



## SWEDEN

**3rd** Sweden ranks 3rd 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 Sweden 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 Sweden in the GII 2022 is between ranks 2 and 3.

### Rankings for Sweden (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	2	3	2
2021	2	2	2
2022	3	4	2

- Sweden performs better in innovation outputs than innovation inputs in 2022.
- This year Sweden ranks 4th in innovation inputs, lower than both 2021 and 2020.
- As for innovation outputs, Sweden ranks 2nd. This position is the same as both 2021 and 2020.

**3rd** Sweden ranks 3rd among the 48 high-income group economies.

**2nd** Sweden ranks 2nd among the 39 economies in Europe.

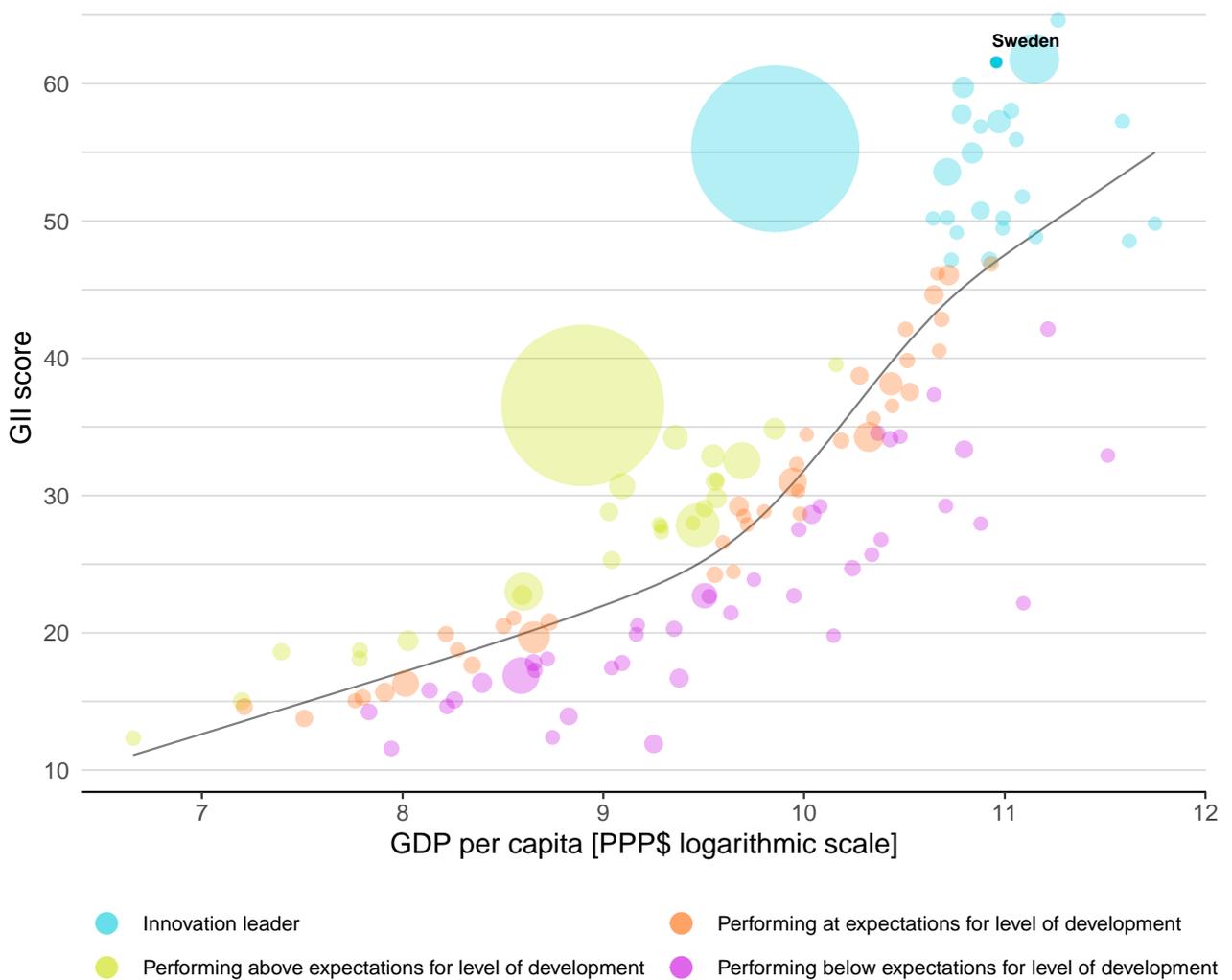


## EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

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, Sweden's performance is above expectations for its level of development.

### The positive relationship between innovation and development



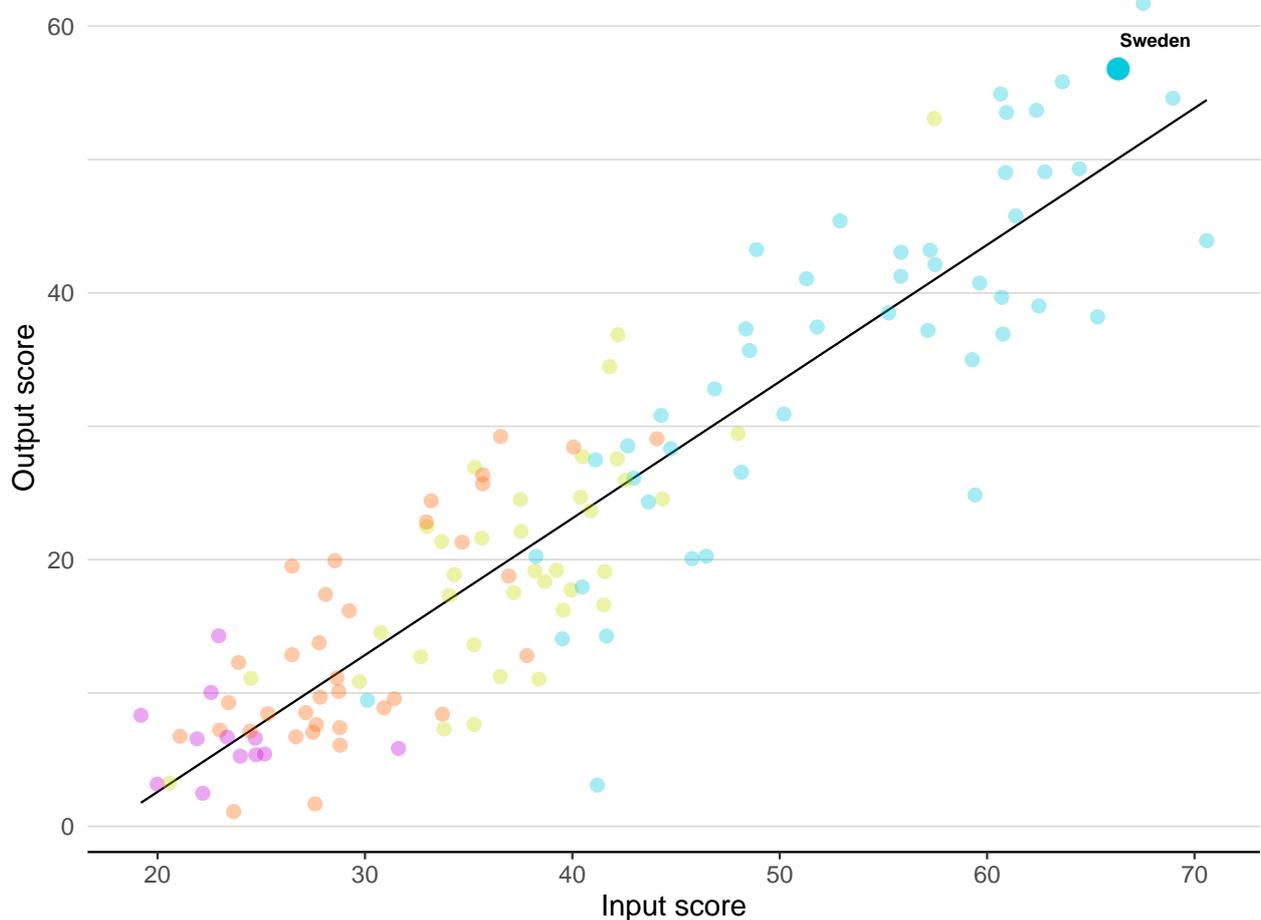


## EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

### Innovation input to output performance

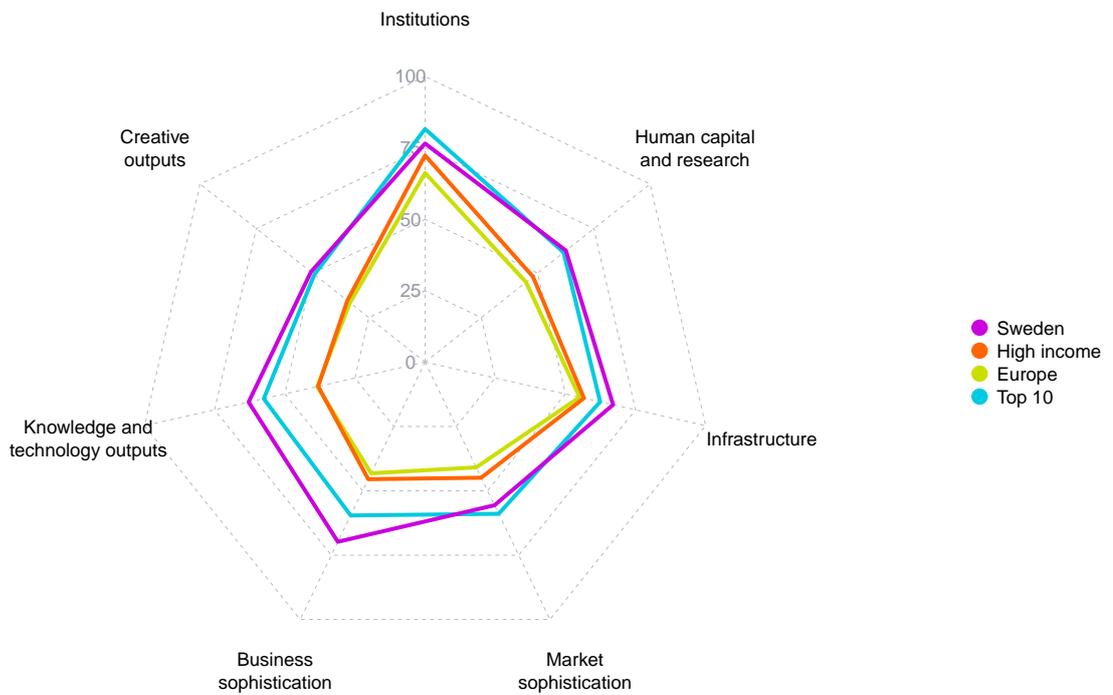


Income    ● High income    ● Upper middle    ● Lower middle    ● Low income    — Fitted line



## BENCHMARKING AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

### The seven GII pillar scores for Sweden



#### High-income group economies

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

#### Europe

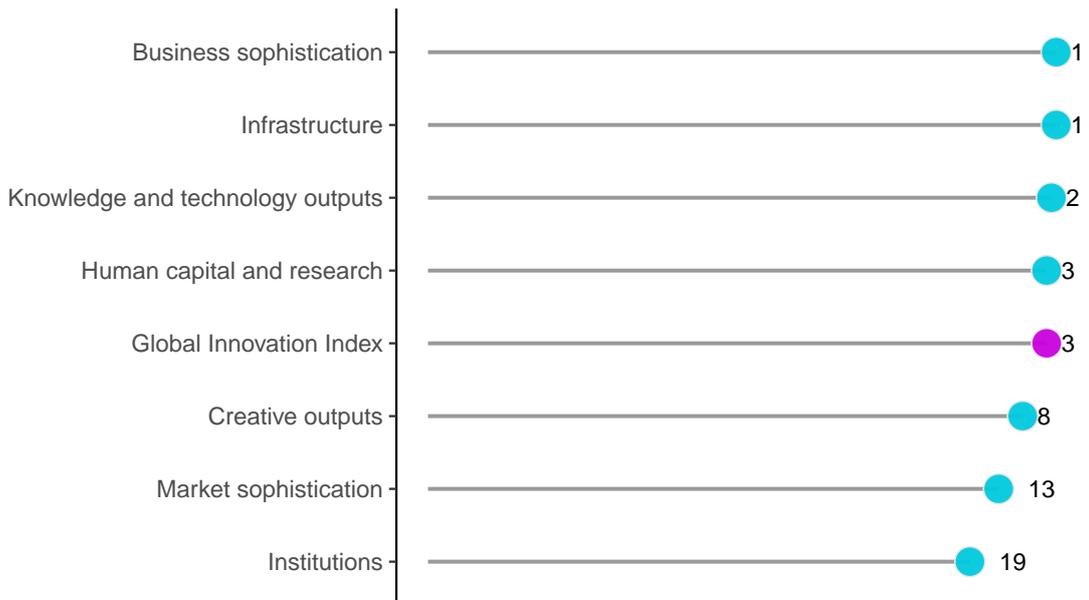
Sweden performs above the regional average in all GII pillars.



## OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Sweden performs best in Infrastructure and Business sophistication and its weakest performance is in Institutions.

### The seven GII pillar ranks for Sweden



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

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

[https://www.wipo.int/ipstats/en/statistics/country\\_profile/profile.jsp?code=SE](https://www.wipo.int/ipstats/en/statistics/country_profile/profile.jsp?code=SE).



## INNOVATION STRENGTHS AND WEAKNESSES

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

### Strengths and weaknesses for Sweden

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
2.3.1	Researchers, FTE/mn pop.	2	1.2.3	Cost of redundancy dismissal	56
2.3.2	Gross expenditure on R&D, % GDP	3	1.3.2	Entrepreneurship policies and culture	36
3.2.2	Logistics performance	2	2.1.5	Pupil-teacher ratio, secondary	53
5.1.1	Knowledge-intensive employment, %	3	3.2.3	Gross capital formation, % GDP	53
5.2.4	Joint venture/strategic alliance deals/bn PPP\$ GDP	4	3.3.1	GDP/unit of energy use	58
5.2.5	Patent families/bn PPP\$ GDP	4	5.3.2	High-tech imports, % total trade	62
5.3.3	ICT services imports, % total trade	5	5.3.4	FDI net inflows, % GDP	52
6.1.2	PCT patents by origin/bn PPP\$ GDP	1	6.2.1	Labor productivity growth, %	69
6.1.4	Scientific and technical articles/bn PPP\$ GDP	5	7.1.2	Trademarks by origin/bn PPP\$ GDP	50
7.1.3	Global brand value, top 5,000, % GDP	4	7.2.4	Printing and other media, % manufacturing	60
7.2.1	Cultural and creative services exports, % total trade	4			

## Sweden

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$ (bn)	GDP per capita, PPP\$
2	4	High	EUR	10.2	609.5	57,425

	Score/ Value	Rank		Score/ Value	Rank
 <b>Institutions</b>	76.6	19	 <b>Business sophistication</b>	69.8	1 ● ◆
<b>1.1 Political environment</b>	86.1	12	<b>5.1 Knowledge workers</b>	77.1	2 ● ◆
1.1.1 Political and operational stability*	85.5	10	5.1.1 Knowledge-intensive employment, %	56.7	3 ● ◆
1.1.2 Government effectiveness*	86.7	8	5.1.2 Firms offering formal training, %	61.9	8
<b>1.2 Regulatory environment</b>	88.6	13	5.1.3 GERD performed by business, % GDP	2.6	5
1.2.1 Regulatory quality*	86.9	10	5.1.4 GERD financed by business, %	62.4	12
1.2.2 Rule of law*	92.9	8	5.1.5 Females employed w/advanced degrees, %	27.7	9
1.2.3 Cost of redundancy dismissal	14.4	56 ○	<b>5.2 Innovation linkages</b>	68.3	2 ● ◆
<b>1.3 Business environment</b>	55.0	48 ◆	5.2.1 University-industry R&D collaboration <sup>†</sup>	67.4	10
1.3.1 Policies for doing business <sup>†</sup>	63.7	29	5.2.2 State of cluster development and depth <sup>†</sup>	64.9	15
1.3.2 Entrepreneurship policies and culture*	46.2	36 ○ ◆	5.2.3 GERD financed by abroad, % GDP	0.3	9
			5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP	0.3	4 ● ◆
			5.2.5 Patent families/bn PPP\$ GDP	6.8	4 ● ◆
 <b>Human capital and research</b>	62.6	3 ●	<b>5.3 Knowledge absorption</b>	64.0	3 ● ◆
<b>2.1 Education</b>	72.1	4 ● ◆	5.3.1 Intellectual property payments, % total trade	2.9	7
2.1.1 Expenditure on education, % GDP	7.6	5 ◆	5.3.2 High-tech imports, % total trade	8.5	62 ○
2.1.2 Government funding/pupil, secondary, % GDP/cap	24.4	24	5.3.3 ICT services imports, % total trade	4.7	5 ● ◆
2.1.3 School life expectancy, years	19.4	5 ◆	5.3.4 FDI net inflows, % GDP	2.8	52 ○
2.1.4 PISA scales in reading, maths and science	502.5	14	5.3.5 Research talent, % in businesses	71.8	5 ◆
2.1.5 Pupil-teacher ratio, secondary	12.3	53 ○			
<b>2.2 Tertiary education</b>	43.0	28	 <b>Knowledge and technology outputs</b>	62.9	2 ● ◆
2.2.1 Tertiary enrolment, % gross	77.3	25	<b>6.1 Knowledge creation</b>	81.6	2 ● ◆
2.2.2 Graduates in science and engineering, %	27.0	31	6.1.1 Patents by origin/bn PPP\$ GDP	10.9	8
2.2.3 Tertiary inbound mobility, %	7.2	35	6.1.2 PCT patents by origin/bn PPP\$ GDP	7.3	1 ● ◆
<b>2.3 Research and development (R&amp;D)</b>	72.7	7	6.1.3 Utility models by origin/bn PPP\$ GDP	n/a	n/a
2.3.1 Researchers, FTE/mn pop.	7,930.4	2 ● ◆	6.1.4 Scientific and technical articles/bn PPP\$ GDP	57.7	5 ● ◆
2.3.2 Gross expenditure on R&D, % GDP	3.5	3 ●	6.1.5 Citable documents H-index	59.5	13
2.3.3 Global corporate R&D investors, top 3, mn USD	79.3	10	<b>6.2 Knowledge impact</b>	43.7	14
2.3.4 QS university ranking, top 3*	61.0	14	6.2.1 Labor productivity growth, %	0.7	69 ○
			6.2.2 New businesses/th pop. 15-64	9.0	16
			6.2.3 Software spending, % GDP	0.5	13
			6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP	5.8	48
			6.2.5 High-tech manufacturing, %	48.8	13
 <b>Infrastructure</b>	67.0	1 ● ◆	<b>6.3 Knowledge diffusion</b>	63.4	6
<b>3.1 Information and communication technologies (ICTs)</b>	88.1	19	6.3.1 Intellectual property receipts, % total trade	3.4	7
3.1.1 ICT access*	93.6	18	6.3.2 Production and export complexity	82.7	8
3.1.2 ICT use*	86.5	6	6.3.3 High-tech exports, % total trade	7.8	24
3.1.3 Government's online service*	90.0	15	6.3.4 ICT services exports, % total trade	6.7	12
3.1.4 E-participation*	82.1	41			
<b>3.2 General infrastructure</b>	68.3	3 ● ◆	 <b>Creative outputs</b>	50.7	8
3.2.1 Electricity output, GWh/mn pop.	15,707.2	7 ◆	<b>7.1 Intangible assets</b>	57.4	13
3.2.2 Logistics performance*	93.0	2 ●	7.1.1 Intangible asset intensity, top 15, %	86.1	6
3.2.3 Gross capital formation, % GDP	25.2	53 ○	7.1.2 Trademarks by origin/bn PPP\$ GDP	47.2	50 ○
<b>3.3 Ecological sustainability</b>	44.6	24	7.1.3 Global brand value, top 5,000, % GDP	205.5	4 ● ◆
3.3.1 GDP/unit of energy use	11.2	58 ○	7.1.4 Industrial designs by origin/bn PPP\$ GDP	3.7	31
3.3.2 Environmental performance*	72.7	5 ◆	<b>7.2 Creative goods and services</b>	42.2	6 ◆
3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP	5.1	21	7.2.1 Cultural and creative services exports, % total trade	3.5	4 ● ◆
			7.2.2 National feature films/mn pop. 15-69	7.5	14
			7.2.3 Entertainment and media market/th pop. 15-69	57.5	8
			7.2.4 Printing and other media, % manufacturing	0.8	60 ○
			7.2.5 Creative goods exports, % total trade	1.9	28
 <b>Market sophistication</b>	55.6	13	<b>7.3 Online creativity</b>	45.8	8
<b>4.1 Credit</b>	50.1	18	7.3.1 Generic top-level domains (TLDs)/th pop. 15-69	42.8	16
4.1.1 Finance for startups and scaleups*	50.3	12	7.3.2 Country-code TLDs/th pop. 15-69	63.0	11
4.1.2 Domestic credit to private sector, % GDP	131.9	18	7.3.3 GitHub commit pushes received/mn pop. 15-69	51.2	8
4.1.3 Loans from microfinance institutions, % GDP	n/a	n/a	7.3.4 Mobile app creation/bn PPP\$ GDP	26.3	10
<b>4.2 Investment</b>	49.3	11			
4.2.1 Market capitalization, % GDP	n/a	n/a			
4.2.2 Venture capital investors, deals/bn PPP\$ GDP	0.3	14			
4.2.3 Venture capital recipients, deals/bn PPP\$ GDP	0.1	12			
4.2.4 Venture capital received, value, % GDP	0.0	8			
<b>4.3 Trade, diversification, and market scale</b>	67.4	23			
4.3.1 Applied tariff rate, weighted avg., %	1.5	20			
4.3.2 Domestic industry diversification	98.1	13			
4.3.3 Domestic market scale, bn PPP\$	609.5	38			

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](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 Sweden.

### Missing data for Sweden

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)
4.2.1	Market capitalization, % GDP	n/a	2020	World Federation of Exchanges
6.1.3	Utility models by origin/bn PPP\$ GDP	n/a	2020	World Intellectual Property Organization

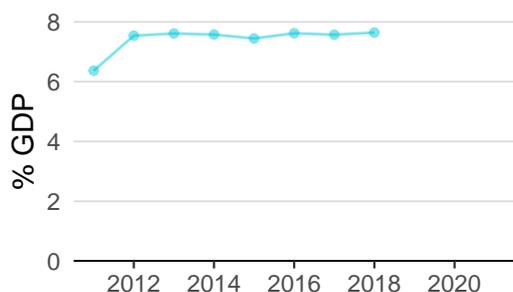
### Outdated data for Sweden

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2018	2020	UNESCO Institute for Statistics
4.1.2	Domestic credit to private sector, % GDP	2018	2020	International Monetary Fund

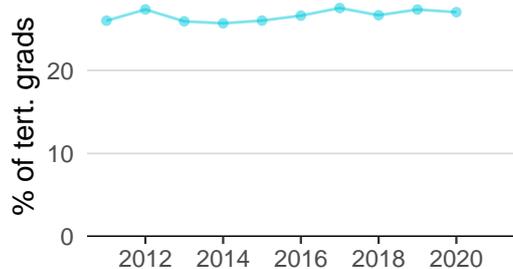
## SWEDEN'S INNOVATION SYSTEM

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

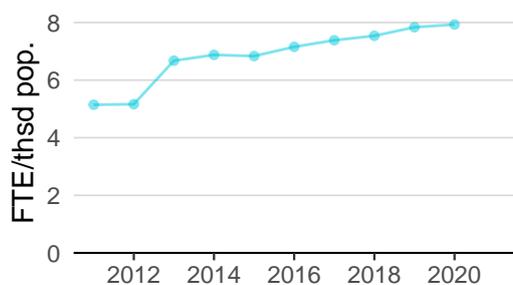
### Innovation inputs



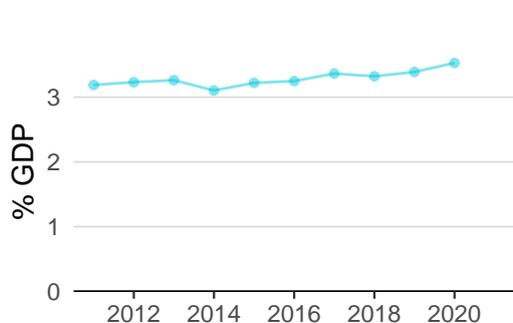
**2.1.1 Expenditure on education** was equal to 7.6% GDP in 2018—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 5.



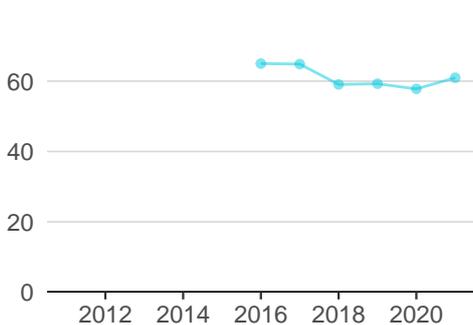
**2.2.2 Graduates in science and engineering** was equal to 27.0% of tert. grads in 2020—down by 1 percentage point from the year prior—and equivalent to an indicator rank of 31.



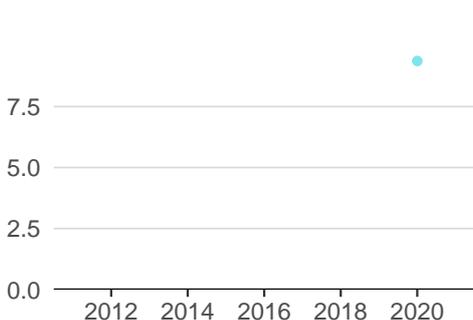
**2.3.1 Researchers** was equal to 7.9 FTE/thsd pop. in 2020—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 2.



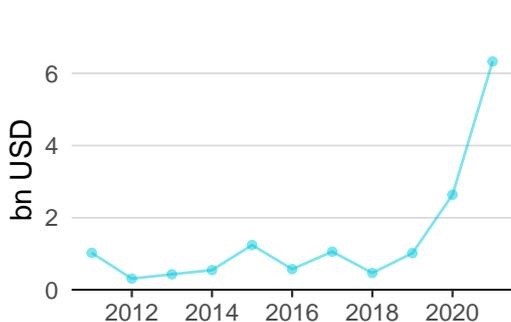
**2.3.2 Gross expenditure on R&D** was equal to 3.5% GDP in 2020—up by 4 percentage points from the year prior—and equivalent to an indicator rank of 3.



**2.3.4 QS university ranking** was equal to 61.0 in 2021—up by 5 percentage points from the year prior—and equivalent to an indicator rank of 14.



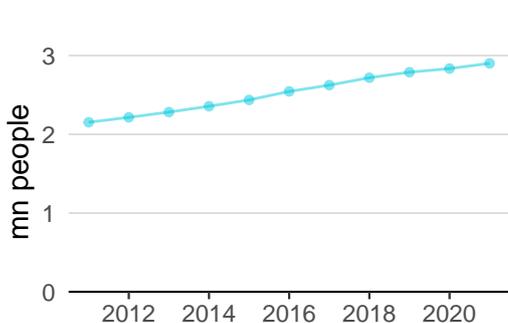
**3.1.1 ICT access** was equal to 9.4 in 2020 and equivalent to an indicator rank of 18.



**4.2.4 Venture capital received** was equal to 6.3 bn USD in 2021—up by 140 percentage points from the year prior—and equivalent to an indicator rank of 8.

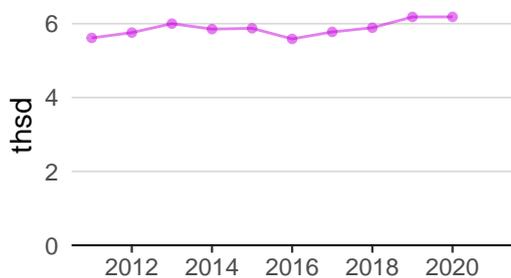


**4.3.2 Domestic industry diversification** was equal to 0.1 in 2020—down by 13 percentage points from the year prior—and equivalent to an indicator rank of 13.



**5.1.1 Knowledge-intensive employment** was equal to 2.9 mn people in 2021—up by 2 percentage points from the year prior—and equivalent to an indicator rank of 3.

## Innovation outputs



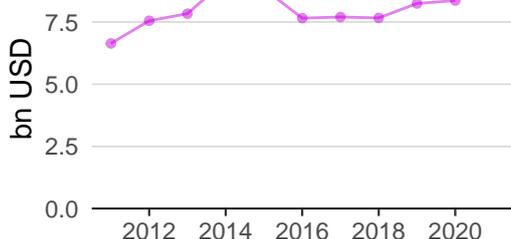
**6.1.1 Patents by origin** was equal to 6.2 thsd in 2020—effectively unchanged from the year prior—and equivalent to an indicator rank of 8.



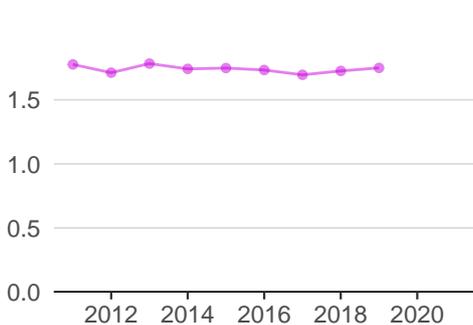
**6.1.5 Citable documents H-index** was equal to 1.0 thsd in 2021—up by 16 percentage points from the year prior—and equivalent to an indicator rank of 13.



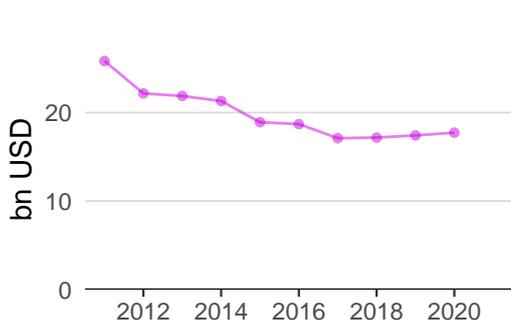
**6.2.5 High-tech manufacturing** was equal to 48.8% of mfg. output in 2020—up by 30 percentage points from the year prior—and equivalent to an indicator rank of 13.



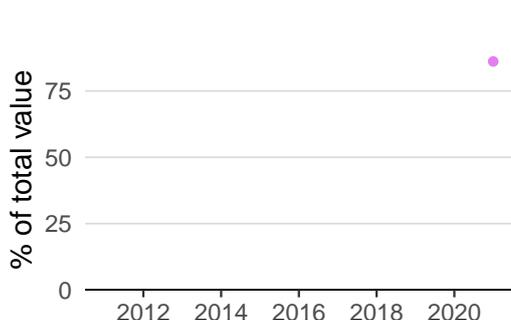
**6.3.1 Intellectual property receipts** was equal to 8.4 bn USD in 2020—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 7.



**6.3.2 Production and export complexity** was equal to 1.7 in 2019—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 8.



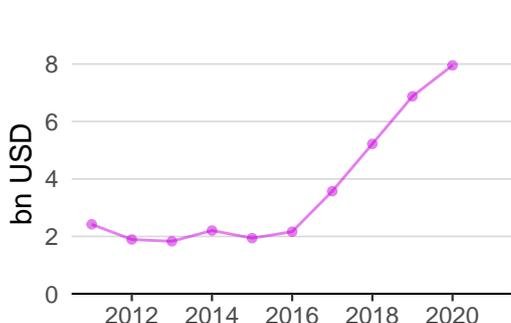
**6.3.3 High-tech exports** was equal to 17.7 bn USD in 2020—up by 2 percentage points from the year prior—and equivalent to an indicator rank of 24.



**7.1.1 Intangible asset intensity** was equal to 86.1% of total value in 2021 and equivalent to an indicator rank of 6.



**7.1.3 Global brand value** was equal to 127.9 bn USD in 2021—up by 9 percentage points from the year prior—and equivalent to an indicator rank of 4.



**7.2.1 Cultural and creative services exports** was equal to 8.0 bn USD in 2020—up by 16 percentage points from the year prior—and equivalent to an indicator rank of 4.

## SWEDEN'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]	[%]	[%]	
ERICSSON	Technology Hardware & Equipment	3,894	1.6	16.8	41
VOLVO	Industrial Engineering	1,619	-17.3	4.8	97
GEELY SWEDEN HOLDINGS	Support Services	1,461	4.6	5.3	110

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
CHALMERS UNIVERSITY OF TECHNOLOGY	55.9	121=
LUND UNIVERSITY	63.8	87
KTH, ROYAL INSTITUTE OF TECHNOLOGY	63.2	89

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
ATLAS COPCO	1
SPOTIFY TECHNOLOGY	2
HEXAGON	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

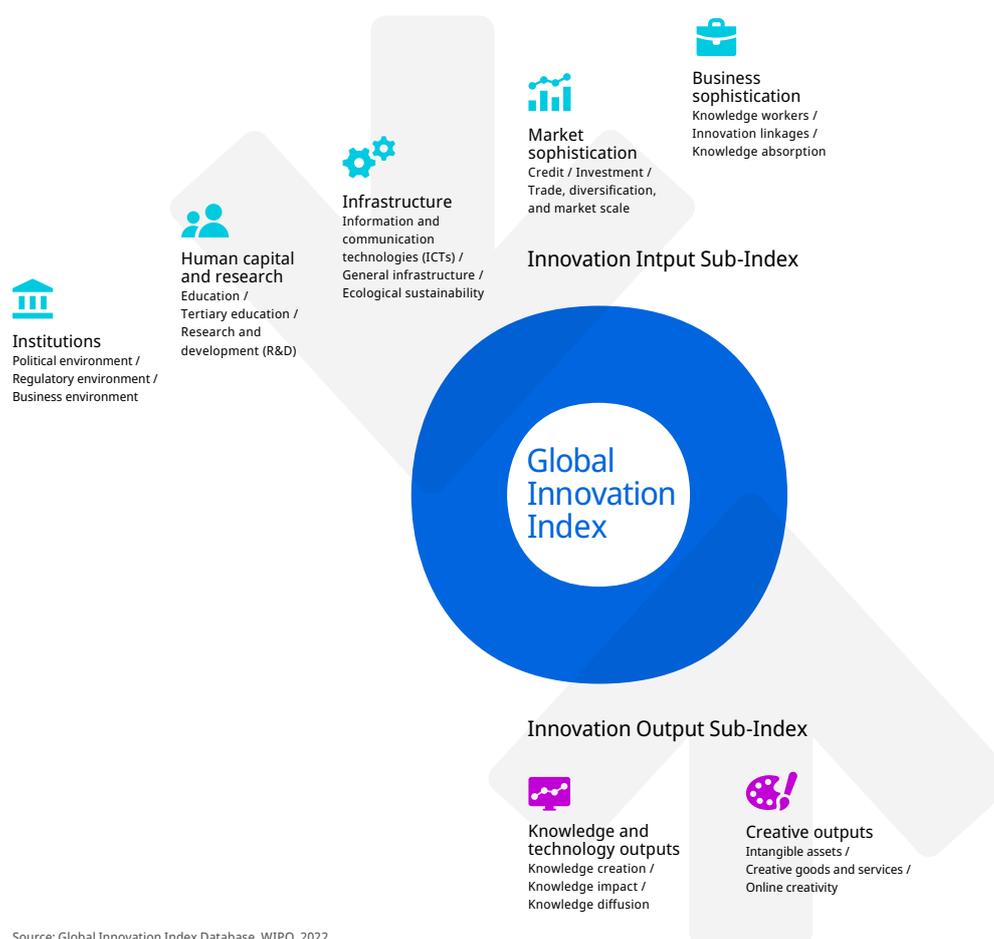
Brand	Industry	Rank
IKEA	Retail	1
VOLVO	Automobiles	2
H&M	Apparel	3

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.