Global Innovation Index 2021

ESTONIA

21st Estonia ranks 21st among the 132 economies featured in the GII 2021.

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 Estonia 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 Estonia in the GII 2021 is between ranks 19 and 22.

Rankings for Estonia (2019–2021)

	GII	Innovation inputs	Innovation outputs
2021	21	24	20
2020	25	25	20
2019	24	27	19

- Estonia performs better in innovation outputs than innovation inputs in 2021.
- This year Estonia ranks 24th in innovation inputs, higher than both 2020 and 2019.
- As for innovation outputs, Estonia ranks 20th. This position is the same as last year but lower than 2019.

20th Estonia ranks 20th among the 51 high-income group economies.

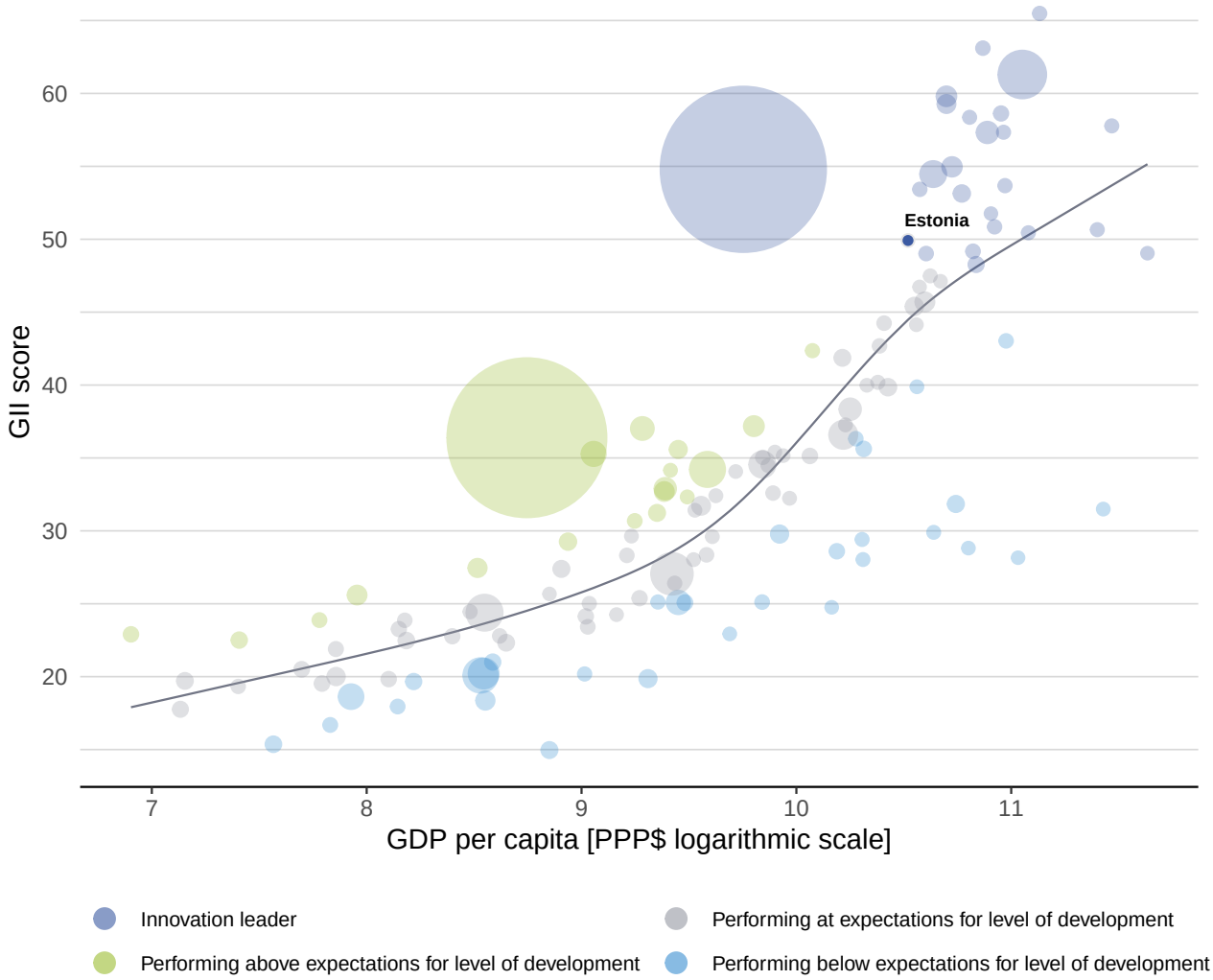
13th Estonia ranks 13th among the 39 economies in Europe.

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

The positive relationship between innovation and development

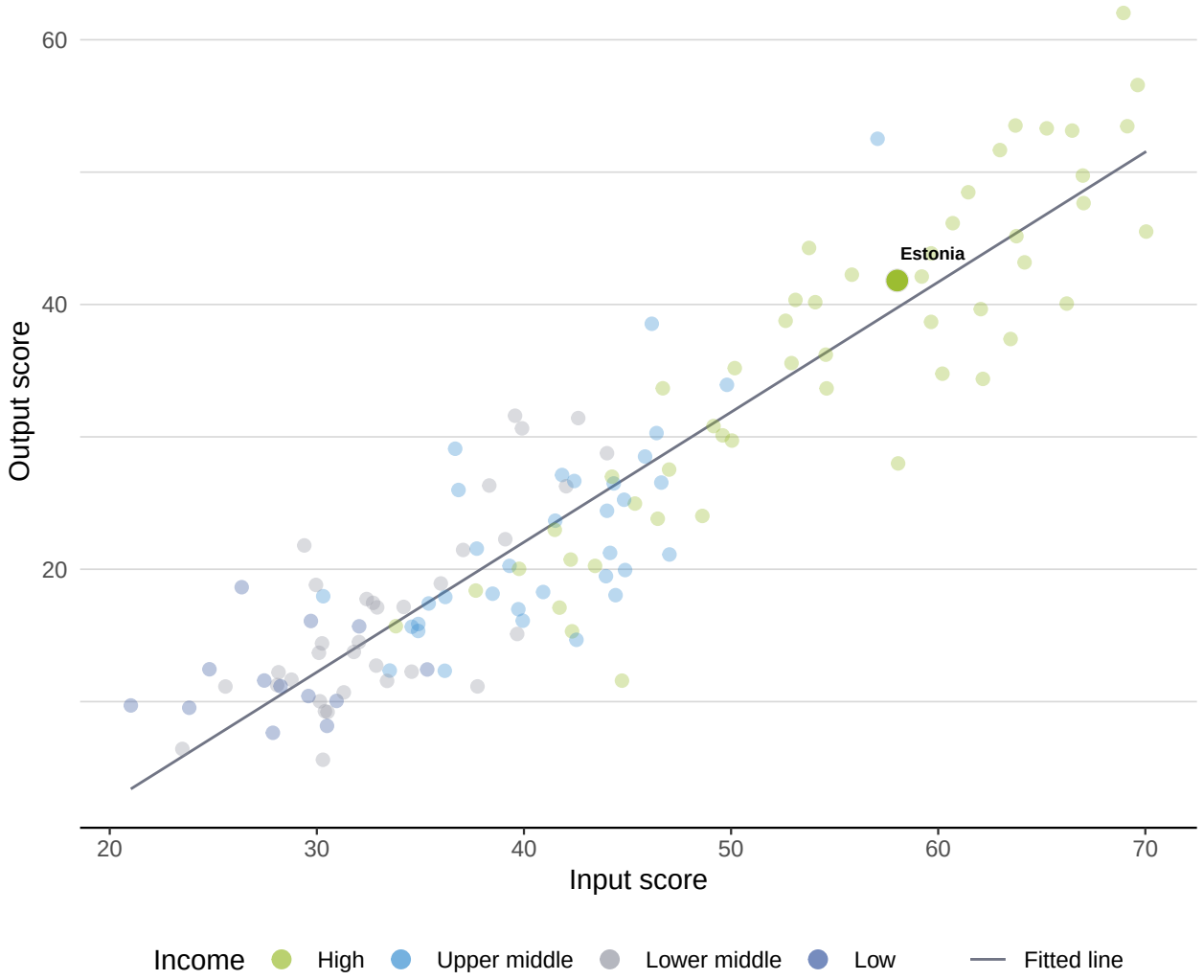


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

Estonia 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 Estonia

High-income group economies

Estonia performs above the high-income group average in five pillars, namely: Institutions; Infrastructure; Market sophistication; Knowledge and technology outputs; and, Creative outputs.

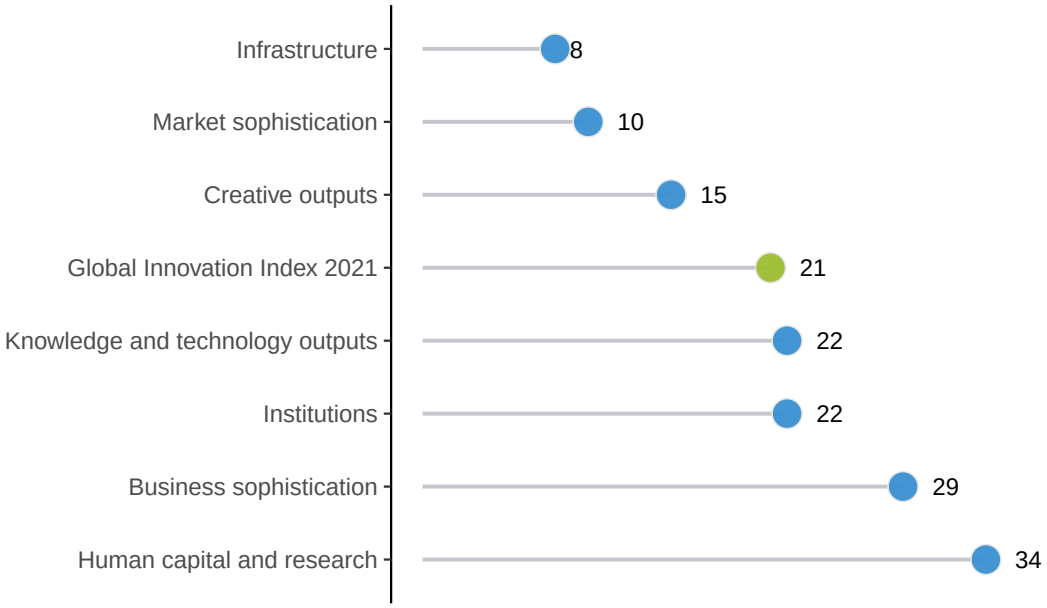
Europe

Estonia performs above the regional average in five pillars, namely: Institutions; Infrastructure; Market sophistication; Knowledge and technology outputs; and, Creative outputs.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2021 AREAS

Estonia performs best in Infrastructure and its weakest performance is in Human capital and research.

The seven GII pillar ranks for Estonia



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

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of Estonia in the GII 2021.

Strengths and weaknesses for Estonia

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
2.1.4	PISA scales in reading, maths and science	4	2.1.2	Government funding/pupil, secondary, % GDP/cap	54
3.1	Information and communication technologies (ICTs)	5	2.3.3	Global corporate R&D investors, top 3, mn US$	41
3.1.3	Government's online service	2	3.3.1	GDP/unit of energy use	83
3.1.4	E-participation	1	4.2.1	Ease of protecting minority investors	77
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	4	4.3.3	Domestic market scale, bn PPP$	102
4.2	Investment	4	5.2.2	State of cluster development and depth	65
4.2.4	Venture capital recipients, deals/bn PPP$ GDP	5	5.3.1	Intellectual property payments, % total trade	82
5.1.5	Females employed w/advanced degrees, %	7	6.2.3	Software spending, % GDP	78
6.2.2	New businesses/th pop. 15–64	2	6.3.1	Intellectual property receipts, % total trade	61
7.1.4	ICTs and organizational model creation	5	7.1.2	Global brand value, top 5,000, % GDP	80
7.2.2	National feature films/mn pop. 15–69	5			
7.3.3	Wikipedia edits/mn pop. 15–69	3			

Estonia

GII 2021 rank

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Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$	GII 2020 rank
20	**24**	**High**	**EUR**	**1.3**	**49.1**	**37,033**	**25**

		Score/ Value	Rank	
Institutions		**81.1**	**22**	
1.1	**Political environment**	**79.1**	**23**	
1.1.1	Political and operational stability*	83.9	13	
1.1.2	Government effectiveness*	76.8	25	
1.2	**Regulatory environment**	**86.5**	**16**	
1.2.1	Regulatory quality*	85.1	15	
1.2.2	Rule of law*	80.5	22	
1.2.3	Cost of redundancy dismissal	12.9	39	
1.3	**Business environment**	**77.7**	**41**	◇
1.3.1	Ease of starting a business*	95.4	13	
1.3.2	Ease of resolving insolvency*	60.1	49	◇
Human capital and research		**42.9**	**34**	◇
2.1	**Education**	**58.2**	**36**	
2.1.1	Expenditure on education, % GDP	5.0	40	
2.1.2	Government funding/pupil, secondary, % GDP/cap ◴	19.1	54 ○	
2.1.3	School life expectancy, years	15.9	38	
2.1.4	PISA scales in reading, maths and science	525.5	4 ●	
2.1.5	Pupil-teacher ratio, secondary ◴	9.7	24	
2.2	**Tertiary education**	**45.9**	**19**	
2.2.1	Tertiary enrolment, % gross	70.4	32	
2.2.2	Graduates in science and engineering, %	27.7	26	
2.2.3	Tertiary inbound mobility, %	9.6	24	
2.3	**Research and development (R&D)**	**24.6**	**42**	◇
2.3.1	Researchers, FTE/mn pop.	3,765.7	28	◇
2.3.2	Gross expenditure on R&D, % GDP	1.6	22	
2.3.3	Global corporate R&D investors, top 3, mn US$	0.0	41 ○	◇
2.3.4	QS university ranking, top 3*	21.3	48	◇
Infrastructure		**59.8**	**8**	
3.1	**Information and communication technologies (ICTs)**	**90.7**	**5** ●	
3.1.1	ICT access*	82.1	26	
3.1.2	ICT use*	81.3	21	
3.1.3	Government's online service*	99.4	2 ●	◆
3.1.4	E-participation*	100.0	1 ●	
3.2	**General infrastructure**	**39.0**	**33**	
3.2.1	Electricity output, GWh/mn pop.	9,370.7	16	
3.2.2	Logistics performance*	58.7	35	◇
3.2.3	Gross capital formation, % GDP	25.2	44	
3.3	**Ecological sustainability**	**49.7**	**16**	
3.3.1	GDP/unit of energy use	8.8	83 ○	
3.3.2	Environmental performance*	65.3	30	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	10.1	4 ●	◆
Market sophistication		**66.4**	**10**	
4.1	**Credit**	**46.6**	**44**	
4.1.1	Ease of getting credit*	70.0	44	
4.1.2	Domestic credit to private sector, % GDP	59.0	56	◇
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	**Investment**	**80.6**	**4** ●	◆
4.2.1	Ease of protecting minority investors*	58.0	77 ○	◇
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital investors, deals/bn PPP$ GDP	0.4	8	◆
4.2.4	Venture capital recipients, deals/bn PPP$ GDP	0.2	5 ●	◆
4.3	**Trade, diversification, and market scale**	**71.9**	**56**	
4.3.1	Applied tariff rate, weighted avg., %	1.8	25	
4.3.2	Domestic industry diversification ◴	96.9	18	
4.3.3	Domestic market scale, bn PPP$	49.1	102 ○	◇

		Score/ Value	Rank	
Business sophistication		**39.9**	**29**	◇
5.1	**Knowledge workers**	**52.0**	**25**	◇
5.1.1	Knowledge-intensive employment, %	46.6	14	
5.1.2	Firms offering formal training, %	40.7	27	
5.1.3	GERD performed by business, % GDP	0.9	25	
5.1.4	GERD financed by business, %	40.8	43	◇
5.1.5	Females employed w/advanced degrees, %	27.0	7 ●	
5.2	**Innovation linkages**	**32.9**	**29**	◇
5.2.1	University-industry R&D collaboration†	48.8	43	◇
5.2.2	State of cluster development and depth†	46.4	65 ○	◇
5.2.3	GERD financed by abroad, % GDP	0.2	20	
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.1	20	
5.2.5	Patent families/bn PPP$ GDP	0.9	28	◇
5.3	**Knowledge absorption**	**34.8**	**42**	◇
5.3.1	Intellectual property payments, % total trade	0.3	82 ○	◇
5.3.2	High-tech imports, % total trade	8.5	53	
5.3.3	ICT services imports, % total trade	2.8	11	
5.3.4	FDI net inflows, % GDP	6.6	15	
5.3.5	Research talent, % in businesses	39.1	33	◇
Knowledge and technology outputs		**38.4**	**22**	
6.1	**Knowledge creation**	**30.9**	**32**	◇
6.1.1	Patents by origin/bn PPP$ GDP	1.6	46	◇
6.1.2	PCT patents by origin/bn PPP$ GDP	1.1	27	◇
6.1.3	Utility models by origin/bn PPP$ GDP	1.3	19	
6.1.4	Scientific and technical articles/bn PPP$ GDP	43.5	14	
6.1.5	Citable documents H-index	17.4	47	◇
6.2	**Knowledge impact**	**48.1**	**9**	
6.2.1	Labor productivity growth, %	2.2	25	◆
6.2.2	New businesses/th pop. 15–64	23.6	2 ●	◆
6.2.3	Software spending, % GDP	0.1	78 ○	◇
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	19.5	13	◆
6.2.5	High-tech manufacturing, %	32.2	40	
6.3	**Knowledge diffusion**	**36.0**	**25**	
6.3.1	Intellectual property receipts, % total trade	0.1	61 ○	◇
6.3.2	Production and export complexity	66.2	28	
6.3.3	High-tech exports, % total trade	8.4	21	
6.3.4	ICT services exports, % total trade	4.6	19	
Creative outputs		**45.3**	**15**	
7.1	**Intangible assets**	**44.3**	**33**	
7.1.1	Trademarks by origin/bn PPP$ GDP	80.7	21	
7.1.2	Global brand value, top 5,000, % GDP	0.0	80 ○	◇
7.1.3	Industrial designs by origin/bn PPP$ GDP	3.5	30	
7.1.4	ICTs and organizational model creation†	79.3	5 ●	
7.2	**Creative goods and services**	**36.5**	**17**	
7.2.1	Cultural and creative services exports, % total trade	2.0	7	
7.2.2	National feature films/mn pop. 15–69	19.5	5 ●	◆
7.2.3	Entertainment and media market/th pop. 15–69	n/a	n/a	
7.2.4	Printing and other media, % manufacturing	1.9	17	
7.2.5	Creative goods exports, % total trade	1.0	43	
7.3	**Online creativity**	**56.1**	**14**	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	10.4	39	◇
7.3.2	Country-code TLDs/th pop. 15–69	44.0	17	
7.3.3	Wikipedia edits/mn pop. 15–69	88.7	3 ●	◆
7.3.4	Mobile app creation/bn PPP$ GDP	75.8	8	◆

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 Appendix IV 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 Estonia.

Missing data for Estonia

Code	Indicator name	Economy 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	2019	World Federation of Exchanges
7.2.3	Entertainment and media market/th pop. 15–69	n/a	2020	PwC

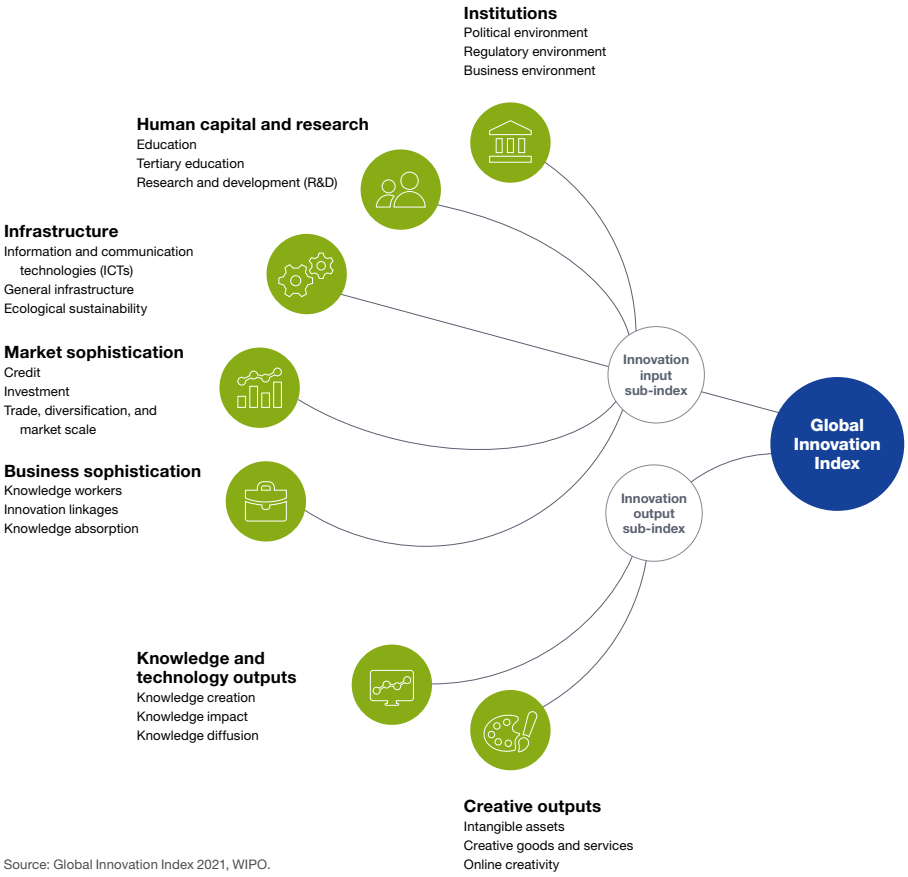
Outdated data for Estonia

Code	Indicator name	Economy year	Model year	Source
2.1.2	Government funding/pupil, secondary, % GDP/cap	2016	2017	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2018	2019	UNESCO Institute for Statistics
4.3.2	Domestic industry diversification	2015	2018	United Nations Industrial Development Organization

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 2021, WIPO.

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.