GLOBAL INNOVATION INDEX 2020

SWEDEN

2nd Sweden ranks 2nd among the 131 economies featured in the GII 2020.

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.

Rankings of Sweden (2018–2020)

	GII	Innovation inputs	Innovation outputs
2020	2	3	2
2019	2	4	3
2018	3	3	3

- Sweden performs better in innovation outputs than innovation inputs in 2020.
- This year Sweden ranks 3rd in innovation inputs, higher than last year and the same as 2018.
- As for innovation outputs, Sweden ranks 2nd. This position is higher than last year and higher compared to 2018.

2nd Sweden ranks 2nd among the 49 high-income group economies.

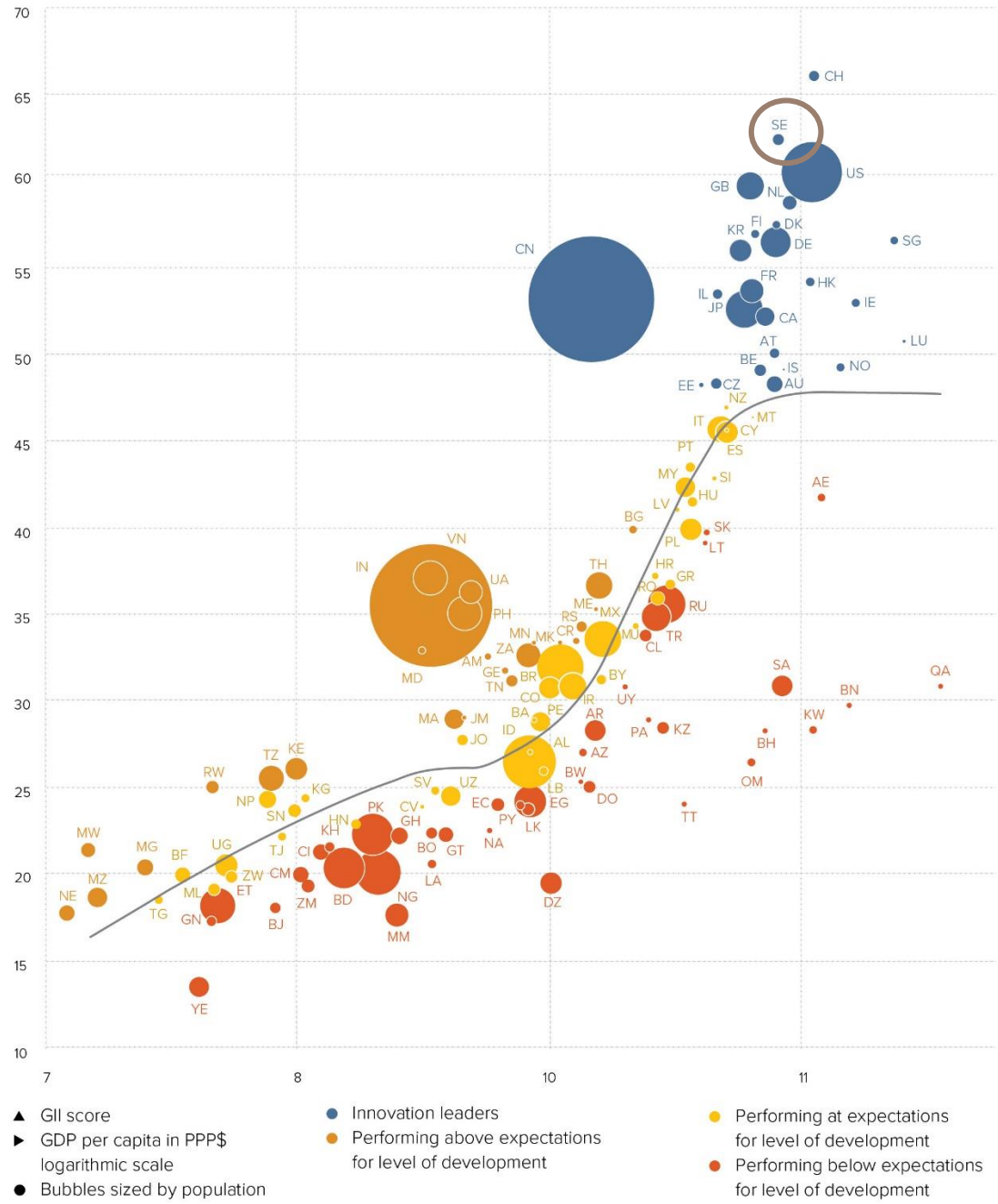
2nd Sweden ranks 2nd among the 39 economies in Europe.

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 is performing above expectations for its level of development.

The positive relationship between innovation and development

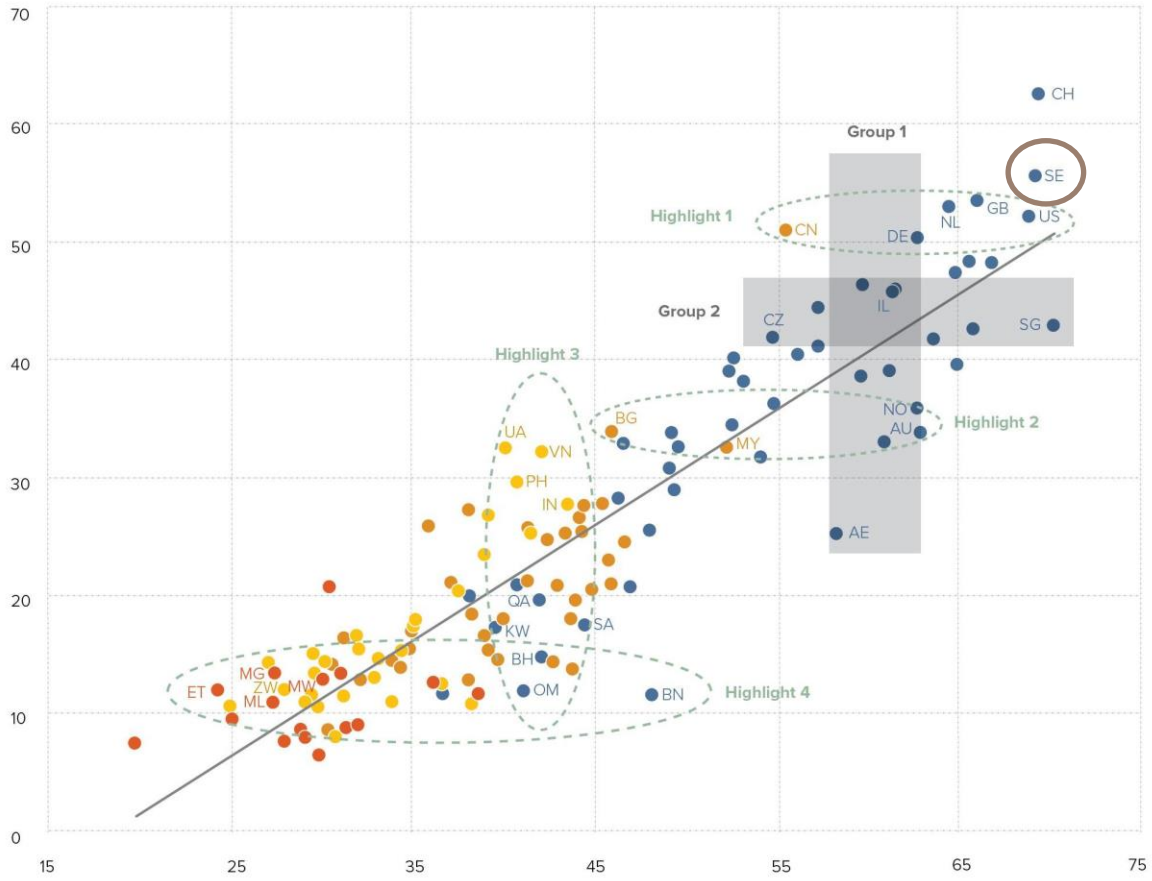


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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, 2020



▲ Output score
► Input score

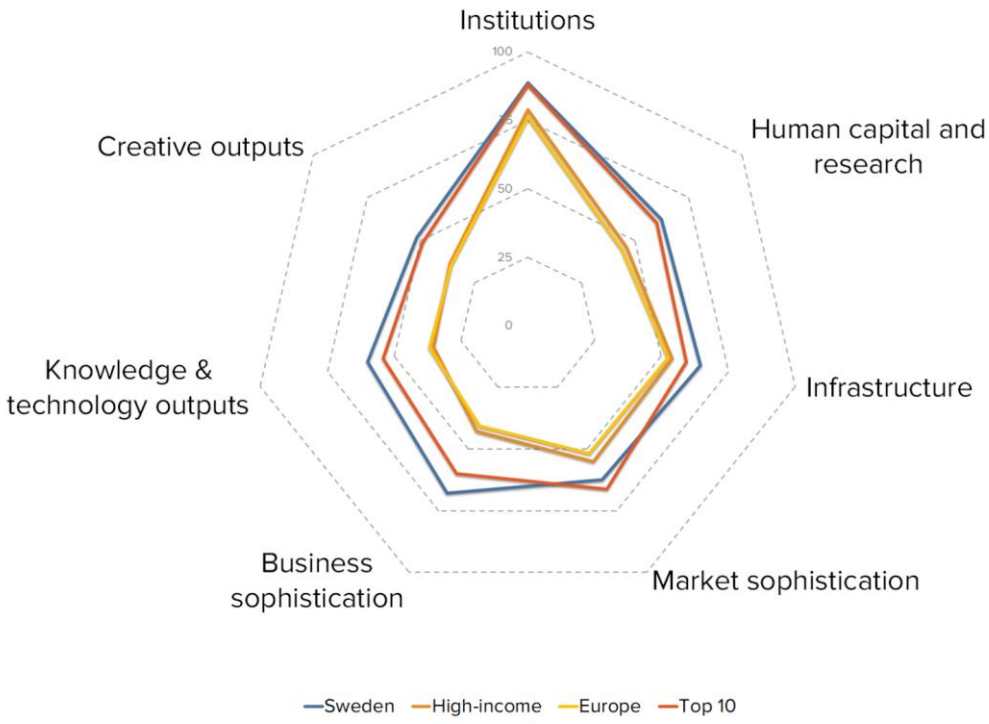
● High income group
● Upper middle-income group
● Lower middle-income group
● Low income group

— Fitted values

AU	Australia	IN	India	NL	Netherlands	CH	Switzerland
BH	Bahrain	IL	Israel	NO	Norway	UA	Ukraine
BN	Brunei Darussalam	KW	Kuwait	OM	Oman	AE	United Arab Emirates
BG	Bulgaria	MG	Madagascar	PH	Philippines	GB	United Kingdom
CN	China	MW	Malawi	QA	Qatar	US	United States of America
CZ	Czech Republic	ML	Mali	SA	Saudi Arabia	VN	Viet Nam
ET	Ethiopia	MY	Malaysia	SG	Singapore	ZW	Zimbabwe
DE	Germany			SE	Sweden		

BENCHMARKING SWEDEN AGAINST OTHER HIGH-INCOME ECONOMIES AND EUROPE

Sweden's scores in the seven GII pillars



High-income group economies

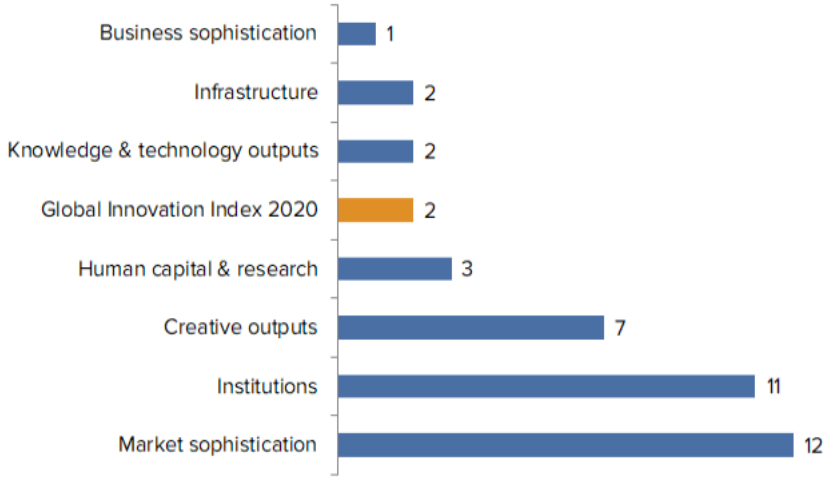
Sweden has high scores in all seven GII pillars, which are above average for the high-income group.

Europe

Compared to other economies in Europe, Sweden performs above average in all seven GII pillars.

OVERVIEW OF SWEDEN RANKINGS IN THE SEVEN GII AREAS

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



*The highest possible ranking in each pillar is 1.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Sweden in the GII 2020.

Strengths

Code	Indicator name	Rank
1.2.2	Rule of law*	4
2	Human capital & research	3
2.1.1	Expenditure on education, % GDP	3
2.1.3	School life expectancy, years	3
2.3.2	Gross expenditure on R&D, % GDP	3
3	Infrastructure	2
3.2	General infrastructure	4
3.2.2	Logistics performance*	2
5	Business sophistication	1
5.1	Knowledge workers	3
5.1.2	Firms offering formal training, %	3
5.2	Innovation linkages	2
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	3
5.2.5	Patent families 2+ offices/bn PPP$ GDP	1
6	Knowledge & technology outputs	2
6.1	Knowledge creation	2
6.3	Knowledge diffusion	4
7.1.2	Global brand value, top 5,000, % GDP	3
7.1.4	ICTs & organizational model creation†	2
7.3.3	Wikipedia edits/mn pop. 15–69	4

Weaknesses

Code	Indicator name	Rank
1.2.3	Cost of redundancy dismissal, salary weeks	55
2.1.5	Pupil-teacher ratio, secondary	61
3.3.1	GDP/unit of energy use	61
4.1.1	Ease of getting credit*	74
4.3.1	Applied tariff rate, weighted avg., %	22
5.3.2	High-tech imports, % total trade	51
5.3.4	FDI net inflows, % GDP	59
6.2.1	Growth rate of PPP$ GDP/worker, %	80
7.1.1	Trademarks by origin/bn PPP$ GDP	56
7.2.4	Printing & other media, % manufacturing	54

STRENGTHS

GII strengths for Sweden are found in six of the seven GII pillars.

- Institutions (11): the indicator Rule of law (4) demonstrates a strength.
- Human capital & research (3): shows strengths in the indicators Expenditure on education (3), School life expectancy (3) and Gross expenditure on R&D (3).
- Infrastructure (2): exhibits strengths in the sub-pillar General infrastructure (4) and in the indicator Logistics performance (2).
- Business sophistication (1): displays strengths in the sub-pillars Knowledge workers (3) and Innovation linkages (2) and in the indicators Firms offering formal training (3), JV–strategic alliance deals (3) and Patent families (1).
- Knowledge & technology outputs (2): the sub-pillars Knowledge creation (2) and Knowledge diffusion (4) reveal strengths.
- Creative outputs (7): shows strengths in the indicators Global brand value (3), ICTs & organizational model creation (2) and Wikipedia edits (4).

WEAKNESSES

GII weaknesses for Sweden are found in all seven of the GII pillars.

- Institutions (11): the indicator Cost of redundancy dismissal (55) is a weakness.
- Human capital & research (3): demonstrates weakness in the indicator Pupil–teacher ratio (61).
- Infrastructure (2): displays weakness in the indicator GDP/unit of energy use (61).
- Market sophistication (12): exhibits weaknesses in the indicators Ease of getting credit (74) and Applied tariff rate (22).
- Business sophistication (1): demonstrates weaknesses in the indicators High-tech imports (51) and FDI net inflows (59).
- Knowledge & technology outputs (2): displays weakness in the indicator Growth rate of PPP (80).
- Creative outputs (7): reveals weaknesses in the indicators Trademarks by origin (56) and Printing & other media (54).

SWEDEN

GII 2020 rank

2

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2019 rank
2	3	High	EUR	10.0	563.9	47,691.9	2

		Score/Value	Rank	
INSTITUTIONS		**88.7**	**11**	
1.1	**Political environment**	**89.9**	**10**	
1.1.1	Political and operational stability*	87.5	11	
1.1.2	Government effectiveness*	91.1	8	
1.2	**Regulatory environment**	**90.0**	**13**	
1.2.1	Regulatory quality*	89.3	6	
1.2.2	Rule of law*	96.1	4	●
1.2.3	Cost of redundancy dismissal, salary weeks	14.4	55	○
1.3	**Business environment**	**86.3**	**16**	
1.3.1	Ease of starting a business*	93.1	37	
1.3.2	Ease of resolving insolvency*	79.5	16	
HUMAN CAPITAL & RESEARCH		**62.4**	**3**	● ◆
2.1	**Education**	**68.2**	**6**	◆
2.1.1	Expenditure on education, % GDP ⊙	7.7	3	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	23.8	24	
2.1.3	School life expectancy, years	19.5	3	● ◆
2.1.4	PISA scales in reading, maths, & science	502.5	14	
2.1.5	Pupil-teacher ratio, secondary ⊙	13.1	61	○
2.2	**Tertiary education**	**44.9**	**28**	
2.2.1	Tertiary enrolment, % gross	67.0	36	
2.2.2	Graduates in science & engineering, %	27.5	26	
2.2.3	Tertiary inbound mobility, %	6.7	37	
2.3	**Research & development (R&D)**	**74.0**	**6**	
2.3.1	Researchers, FTE/mn pop	7,536.5	4	◆
2.3.2	Gross expenditure on R&D, % GDP	3.3	3	●
2.3.3	Global R&D companies, avg. exp. top 3, mn $US	79.0	10	
2.3.4	QS university ranking, average score top 3*	59.3	14	
INFRASTRUCTURE		**64.6**	**2**	● ◆
3.1	**Information & communication technologies (ICTs)**	**89.0**	**13**	
3.1.1	ICT access*	81.7	20	
3.1.2	ICT use*	86.2	7	
3.1.3	Government's online service*	94.4	14	
3.1.4	E-participation*	93.8	19	
3.2	**General infrastructure**	**50.7**	**4**	● ◆
3.2.1	Electricity output, kWh/mn pop	15,643.3	7	
3.2.2	Logistics performance*	93.0	2	●
3.2.3	Gross capital formation, % GDP	26.2	42	
3.3	**Ecological sustainability**	**54.0**	**15**	◆
3.3.1	GDP/unit of energy use	9.7	61	○
3.3.2	Environmental performance*	78.7	8	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.9	11	◆
MARKET SOPHISTICATION		**62.3**	**12**	
4.1	**Credit**	**59.8**	**17**	
4.1.1	Ease of getting credit*	60.0	74	○
4.1.2	Domestic credit to private sector, % GDP	133.1	16	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**54.5**	**21**	
4.2.1	Ease of protecting minority investors*	72.0	27	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.2	14	
4.3	**Trade, competition, and market scale**	**72.6**	**30**	
4.3.1	Applied tariff rate, weighted avg., %	1.7	22	○
4.3.2	Intensity of local competition+	75.1	25	
4.3.3	Domestic market scale, bn PPP$	563.9	38	

		Score/Value	Rank	
BUSINESS SOPHISTICATION		**68.0**	**1**	● ◆
5.1	**Knowledge workers**	**76.8**	**3**	● ◆
5.1.1	Knowledge-intensive employment, %	53.5	4	
5.1.2	Firms offering formal training, % ⊙	70.3	3	●
5.1.3	GERD performed by business, % GDP	2.3	4	
5.1.4	GERD financed by business, %	60.8	12	
5.1.5	Females employed w/advanced degrees, %	25.6	11	
5.2	**Innovation linkages**	**76.2**	**2**	● ◆
5.2.1	University/industry research collaboration+	71.0	7	
5.2.2	State of cluster development+	64.8	18	
5.2.3	GERD financed by abroad, % GDP	0.3	7	
5.2.4	JV-strategic alliance deals/bn PPP$ GDP	0.3	3	● ◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	6.6	1	● ◆
5.3	**Knowledge absorption**	**51.0**	**13**	
5.3.1	Intellectual property payments, % total trade	1.5	22	
5.3.2	High-tech imports, % total trade	8.6	51	○
5.3.3	ICT services imports, % total trade	3.1	7	◆
5.3.4	FDI net inflows, % GDP	2.9	59	○
5.3.5	Research talent, % in business enterprise	72.8	5	◆
KNOWLEDGE & TECHNOLOGY OUTPUTS		**59.8**	**2**	● ◆
6.1	**Knowledge creation**	**76.0**	**2**	● ◆
6.1.1	Patents by origin/bn PPP$ GDP	10.7	9	
6.1.2	PCT patents by origin/bn PPP$ GDP	7.4	4	◆
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	31.9	8	◆
6.1.5	Citable documents H-index	59.3	12	
6.2	**Knowledge impact**	**39.7**	**19**	
6.2.1	Growth rate of PPP$ GDP/worker, %	0.4	80	○
6.2.2	New businesses/th pop. 15-64	7.2	22	
6.2.3	Computer software spending, % GDP	0.0	10	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.6	33	
6.2.5	High- and medium-high-tech manufacturing, %	45.4	14	
6.3	**Knowledge diffusion**	**63.9**	**4**	● ◆
6.3.1	Intellectual property receipts, % total trade	3.3	6	◆
6.3.2	High-tech net exports, % total trade	7.0	23	
6.3.3	ICT services exports, % total trade	6.1	7	◆
6.3.4	FDI net outflows, % GDP	3.5	18	
CREATIVE OUTPUTS		**51.7**	**7**	
7.1	**Intangible assets**	**54.1**	**8**	
7.1.1	Trademarks by origin/bn PPP$ GDP	45.9	56	○
7.1.2	Global brand value, top 5,000, % GDP	214.0	3	● ◆
7.1.3	Industrial designs by origin/bn PPP$ GDP	3.9	32	
7.1.4	ICTs & organizational model creation+	82.7	2	● ◆
7.2	**Creative goods and services**	**31.9**	**21**	
7.2.1	Cultural & creative services exports, % total trade	1.0	26	
7.2.2	National feature films/mn pop. 15-69	10.0	20	
7.2.3	Entertainment & Media market/th pop. 15-69	66.8	6	
7.2.4	Printing and other media, % manufacturing	1.1	54	○
7.2.5	Creative goods exports, % total trade	1.8	31	
7.3	**Online creativity**	**66.4**	**6**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15-69	42.9	17	
7.3.2	Country-code TLDs/th pop. 15-69	68.6	8	
7.3.3	Wikipedia edits/mn pop. 15-69	93.8	4	● ◆
7.3.4	Mobile app creation/bn PPP$ GDP	60.7	9	

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * an index; + a survey question. ⊙ indicates that the economy's data are older than the base year; see Appendix II for details, including the year of the data, at http://globalinnovationindex.org. 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 data that are either missing or outdated for Sweden.

Missing data

Code	Indicator name	Country year	Model year	Source
4.1.3	Microfinance gross loans, % GDP	n/a	2018	Microfinance Information Exchange
4.2.2	Market capitalization, % GDP	n/a	2018	World Federation of Exchanges
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2018	World Intellectual Property Organization

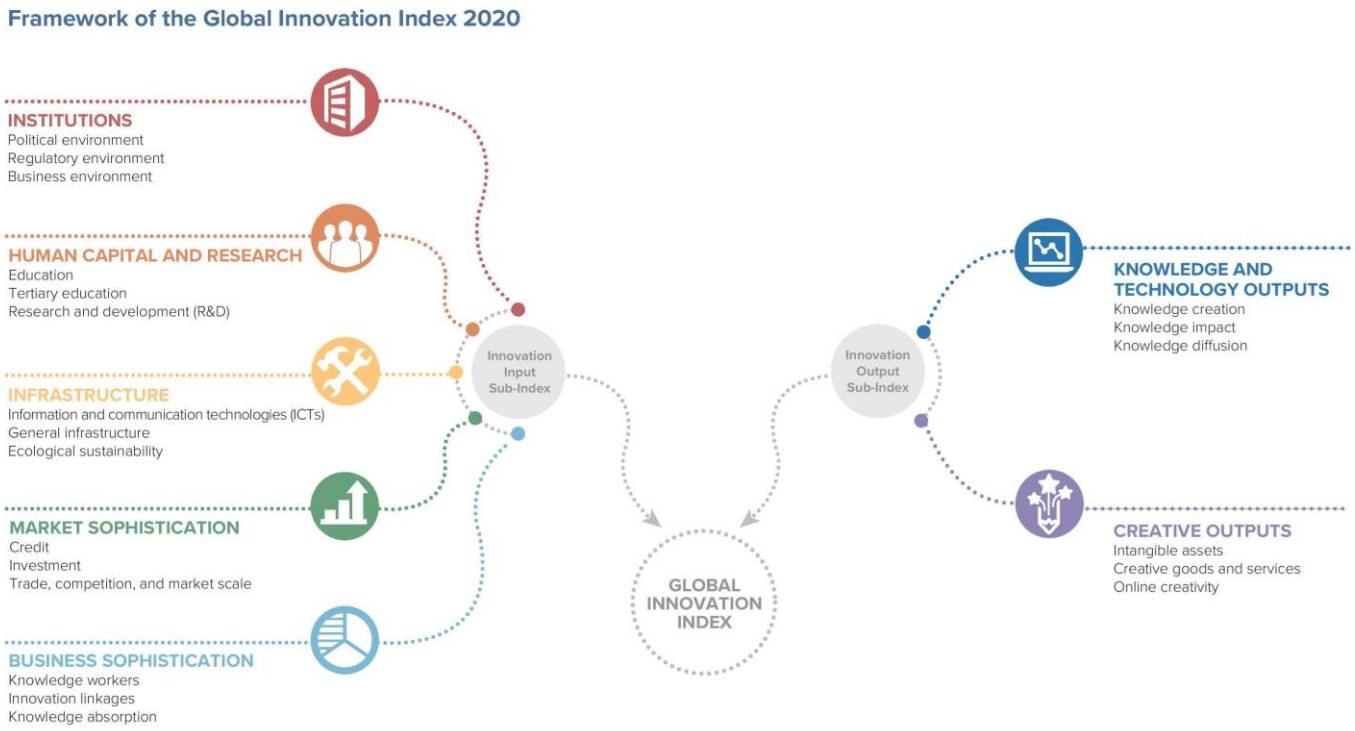
Outdated data

Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	2016	2018	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2017	2018	UNESCO Institute for Statistics
5.1.2	Firms offering formal training, %	2013	2018	World Bank

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2020, the GII presents its 13th edition devoted to the theme *Who Will Finance Innovation?*

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.