



NETHERLANDS

5th

Netherlands ranks 5th among the 132 economies featured in the GII 2022.

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.

The following table shows the rankings of Netherlands over the past three years, noting that 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 in the GII 2022 is between ranks 5 and 8.

Rankings for Netherlands (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	5	11	4
2021	6	12	3
2022	5	10	6

- Netherlands performs better in innovation outputs than innovation inputs in 2022.
- This year Netherlands ranks 10th in innovation inputs, higher than both 2021 and 2020.
- As for innovation outputs, Netherlands ranks 6th. This position is lower than both 2021 and 2020.

5th

Netherlands ranks 5th among the 48 high-income group economies.

4th

Netherlands ranks 4th among the 39 economies in Europe.

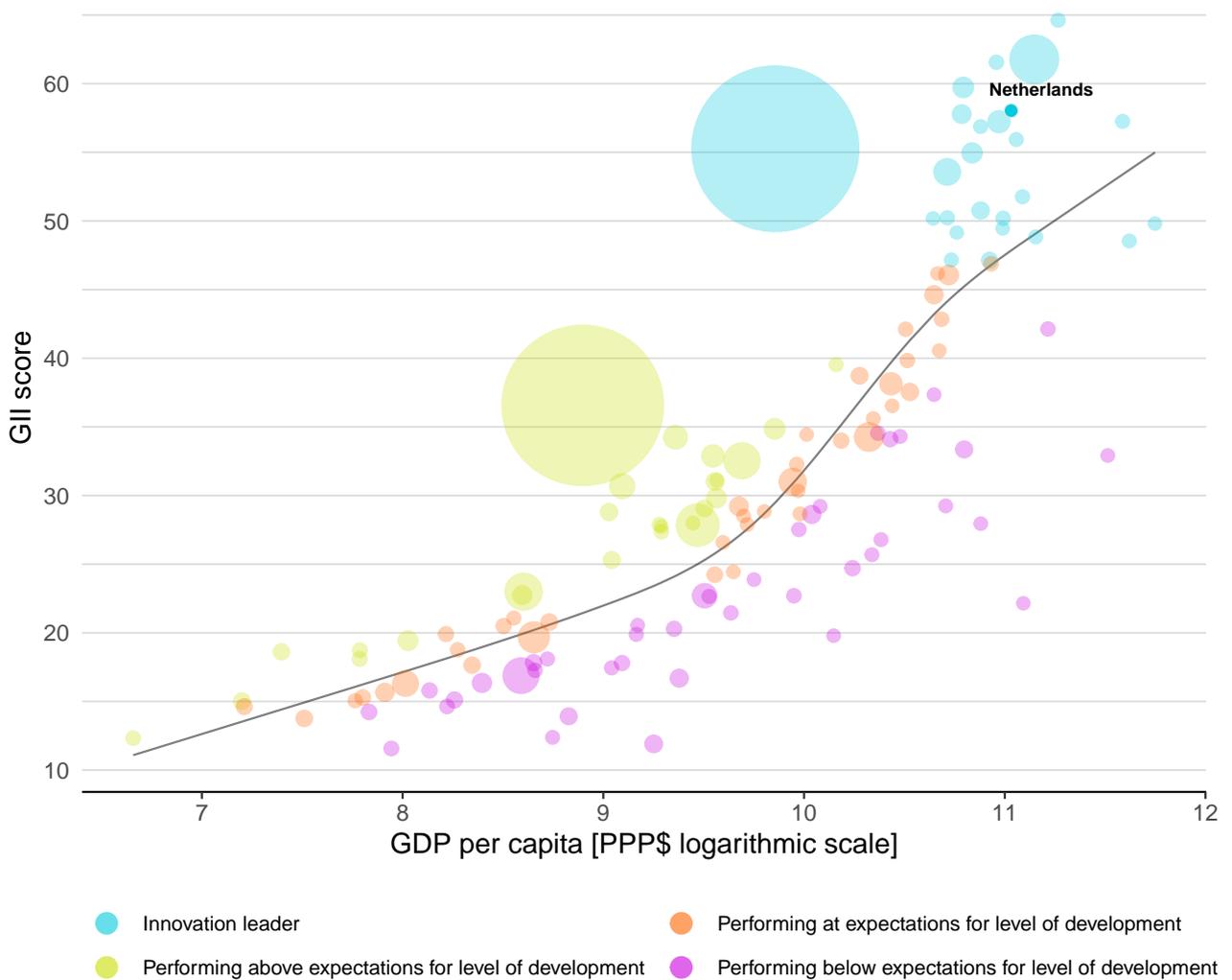


EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

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

Relative to GDP, Netherlands's performance is above expectations for its level of development.

The positive relationship between innovation and development



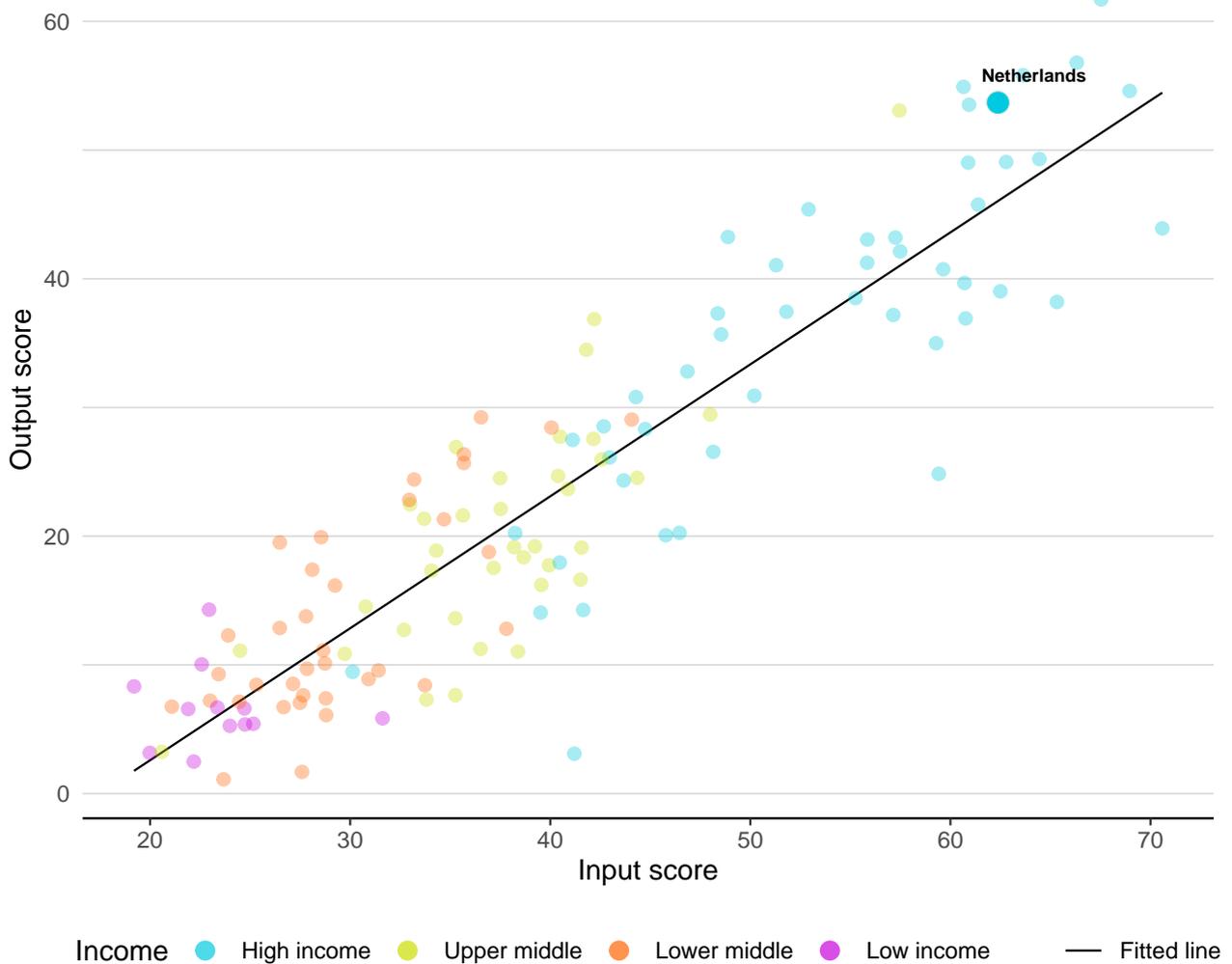


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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

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

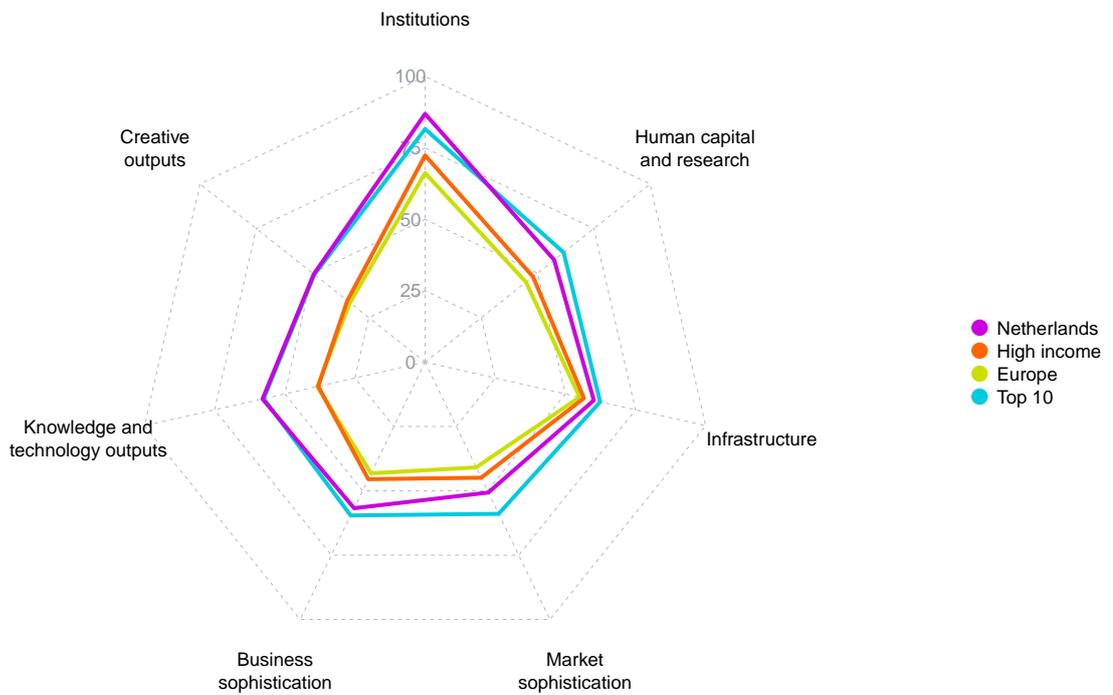
Innovation input to output performance





BENCHMARKING AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

The seven GII pillar scores for Netherlands



High-income group economies

Netherlands performs above the high-income group average in all GII pillars.

Europe

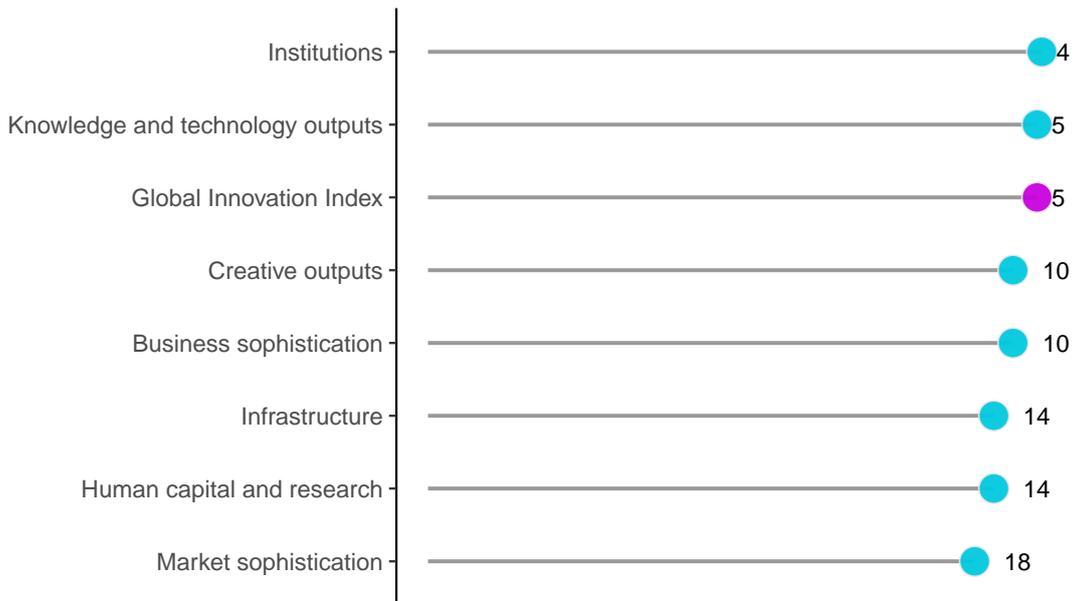
Netherlands performs above the regional average in all GII pillars.



OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Netherlands performs best in Institutions and its weakest performance is in Market sophistication.

The seven GII pillar ranks for Netherlands



Note: The highest possible ranking in each pillar is 1.

The full WIPO Intellectual Property Statistics profile for Netherlands can be found at:

https://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=NL.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the indicator strengths and weaknesses of Netherlands in the GII 2022.

Strengths and weaknesses for Netherlands

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
1.1.2	Government effectiveness	6	1.2.3	Cost of redundancy dismissal	65
4.1.1	Finance for startups and scaleups	3	2.1.5	Pupil-teacher ratio, secondary	64
5.1.1	Knowledge-intensive employment, %	5	2.2.2	Graduates in science and engineering, %	79
5.2.1	University-industry R&D collaboration	4	3.2.3	Gross capital formation, % GDP	74
5.3.1	Intellectual property payments, % total trade	1	5.3.4	FDI net inflows, % GDP	132
6.1.5	Citable documents H-index	6	6.2.1	Labor productivity growth, %	89
6.3.1	Intellectual property receipts, % total trade	1	6.2.2	New businesses/th pop. 15–64	43
7.1.1	Intangible asset intensity, top 15, %	2	7.1.2	Trademarks by origin/bn PPP\$ GDP	47
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	6	7.2.2	National feature films/mn pop. 15–69	40
7.3.2	Country-code TLDs/th pop. 15–69	1	7.2.4	Printing and other media, % manufacturing	56

Netherlands

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
6	10	High	EUR	17.2	1,079.2	61,816

	Score/Value	Rank		Score/Value	Rank
 Institutions	86.9	4 ●◆	 Business sophistication	56.8	10
1.1 Political environment	86.6	10	5.1 Knowledge workers	64.7	14
1.1.1 Political and operational stability*	83.6	16	5.1.1 Knowledge-intensive employment, %	52.4	5 ●
1.1.2 Government effectiveness*	89.6	6 ●	5.1.2 Firms offering formal training, %	54.1	15
1.2 Regulatory environment	87.3	15	5.1.3 GERD performed by business, % GDP	1.5	16
1.2.1 Regulatory quality*	88.7	8	5.1.4 GERD financed by business, %	57.6	16
1.2.2 Rule of law*	91.7	11	5.1.5 Females employed w/advanced degrees, %	22.2	26
1.2.3 Cost of redundancy dismissal	15.9	65 ○	5.2 Innovation linkages	53.7	11
1.3 Business environment	86.8	3 ●◆	5.2.1 University-industry R&D collaboration†	70.1	4 ●
1.3.1 Policies for doing business†	76.3	9	5.2.2 State of cluster development and depth†	68.5	8
1.3.2 Entrepreneurship policies and culture*	97.3	4 ◆	5.2.3 GERD financed by abroad, % GDP	0.2	16
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.1	23
			5.2.5 Patent families/bn PPP\$ GDP	4.4	9
 Human capital and research	57.4	14	5.3 Knowledge absorption	51.9	12
2.1 Education	63.8	17	5.3.1 Intellectual property payments, % total trade	7.9	1 ●◆
2.1.1 Expenditure on education, % GDP	5.4	32	5.3.2 High-tech imports, % total trade	13.6	18
2.1.2 Government funding/pupil, secondary, % GDP/cap	22.9	33	5.3.3 ICT services imports, % total trade	1.8	44
2.1.3 School life expectancy, years	18.6	10	5.3.4 FDI net inflows, % GDP	-24.2	132 ○◇
2.1.4 PISA scales in reading, maths and science	502.5	15	5.3.5 Research talent, % in businesses	70.5	6 ◆
2.1.5 Pupil-teacher ratio, secondary	14.2	64 ○◇	 Knowledge and technology outputs	57.9	5 ●
2.2 Tertiary education	40.1	35	6.1 Knowledge creation	68.6	6 ●
2.2.1 Tertiary enrolment, % gross	87.1	13	6.1.1 Patents by origin/bn PPP\$ GDP	8.5	12
2.2.2 Graduates in science and engineering, %	18.8	79 ○◇	6.1.2 PCT patents by origin/bn PPP\$ GDP	3.8	9
2.2.3 Tertiary inbound mobility, %	11.7	19	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3 Research and development (R&D)	68.3	10	6.1.4 Scientific and technical articles/bn PPP\$ GDP	44.2	16
2.3.1 Researchers, FTE/mn pop.	5,911.7	8	6.1.5 Citable documents H-index	69.8	6 ●
2.3.2 Gross expenditure on R&D, % GDP	2.3	15	6.2 Knowledge impact	39.7	26
2.3.3 Global corporate R&D investors, top 3, mn USD	81.7	9	6.2.1 Labor productivity growth, %	0.0	89 ○
2.3.4 QS university ranking, top 3*	68.1	13	6.2.2 New businesses/th pop. 15-64	3.1	43 ○
			6.2.3 Software spending, % GDP	0.5	12
 Infrastructure	60.1	14	6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	9.0	31
3.1 Information and communication technologies (ICTs)	90.7	9	6.2.5 High-tech manufacturing, %	49.8	12
3.1.1 ICT access*	93.8	17	6.3 Knowledge diffusion	65.4	4 ●
3.1.2 ICT use*	82.0	17	6.3.1 Intellectual property receipts, % total trade	7.7	1 ●◆
3.1.3 Government's online service*	90.6	12	6.3.2 Production and export complexity	67.7	25
3.1.4 E-participation*	96.4	9	6.3.3 High-tech exports, % total trade	13.0	12
3.2 General infrastructure	52.0	22	6.3.4 ICT services exports, % total trade	3.6	30
3.2.1 Electricity output, GWh/mn pop.	7,022.9	27	 Creative outputs	49.4	10
3.2.2 Logistics performance*	91.6	6	7.1 Intangible assets	50.8	21
3.2.3 Gross capital formation, % GDP	22.5	74 ○	7.1.1 Intangible asset intensity, top 15, %	92.1	2 ●◆
3.3 Ecological sustainability	37.8	36	7.1.2 Trademarks by origin/bn PPP\$ GDP	50.2	47 ○
3.3.1 GDP/unit of energy use	13.0	38	7.1.3 Global brand value, top 5,000, % GDP	111.4	17
3.3.2 Environmental performance*	62.6	11	7.1.4 Industrial designs by origin/bn PPP\$ GDP	4.2	30
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	2.5	35	7.2 Creative goods and services	35.7	17
			7.2.1 Cultural and creative services exports, % total trade	2.3	8
 Market sophistication	50.7	18	7.2.2 National feature films/mn pop. 15-69	2.8	40 ○
4.1 Credit	49.0	22	7.2.3 Entertainment and media market/th pop. 15-69	48.5	17
4.1.1 Finance for startups and scaleups*	60.3	3 ●◆	7.2.4 Printing and other media, % manufacturing	0.9	56 ○
4.1.2 Domestic credit to private sector, % GDP	100.9	28	7.2.5 Creative goods exports, % total trade	3.8	15
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3 Online creativity	60.5	3 ●◆
4.2 Investment	33.9	23	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	80.9	6 ●◆
4.2.1 Market capitalization, % GDP	109.9	12	7.3.2 Country-code TLDs/th pop. 15-69	100.0	1 ●◆
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.3	16	7.3.3 GitHub commit pushes received/mn pop. 15-69	49.5	9
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	27	7.3.4 Mobile app creation/bn PPP\$ GDP	11.4	35
4.2.4 Venture capital received, value, % GDP	0.0	21			
4.3 Trade, diversification, and market scale	69.2	20			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	92.9	36			
4.3.3 Domestic market scale, bn PPP\$	1,079.2	26			

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/global_innovation_index/en/2022. 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.

Missing data for Netherlands

Code	Indicator name	Economy year	Model year	Source
4.1.3	Loans from microfinance institutions, % GDP	n/a	2020	International Monetary Fund, Financial Access Survey (FAS)
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2020	World Intellectual Property Organization

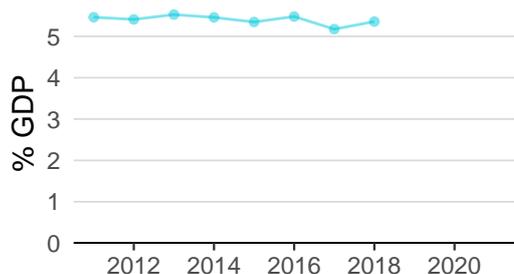
Outdated data for Netherlands

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2018	2020	UNESCO Institute for Statistics
2.1.3	School life expectancy, years	2018	2019	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2018	2019	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	2018	2019	UNESCO Institute for Statistics
4.2.1	Market capitalization, % GDP	2017	2020	World Federation of Exchanges
6.3.4	ICT services exports, % total trade	2019	2020	World Trade Organization and United Nations Conference on Trade and Development
7.2.1	Cultural and creative services exports, % total trade	2019	2020	World Trade Organization and United Nations Conference on Trade and Development

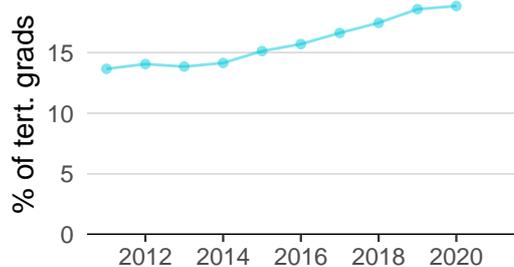
NETHERLANDS'S INNOVATION SYSTEM

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

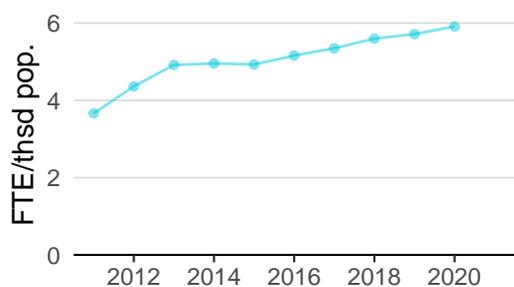
Innovation inputs



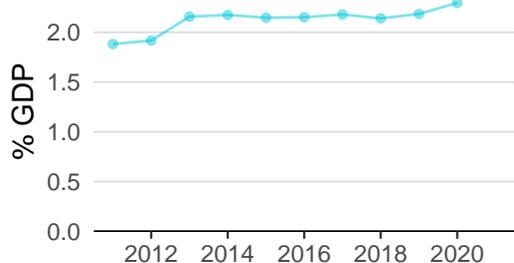
2.1.1 Expenditure on education was equal to 5.4% GDP in 2018—up by 4 percentage points from the year prior—and equivalent to an indicator rank of 32.



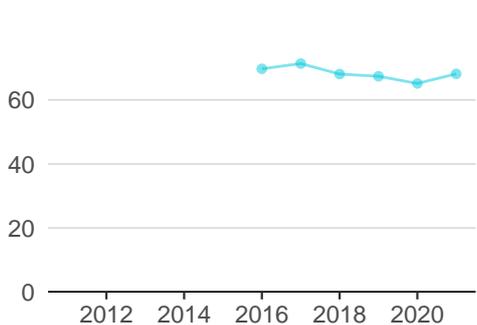
2.2.2 Graduates in science and engineering was equal to 18.8% of tert. grads in 2020—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 79.



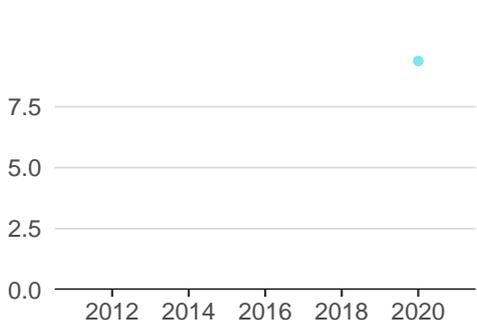
2.3.1 Researchers was equal to 5.9 FTE/thsd pop. in 2020—up by 3 percentage points from the year prior—and equivalent to an indicator rank of 8.



2.3.2 Gross expenditure on R&D was equal to 2.3% GDP in 2020—up by 5 percentage points from the year prior—and equivalent to an indicator rank of 15.



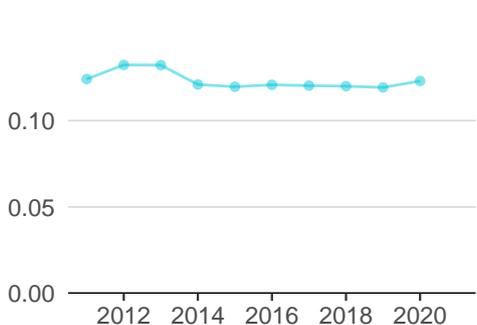
2.3.4 QS university ranking was equal to 68.1 in 2021—up by 5 percentage points from the year prior—and equivalent to an indicator rank of 13.



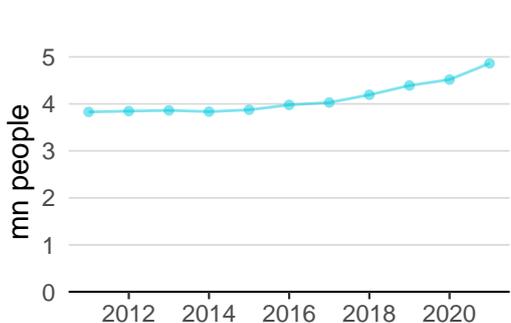
3.1.1 ICT access was equal to 9.4 in 2020 and equivalent to an indicator rank of 17.



4.2.4 Venture capital received was equal to 5.9 bn USD in 2021—up by 348 percentage points from the year prior—and equivalent to an indicator rank of 21.

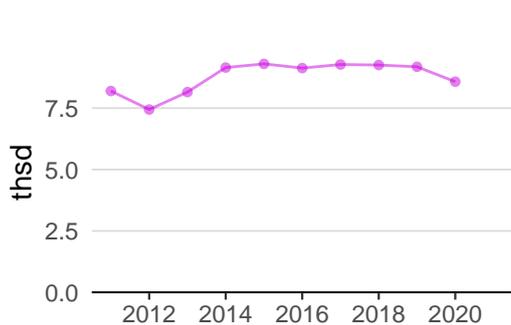


4.3.2 Domestic industry diversification was equal to 0.1 in 2020—up by 3 percentage points from the year prior—and equivalent to an indicator rank of 36.

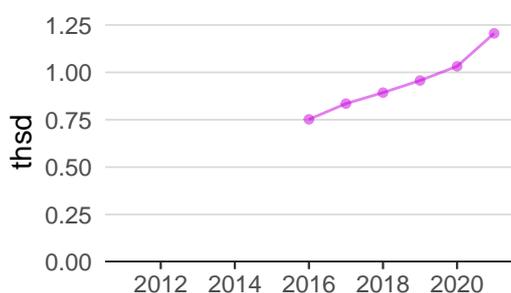


5.1.1 Knowledge-intensive employment was equal to 4.9 mn people in 2021—up by 8 percentage points from the year prior—and equivalent to an indicator rank of 5.

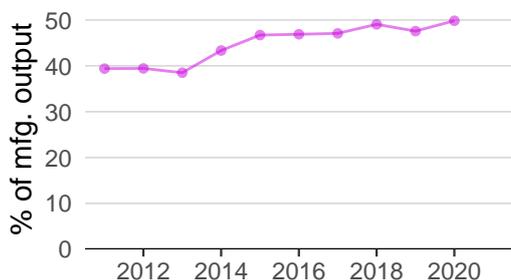
Innovation outputs



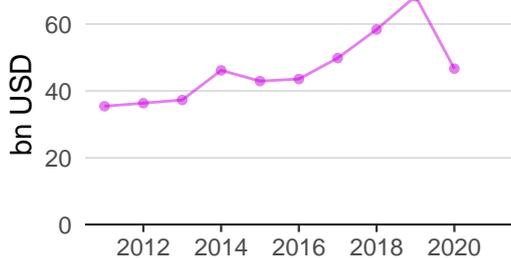
6.1.1 Patents by origin was equal to 8.6 thsd in 2020—down by 7 percentage points from the year prior—and equivalent to an indicator rank of 12.



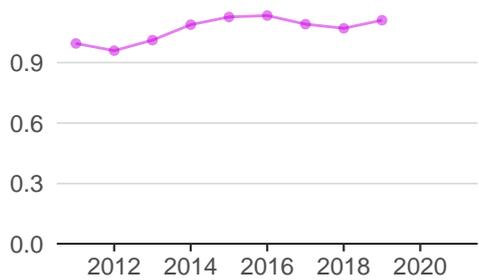
6.1.5 Citable documents H-index was equal to 1.2 thsd in 2021—up by 17 percentage points from the year prior—and equivalent to an indicator rank of 6.



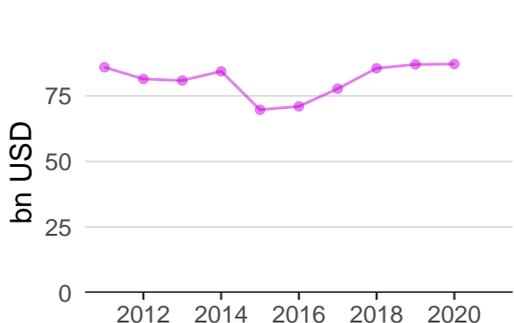
6.2.5 High-tech manufacturing was equal to 49.8% of mfg. output in 2020—up by 5 percentage points from the year prior—and equivalent to an indicator rank of 12.



6.3.1 Intellectual property receipts was equal to 46.7 bn USD in 2020—down by 32 percentage points from the year prior—and equivalent to an indicator rank of 1.



6.3.2 Production and export complexity was equal to 1.1 in 2019—up by 4 percentage points from the year prior—and equivalent to an indicator rank of 25.



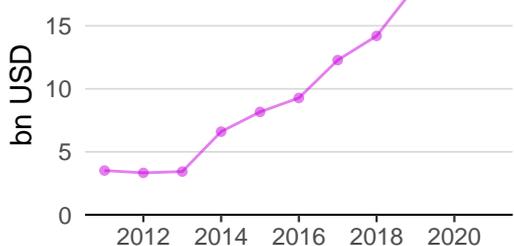
6.3.3 High-tech exports was equal to 87.1 bn USD in 2020—effectively unchanged from the year prior—and equivalent to an indicator rank of 12.



7.1.1 Intangible asset intensity was equal to 92.1% of total value in 2021 and equivalent to an indicator rank of 2.



7.1.3 Global brand value was equal to 112.3 bn USD in 2021—down by 23 percentage points from the year prior—and equivalent to an indicator rank of 17.



7.2.1 Cultural and creative services exports was equal to 18.1 bn USD in 2019—up by 28 percentage points from the year prior—and equivalent to an indicator rank of 8.

NETHERLANDS'S INNOVATION TOP PERFORMERS

2.3.3 Global corporate R&D investors

Firm	Industry	R&D	R&D Growth	R&D Intensity	Rank
		[mn EUR]	[%]	[%]	
STELLANTIS	Automobiles & Parts	3,866	-7.8	4.5	43
AIRBUS	Aerospace & Defence	2,959	-15.2	5.9	56
ASML HOLDING	Technology Hardware & Equipment	2,069	12.2	14.8	76

Source: European Commission's Joint Research Centre (<https://iri.jrc.ec.europa.eu/scoreboard/2021-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

University	Score	Rank
UTRECHT UNIVERSITY	57.5	110
UNIVERSITY OF AMSTERDAM	73.8	55
DELFT UNIVERSITY OF TECHNOLOGY	73.1	57

Source: QS Quacquarelli Symonds Ltd (<https://www.topuniversities.com/university-rankings/world-university-rankings/2022>).
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".

7.1.1 Intangible asset intensity, top 15

Firm	Rank
ASML	1
ADYEN	3

Source: Brand Finance (<https://brandirectory.com/reports/gift-2021>).
Note: Brand Finance only provides within economy ranks.

7.1.3 Global brand value, top 5,000

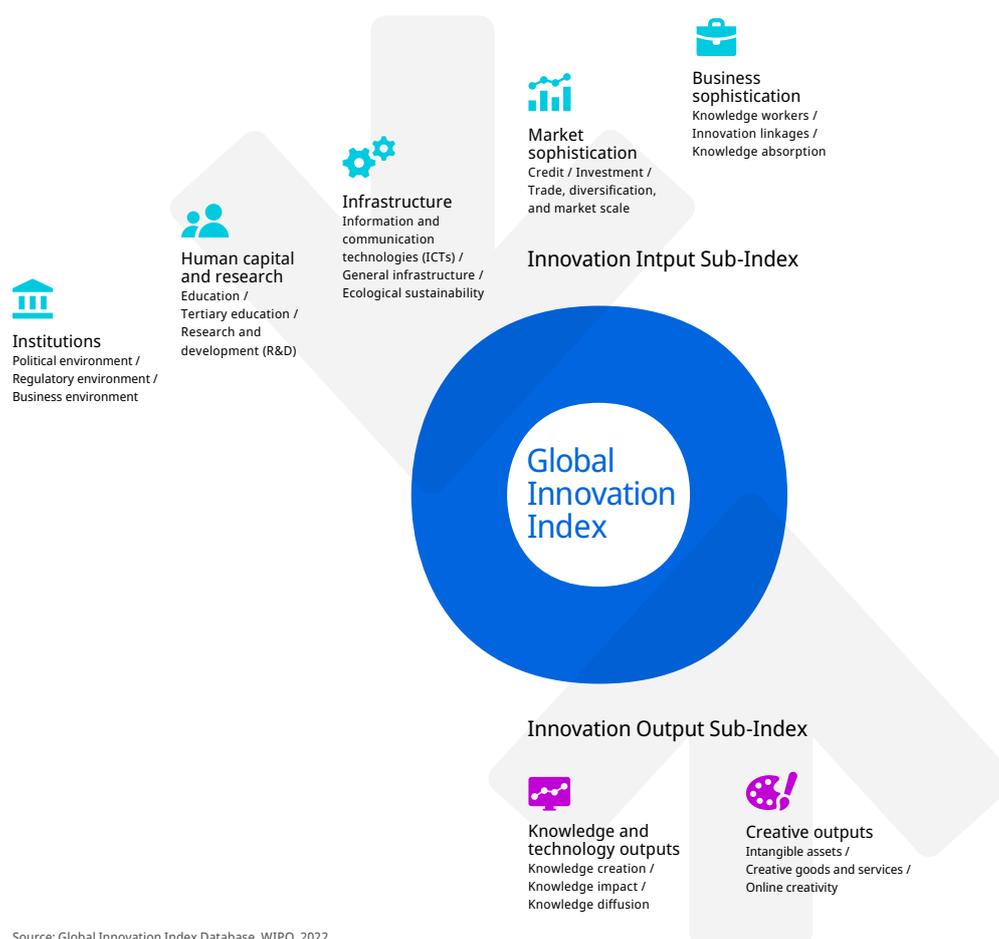
Brand	Industry	Rank
SHELL	Oil & Gas	1
KPMG	Commercial Services	2
ING	Banking	3

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

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.