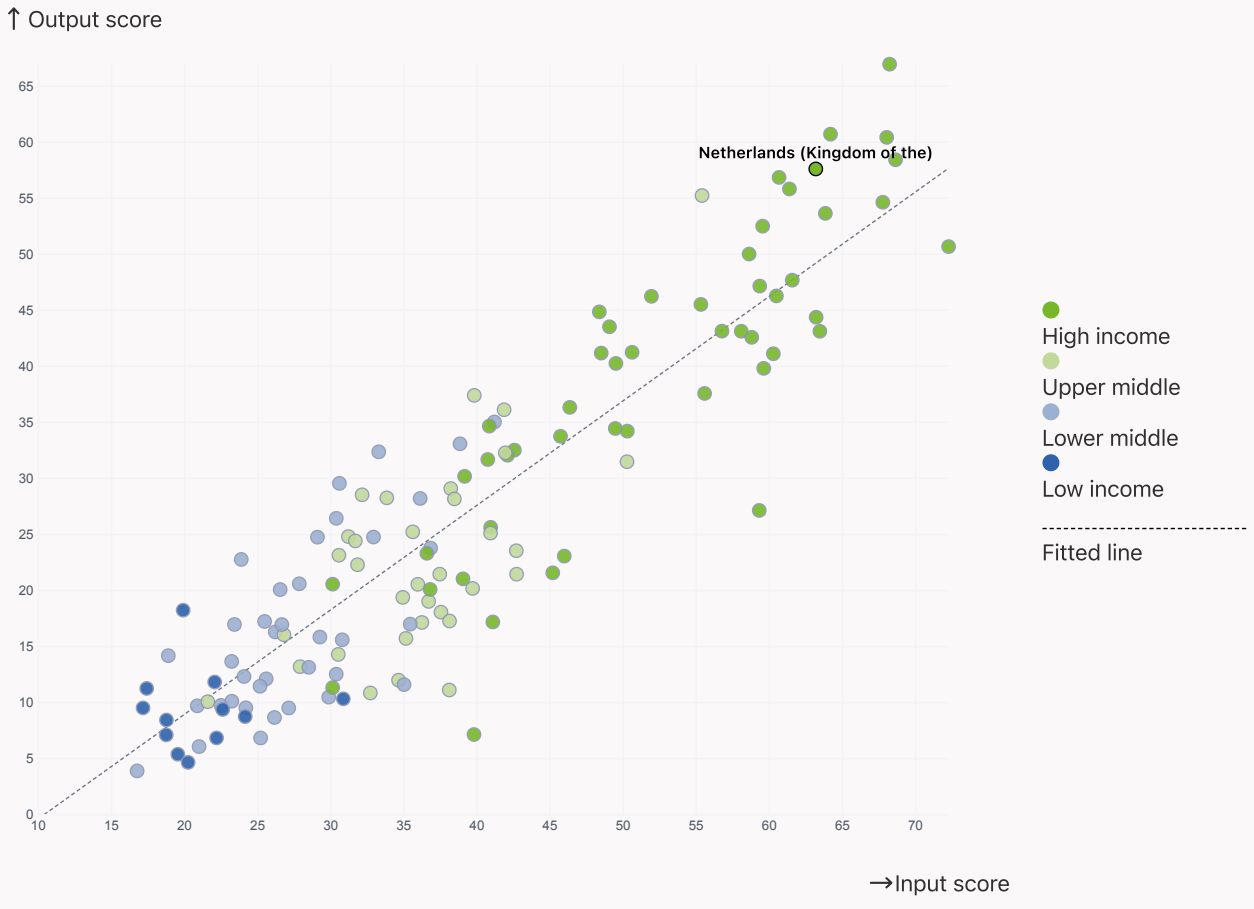


→ Effectively translating innovation investments into innovation outputs

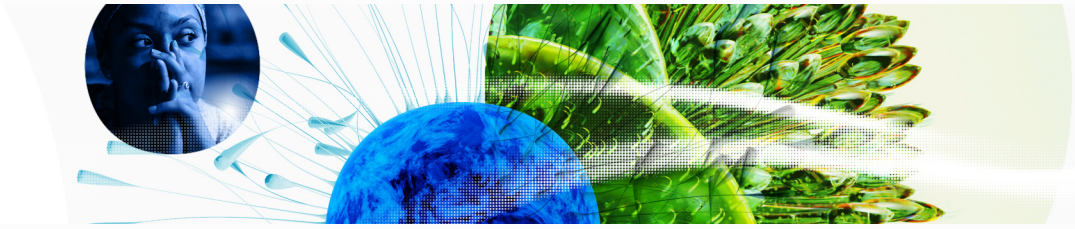
The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

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

> Relationship between innovation inputs and outputs

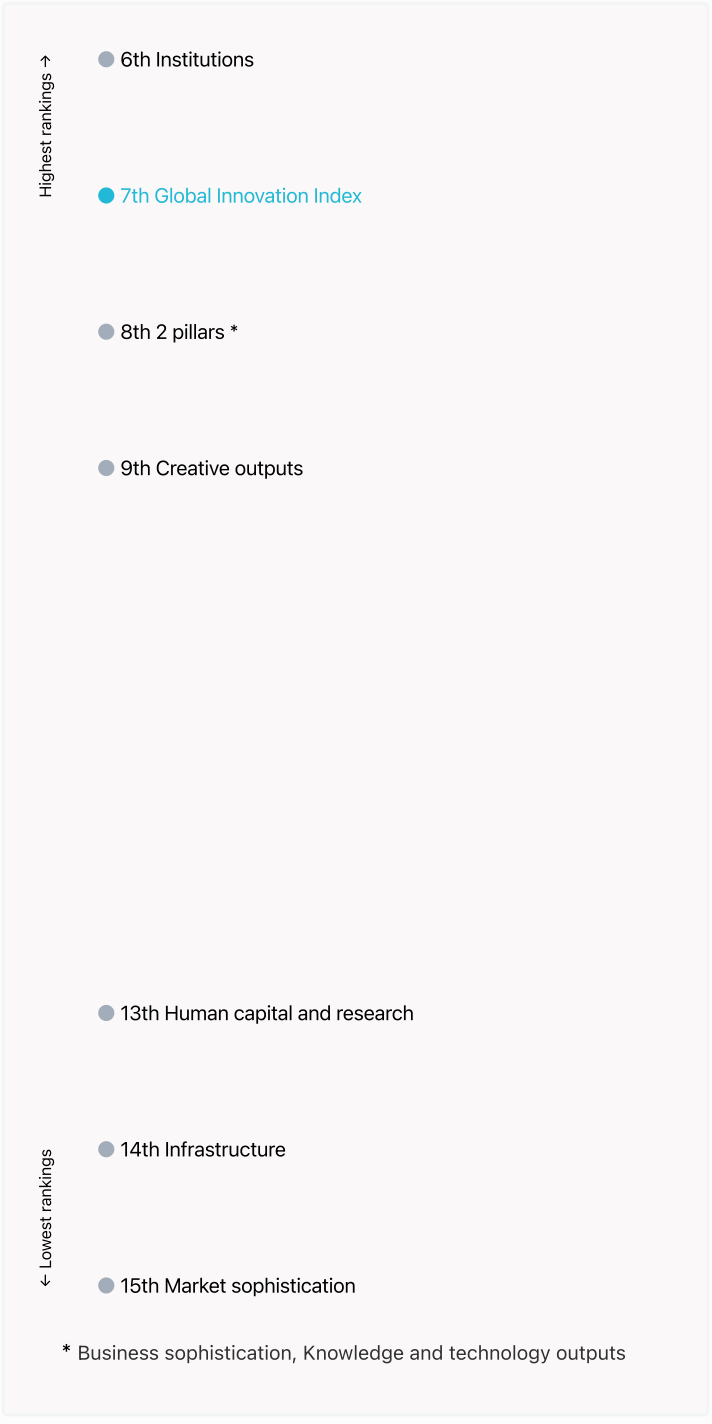


Global Innovation Index 2023



→ 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

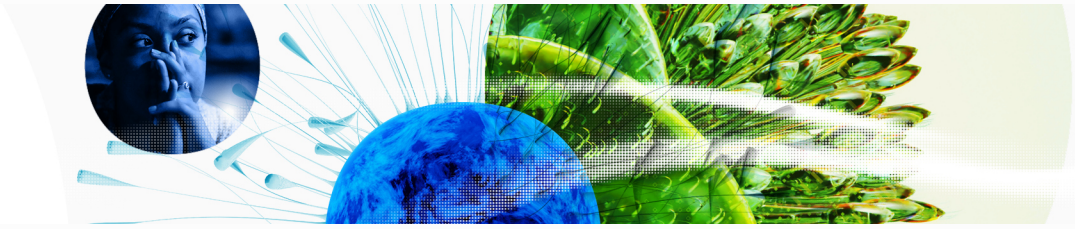
Netherlands (Kingdom of the) ranks highest in Institutions (6th).

> 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.

Global Innovation Index 2023



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

The charts shows 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

- Top 10 | Score: 58.96
- Netherlands | Score: 58.83
- Europe | Score: 38.80
- High income | Score: 38.62

Creative outputs

- Netherlands | 56.29
- Top 10 | 56.09
- High income | 40.27
- Europe | 39.87

Business sophistication

- Top 10 | 64.39
- Netherlands | 62.31
- High income | 46.38
- Europe | 44.61

Market sophistication

- Top 10 | 61.93
- Netherlands | 55.58
- High income | 46.42
- Europe | 43.65

Human capital and research

- Top 10 | 60.28
- Netherlands | 55.73
- High income | 46.30
- Europe | 44.05

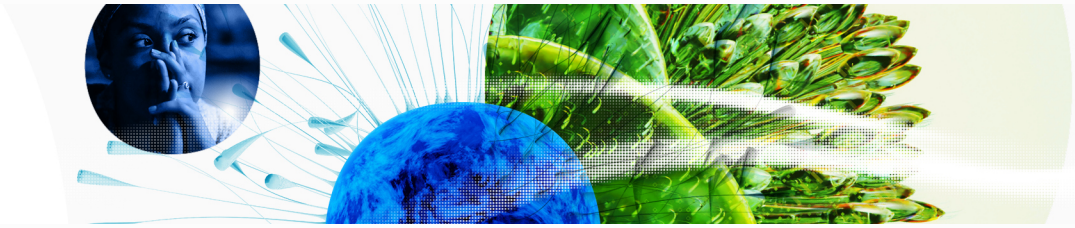
Infrastructure

- Top 10 | 62.83
- Netherlands | 60.23
- High income | 55.85
- Europe | 54.69

Institutions

- Netherlands | 82.26
- Top 10 | 79.85
- High income | 68.16
- Europe | 61.69

Global Innovation Index 2023



→ 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).

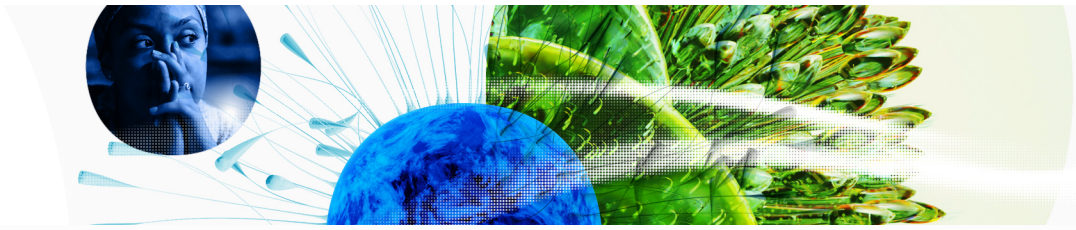
Strengths

Rank	Code	Indicator name
1	7.3.2	Country-code TLDs/th pop. 15-69
1	5.3.1	Intellectual property payments, % total trade
1	6.3.1	Intellectual property receipts, % total trade
3	4.1.1	Finance for startups and scaleups
3	3.2.2	Logistics performance
4	1.3.2	Entrepreneurship policies and culture
4	7.3.3	GitHub commits/mn pop. 15-69
4	5.1.1	Knowledge-intensive employment, %
4	5.2.1	University-industry R&D collaboration
5	3.1.4	E-participation
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

Weaknesses

Rank	Code	Indicator name
132	5.3.4	FDI net inflows, % GDP
104	6.2.1	Labor productivity growth, %
87	3.2.3	Gross capital formation, % GDP
82	2.2.2	Graduates in science and engineering, %
70	2.1.5	Pupil-teacher ratio, secondary
65	1.2.3	Cost of redundancy dismissal
46	7.1.2	Trademarks by origin/bn PPP$ GDP
41	2.1.2	Government funding/pupil, secondary, % GDP/cap
38	7.2.2	National feature films/mn pop. 15-69
20	4.3.1	Applied tariff rate, weighted avg., %

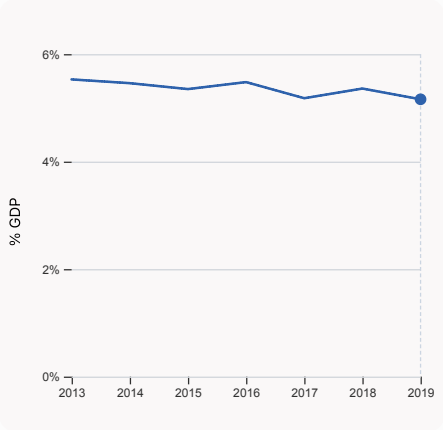
Global Innovation Index 2023



→ Netherlands (Kingdom of the)'s innovation system

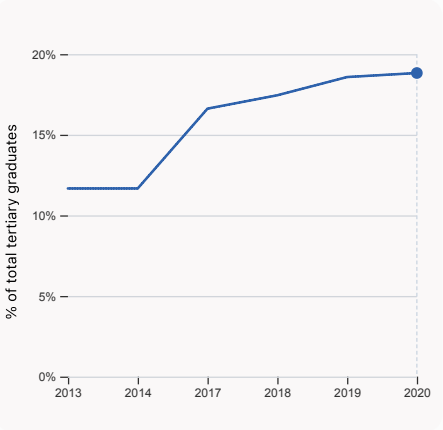
As far as practicable, the plots below present unscaled indicator data.

> Innovation inputs in Netherlands (Kingdom of the)



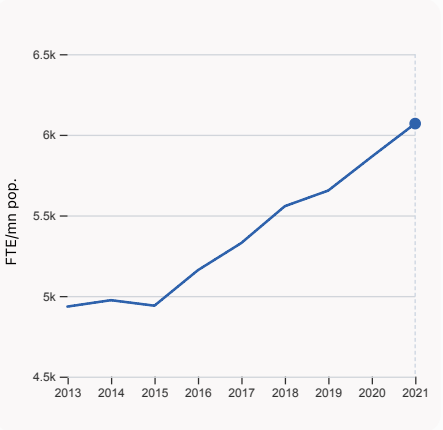
2.1.1 Expenditure on education, % GDP

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.



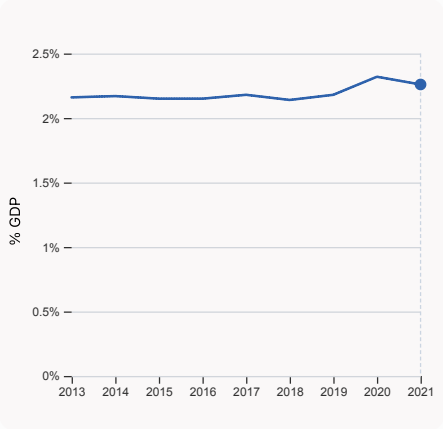
2.2.2 Graduates in science and engineering, %

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.



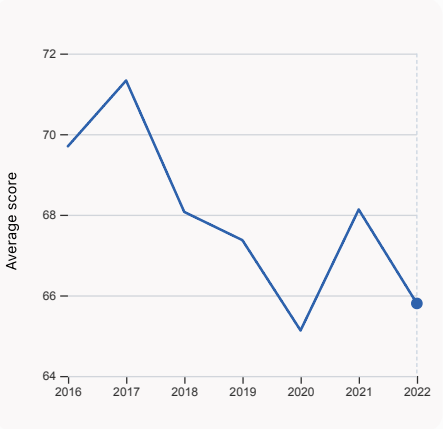
2.3.1 Researchers, FTE/mn pop.

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.



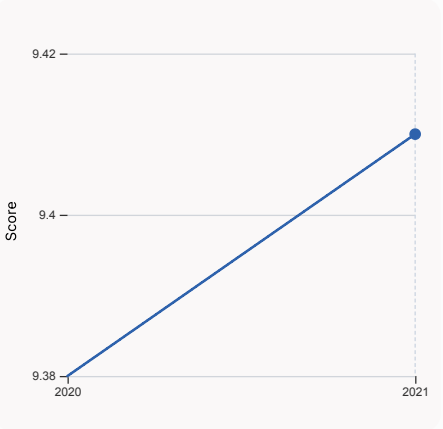
2.3.2 Gross expenditure on R&D, % GDP

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

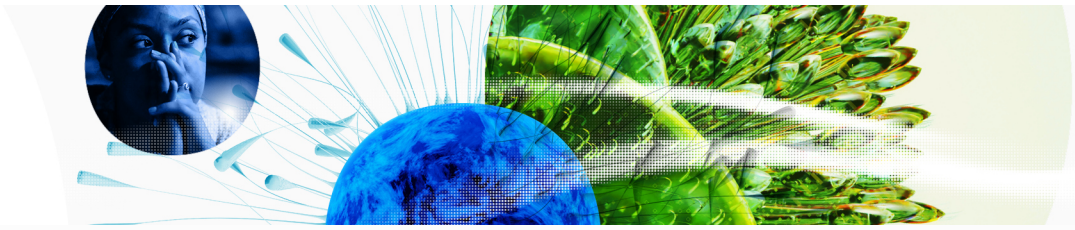
was equal to an average score of 65.8 for the top 3 universities in 2022, down by 3.42% from the year prior – and equivalent to an indicator rank of 13.

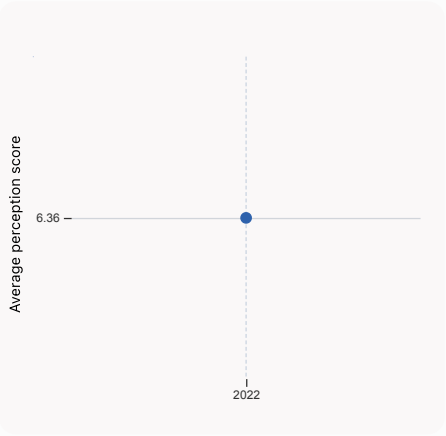


3.1.1 ICT access

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.

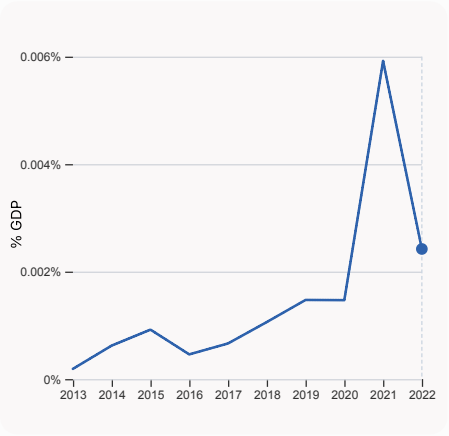
Global Innovation Index 2023





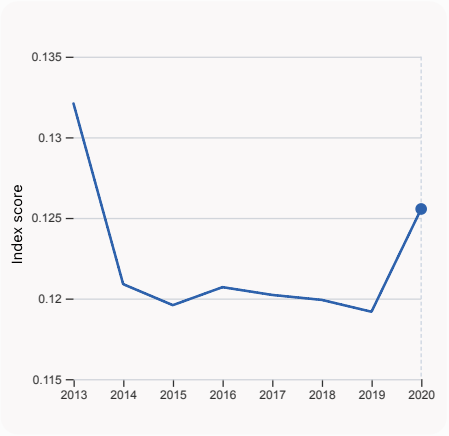
4.1.1 Finance for startups and scaleups

was equal to an average perception score of 6.36 in 2022, equivalent to an indicator rank of 3.



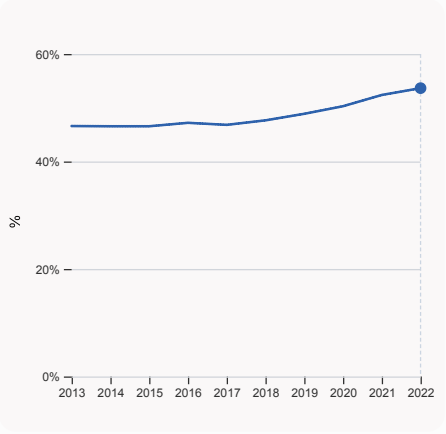
4.2.4 VC received, value, % GDP

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

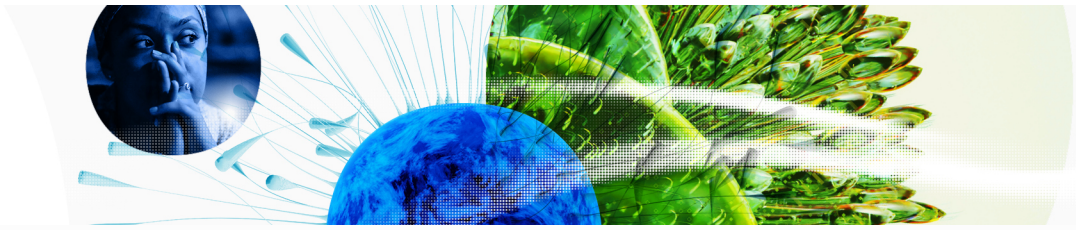
was equal to an index score of 0.126 in 2020, up by 5.35% from the year prior – and equivalent to an indicator rank of 37.



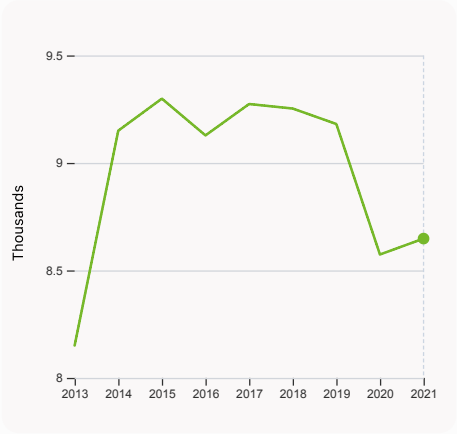
5.1.1 Knowledge-intensive employment, %

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.

Global Innovation Index 2023

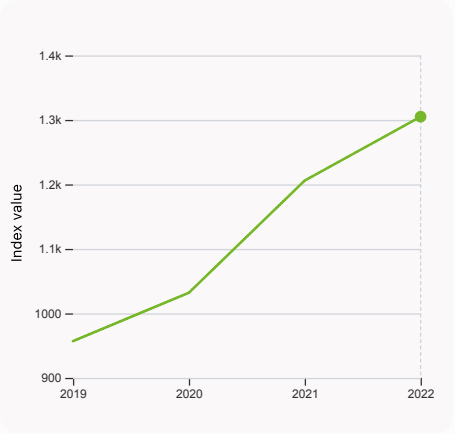


> Innovation outputs in Netherlands (Kingdom of the)



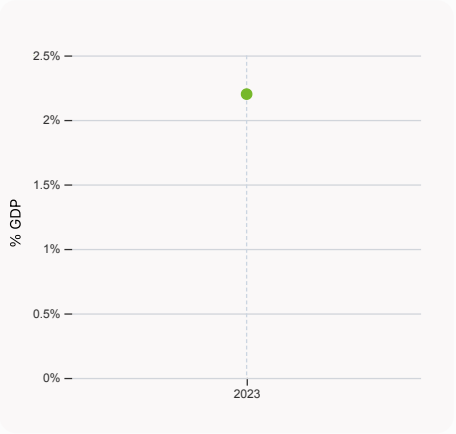
6.1.1 Patents by origin

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



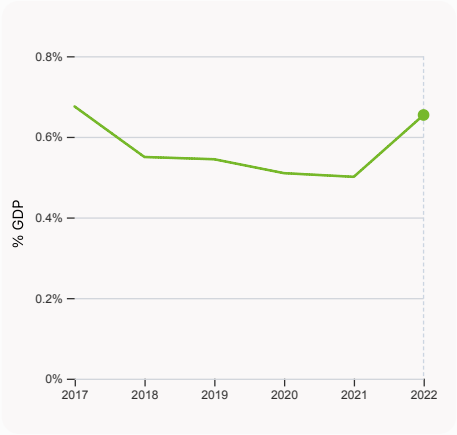
6.1.5 Citable documents H-index

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.



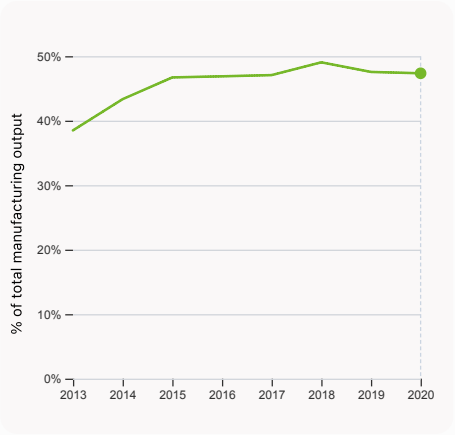
6.2.2 Unicorn valuation, % GDP

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



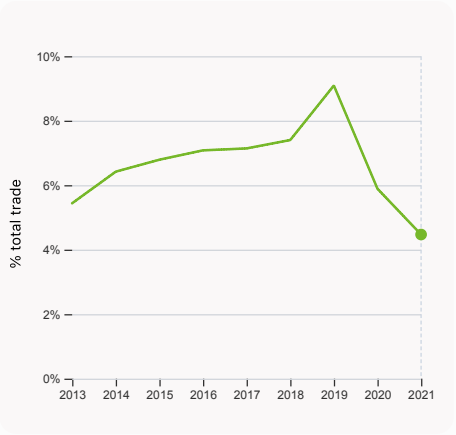
6.2.3 Software spending, % GDP

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, %

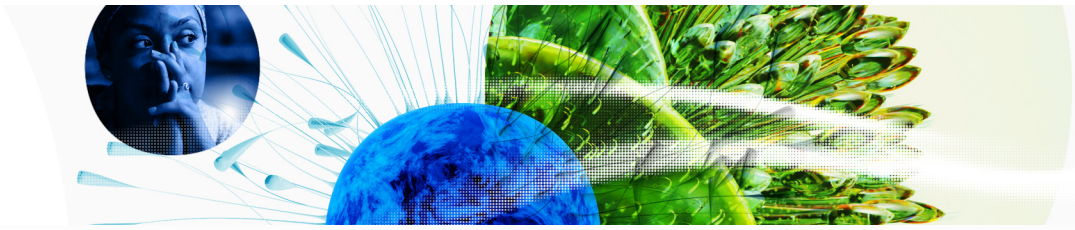
was equal to 47.35% of total manufacturing output in 2020, down by 0.21 percentage points from the year prior – and equivalent to an indicator rank of 15.

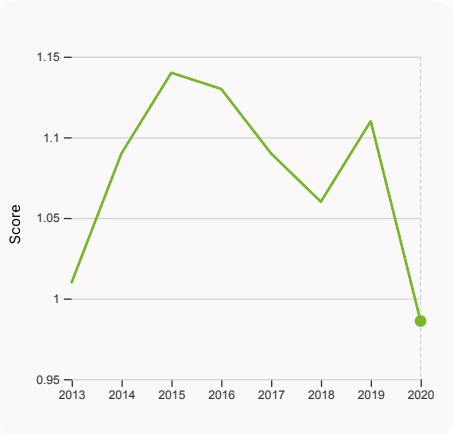


6.3.1 Intellectual property receipts, % total trade

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.

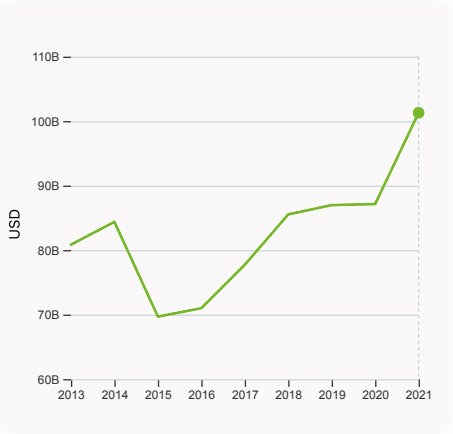
Global Innovation Index 2023





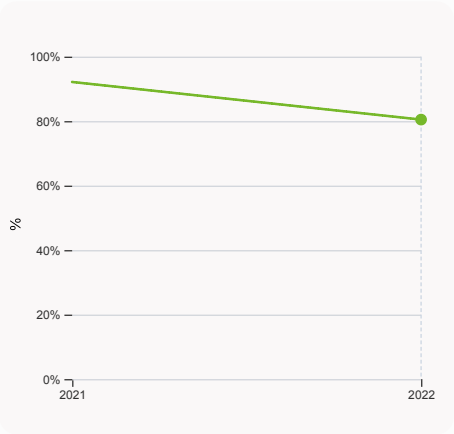
6.3.2 Production and export complexity

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.



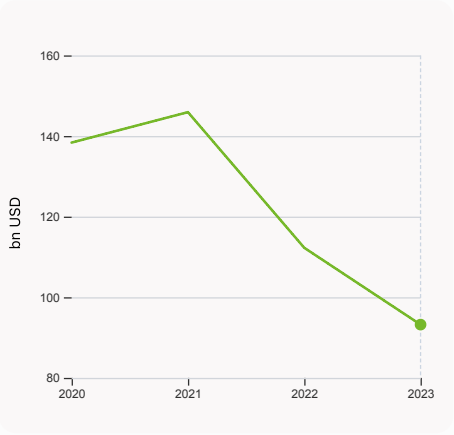
6.3.3 High-tech exports

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.



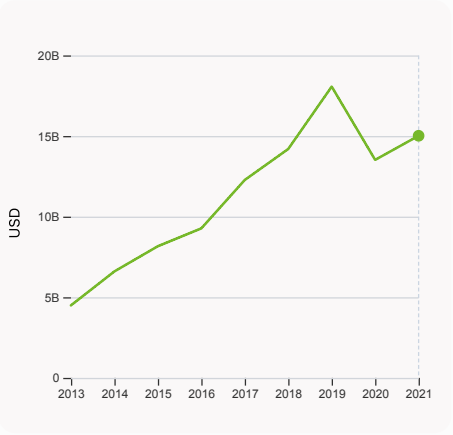
7.1.1 Intangible asset intensity, top 15, %

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.



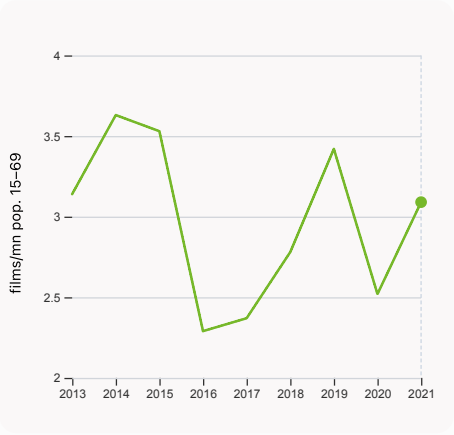
7.1.3 Global brand value, top 5,000

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

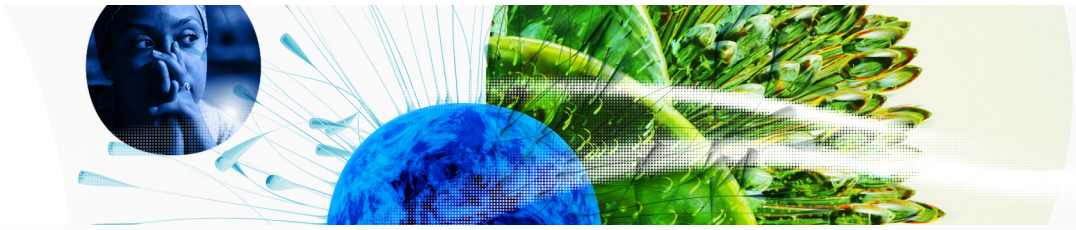
was equal to 15,017,098,000 USD in 2021, up by 11.053% from the year prior – and equivalent to an indicator rank of 14.

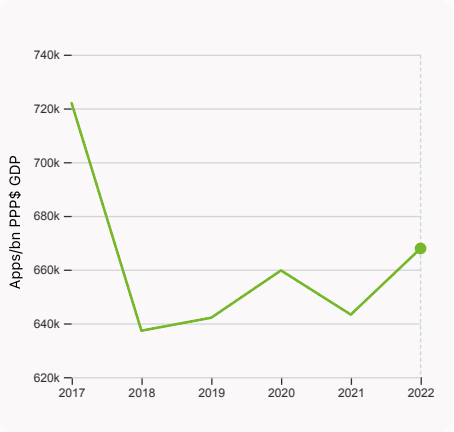


7.2.2 National feature films/mn pop. 15-69

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.

Global Innovation Index 2023

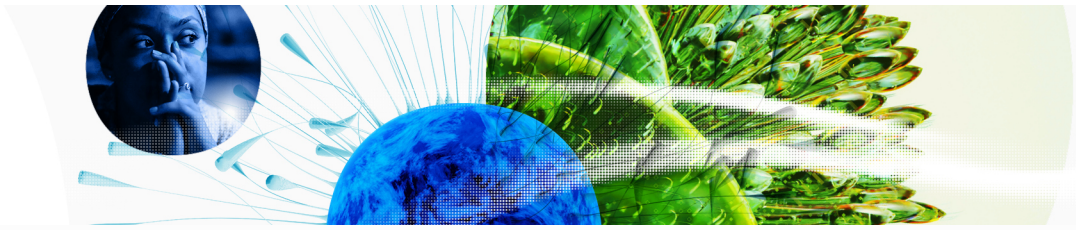




7.3.4 Mobile app creation/bn PPP$ GDP

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.

Global Innovation Index 2023



→ 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

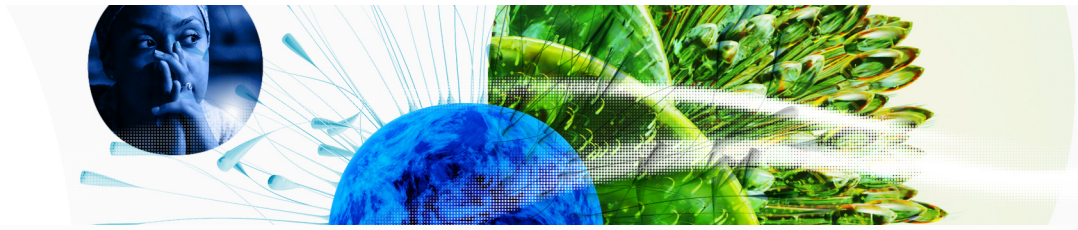
Rank	University	Score
58	UNIVERSITY OF AMSTERDAM	71.10
61	DELFT UNIVERSITY OF TECHNOLOGY	70.00
112	UTRECHT UNIVERSITY	56.30

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

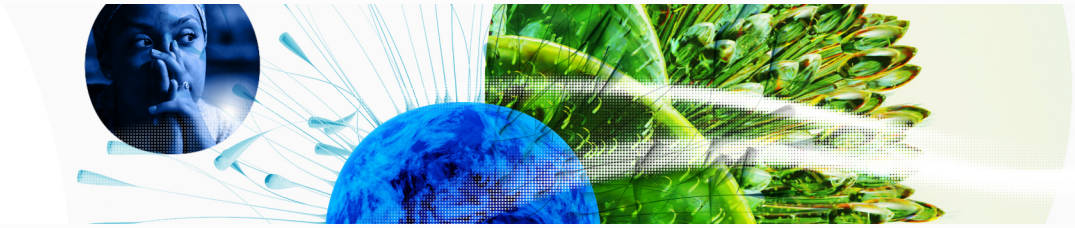
Source: Brand Finance (https://brandirectory.com/reports/gift-2022).
Note: Brand Finance only provides within economy ranks.

> 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.

Global Innovation Index 2023



GII 2023 rank

Netherlands (Kingdom of the) 7

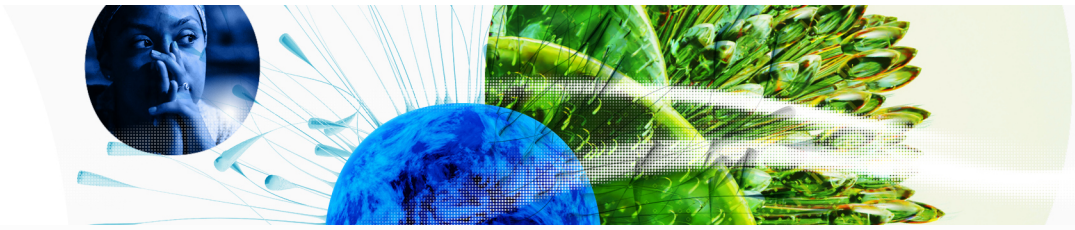
Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
5	10	High	EUR	17.6	1,226.7	69,714.5

	Score / Value	Rank
Institutions	**82.3**	**6**
1.1 Institutional environment	**79.2**	**12**
1.1.1 Operational stability for businesses*	72.9	20
1.1.2 Government effectiveness*	85.5	6 ●
1.2 Regulatory environment	**86.8**	**15**
1.2.1 Regulatory quality*	87.6	7
1.2.2 Rule of law*	90.7	10
1.2.3 Cost of redundancy dismissal	15.9	65 ○
1.3 Business environment	**80.8**	**5**
1.3.1 Policies for doing business†	77.7	13
1.3.2 Entrepreneurship policies and culture†	83.9	4 ●
Human capital and research	**55.7**	**13**
2.1 Education	**62.9**	**19**
2.1.1 Expenditure on education, % GDP	5.2	34
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.1	41 ○
2.1.3 School life expectancy, years	18.9	8
2.1.4 PISA scales in reading, maths and science	502.5	15
2.1.5 Pupil-teacher ratio, secondary	13.9	70 ○ ◇
2.2 Tertiary education	**41.3**	**32**
2.2.1 Tertiary enrolment, % gross	92.0	11
2.2.2 Graduates in science and engineering, %	18.8	82 ○ ◇
2.2.3 Tertiary inbound mobility, %	13.3	16
2.3 Research and development (R&D)	**63.0**	**11**
2.3.1 Researchers, FTE/mn pop.	6,069.3	10
2.3.2 Gross expenditure on R&D, % GDP	2.3	15
2.3.3 Global corporate R&D investors, top 3, mn US$	82.0	8
2.3.4 QS university ranking, top 3*	66.7	13
Infrastructure	**60.2**	**14**
3.1 Information and communication technologies (ICTs)	**92.1**	**8**
3.1.1 ICT access*	91.3	19
3.1.2 ICT use*	91.4	18
3.1.3 Government's online service*	89.2	11
3.1.4 E-participation*	96.5	5 ●
3.2 General infrastructure	**47.3**	**24**
3.2.1 Electricity output, GWh/mn pop.	6,930.9	28
3.2.2 Logistics performance*	90.9	3 ●
3.2.3 Gross capital formation, % GDP	21.4	87 ○
3.3 Ecological sustainability	**41.3**	**29**
3.3.1 GDP/unit of energy use	13.3	35
3.3.2 Environmental performance*	74.1	11
3.3.3 ISO 14001 environment/bn PPP$ GDP	2.2	41
Market sophistication	**55.6**	**15**
4.1 Credit	**63.1**	**13**
4.1.1 Finance for startups and scaleups†	88.4	3 ●
4.1.2 Domestic credit to private sector, % GDP	101.3	28
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a
4.2 Investment	**33.5**	**19**
4.2.1 Market capitalization, % GDP	109.9	12
4.2.2 Venture capital (VC) investors, deals/bn PPP$ GDP	0.4	16
4.2.3 VC recipients, deals/bn PPP$ GDP	0.1	23
4.2.4 VC received, value, % GDP	0.0	20
4.3 Trade, diversification, and market scale	**70.1**	**20**
4.3.1 Applied tariff rate, weighted avg., %	1.5	20 ○
4.3.2 Domestic industry diversification	93.7	37
4.3.3 Domestic market scale, bn PPP$	1,226.7	27

	Score / Value	Rank
Business sophistication	**62.3**	**8**
5.1 Knowledge workers	**65.8**	**13**
5.1.1 Knowledge-intensive employment, %	53.6	4 ●
5.1.2 Firms offering formal training, %	54.1	14
5.1.3 GERD performed by business, % GDP	1.5	16
5.1.4 GERD financed by business, %	56.9	18
5.1.5 Females employed w/advanced degrees, %	23.2	24
5.2 Innovation linkages	**65.5**	**7**
5.2.1 University-industry R&D collaboration†	87.9	4 ●
5.2.2 State of cluster development†	83.9	6
5.2.3 GERD financed by abroad, % GDP	0.2	14
5.2.4 Joint venture/strategic alliance deals/bn PPP$ GDP	0.1	22
5.2.5 Patent families/bn PPP$ GDP	4.4	9
5.3 Knowledge absorption	**55.6**	**10**
5.3.1 Intellectual property payments, % total trade	6.1	1 ●
5.3.2 High-tech imports, % total trade	12.0	21
5.3.3 ICT services imports, % total trade	2.9	21
5.3.4 FDI net inflows, % GDP	-13.2	132 ○ ◇
5.3.5 Research talent, % in businesses	70.2	6
Knowledge and technology outputs	**58.8**	**8**
6.1 Knowledge creation	**66.7**	**4**
6.1.1 Patents by origin/bn PPP$ GDP	7.9	10
6.1.2 PCT patents by origin/bn PPP$ GDP	3.3	9
6.1.3 Utility models by origin/bn PPP$ GDP	n/a	n/a
6.1.4 Scientific and technical articles/bn PPP$ GDP	n/a	n/a
6.1.5 Citable documents H-index	70.2	6 ●
6.2 Knowledge impact	**50.9**	**14**
6.2.1 Labor productivity growth, %	-0.1	104 ○
6.2.2 Unicorn valuation, % GDP	2.2	16
6.2.3 Software spending, % GDP	0.7	11
6.2.4 High-tech manufacturing, %	47.4	15
6.3 Knowledge diffusion	**58.9**	**7**
6.3.1 Intellectual property receipts, % total trade	6.5	1 ●
6.3.2 Production and export complexity	73.2	28
6.3.3 High-tech exports, % total trade	11.8	14
6.3.4 ICT services exports, % total trade	4.2	25
6.3.5 ISO 9001 quality/bn PPP$ GDP	8.4	32
Creative outputs	**56.3**	**9**
7.1 Intangible assets	**50.7**	**24**
7.1.1 Intangible asset intensity, top 15, %	80.5	6
7.1.2 Trademarks by origin/bn PPP$ GDP	49.7	46 ○
7.1.3 Global brand value, top 5,000	9.1	21
7.1.4 Industrial designs by origin/bn PPP$ GDP	3.6	27
7.2 Creative goods and services	**36.6**	**19**
7.2.1 Cultural and creative services exports, % total trade	1.8	14
7.2.2 National feature films/mn pop. 15-69	3.1	38 ○
7.2.3 Entertainment and media market/th pop. 15-69	49.8	18
7.2.4 Creative goods exports, % total trade	3.5	16
7.3 Online creativity	**87.2**	**1**
7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	92.4	5 ●
7.3.2 Country-code TLDs/th pop. 15-69	100.0	1 ●
7.3.3 GitHub commits/mn pop. 15-69	82.8	4 ●
7.3.4 Mobile app creation/bn PPP$ GDP	73.7	34

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.

Global Innovation Index 2023



→ 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.

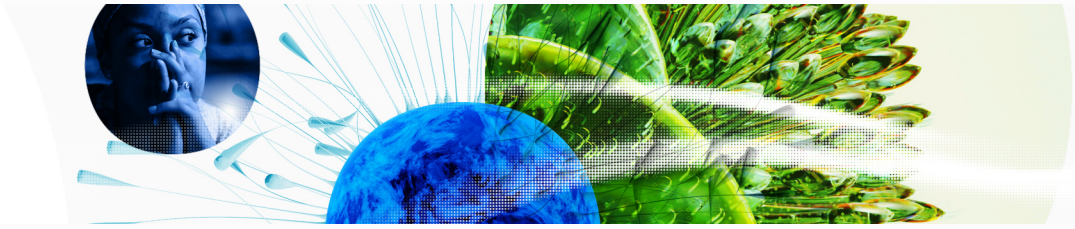
> Missing data for Netherlands (Kingdom of the)

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.

Source: Global Innovation Index Database, WIPO, 2023.

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.