Global Innovation Index 2022

FRANCE

12th France ranks 12th 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 France 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 France in the GII 2022 is between ranks 11 and 12.

Rankings for France (2020–2022)

GIIYR	GII	Innovation inputs	Innovation outputs
2020	12	16	12
2021	11	17	10
2022	12	13	11

- France performs better in innovation outputs than innovation inputs in 2022.
- This year France ranks 13th in innovation inputs, higher than both 2021 and 2020.
- As for innovation outputs, France ranks 11th. This position is lower than last year but higher than 2020.

11th France ranks 11th among the 48 high-income group economies.

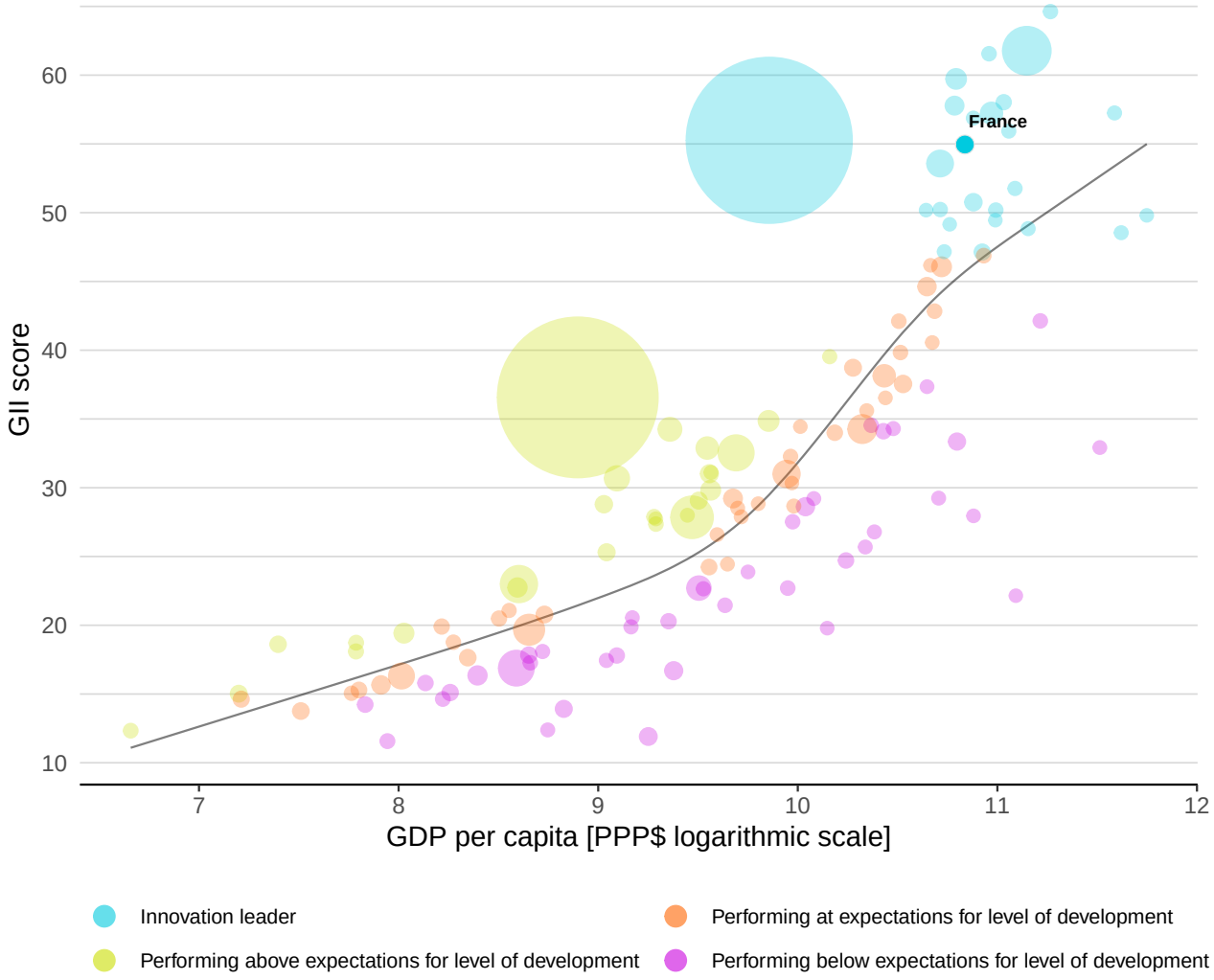
8th France ranks 8th among the 39 economies in Europe.

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

The positive relationship between innovation and development

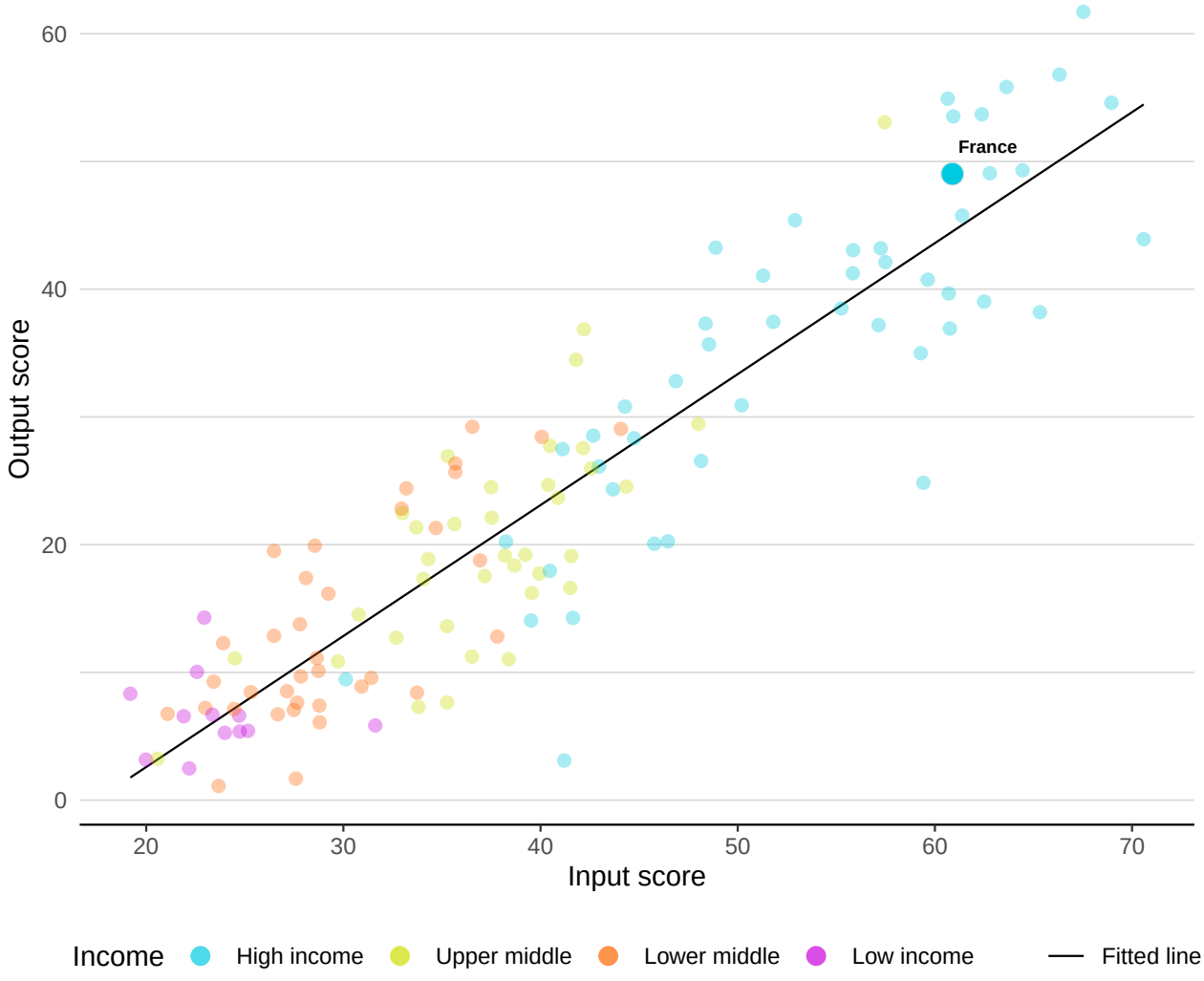


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

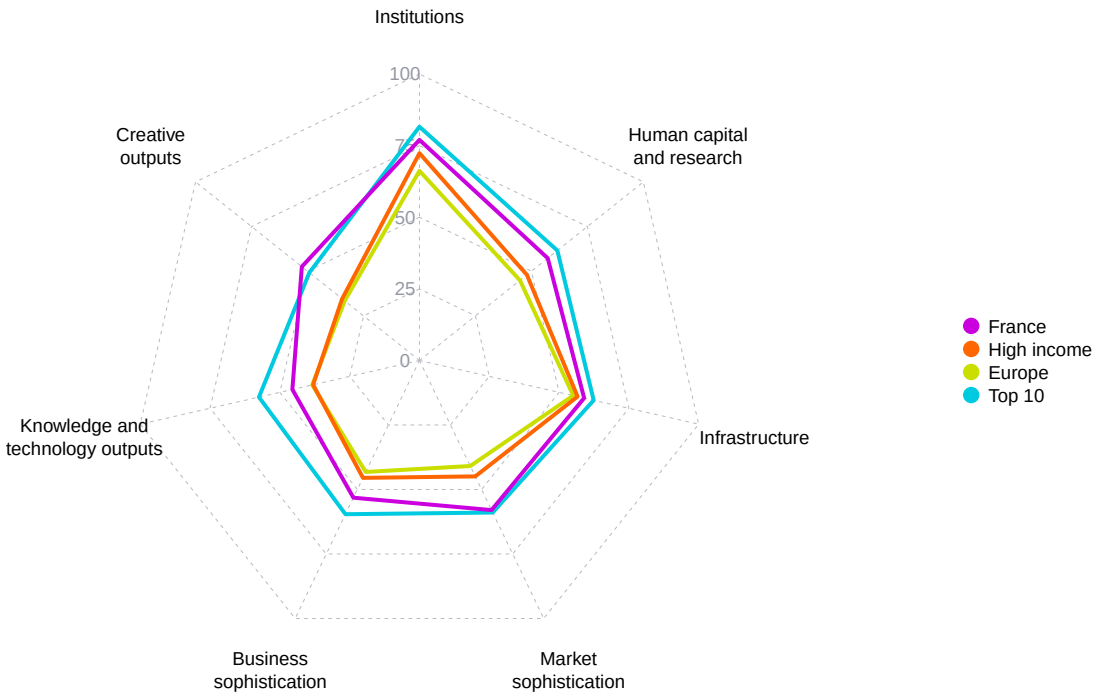
France produces more innovation outputs relative to its level of innovation investments.

Innovation input to output performance



BENCHMARKING AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

The seven GII pillar scores for France



High-income group economies

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

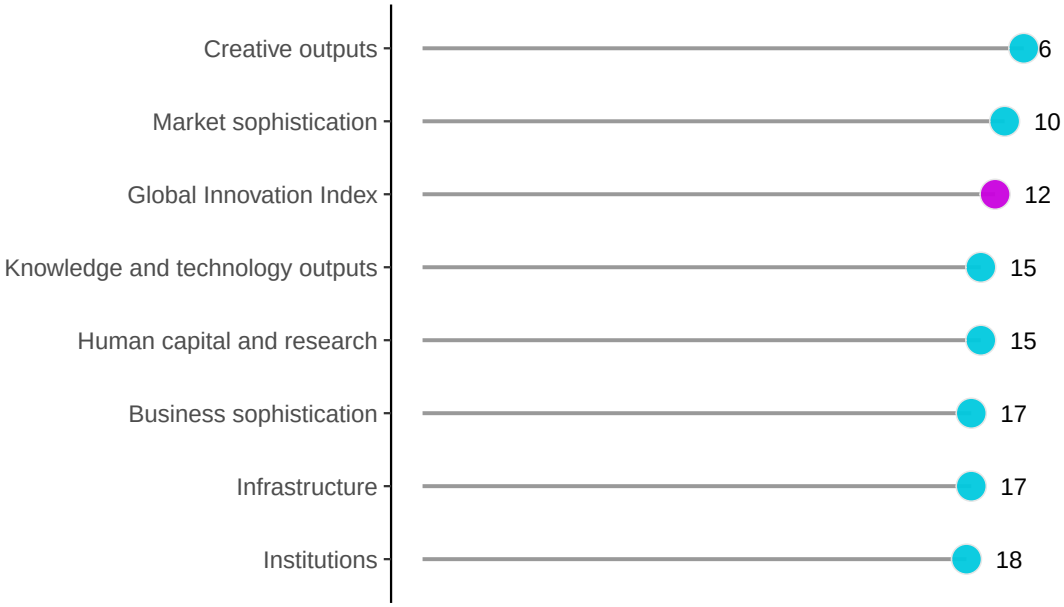
Europe

France performs above the regional average in all GII pillars.

OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

France performs best in Creative outputs and its weakest performance is in Institutions.

The seven GII pillar ranks for France



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

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

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

INNOVATION STRENGTHS AND WEAKNESSES

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

Strengths and weaknesses for France

Strengths			Weaknesses		
Code	**Indicator name**	**Rank**	**Code**	**Indicator name**	**Rank**
2.3.3	Global corporate R&D investors, top 3, mn USD	7	2.1.5	Pupil-teacher ratio, secondary	60
2.3.4	QS university ranking, top 3	10	3.1.1	ICT access	58
3.1.2	ICT use	9	3.2.3	Gross capital formation, % GDP	47
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	9	3.3.1	GDP/unit of energy use	46
4.3.3	Domestic market scale, bn PPP$	9	5.2.1	University-industry R&D collaboration	48
5.1.2	Firms offering formal training, %	3	5.3.4	FDI net inflows, % GDP	81
6.1.5	Citable documents H-index	5	6.1.3	Utility models by origin/bn PPP$ GDP	45
7.1.1	Intangible asset intensity, top 15, %	3	6.2.1	Labor productivity growth, %	85
7.1.3	Global brand value, top 5,000, % GDP	6	6.3.4	ICT services exports, % total trade	54
7.1.4	Industrial designs by origin/bn PPP$ GDP	8	7.2.4	Printing and other media, % manufacturing	54

GII 2022 rank

France

12

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP$ (bn)	GDP per capita, PPP$
11	13	High	EUR	65.4	3,322.3	50,876

		Score/ Value	Rank	
Institutions		**77.0**	**18**	
1.1	**Political environment**	76.5	29	◇
1.1.1	Political and operational stability*	76.4	37	◇
1.1.2	Government effectiveness*	76.6	24	
1.2	**Regulatory environment**	83.9	23	
1.2.1	Regulatory quality*	74.8	25	
1.2.2	Rule of law*	80.5	22	
1.2.3	Cost of redundancy dismissal	13.0	41	
1.3	**Business environment**	70.7	16	
1.3.1	Policies for doing business†	62.0	34	
1.3.2	Entrepreneurship policies and culture*	79.5	8	
Human capital and research		**57.3**	**15**	
2.1	**Education**	61.0	33	
2.1.1	Expenditure on education, % GDP	5.4	30	
2.1.2	Government funding/pupil, secondary, % GDP/cap	25.5	21	
2.1.3	School life expectancy, years	15.8	39	◇
2.1.4	PISA scales in reading, maths and science	493.7	25	
2.1.5	Pupil-teacher ratio, secondary	13.4	60 ○	
2.2	**Tertiary education**	41.5	33	
2.2.1	Tertiary enrolment, % gross	68.4	37	
2.2.2	Graduates in science and engineering, %	25.9	35	
2.2.3	Tertiary inbound mobility, %	9.2	28	
2.3	**Research and development (R&D)**	69.3	9 ●	
2.3.1	Researchers, FTE/mn pop.	4,926.2	17	
2.3.2	Gross expenditure on R&D, % GDP	2.4	14	
2.3.3	Global corporate R&D investors, top 3, mn USD	84.7	7 ●	
2.3.4	QS university ranking, top 3*	73.5	10 ●	
Infrastructure		**59.0**	**17**	
3.1	**Information and communication technologies (ICTs)**	88.1	18	
3.1.1	ICT access*	88.7	58 ○	◇
3.1.2	ICT use*	85.1	9 ●	
3.1.3	Government's online service*	88.2	18	
3.1.4	E-participation*	90.5	18	
3.2	**General infrastructure**	52.4	21	
3.2.1	Electricity output, GWh/mn pop.	7,803.7	21	
3.2.2	Logistics performance*	83.3	16	
3.2.3	Gross capital formation, % GDP	25.7	47 ○	
3.3	**Ecological sustainability**	36.4	39	
3.3.1	GDP/unit of energy use	12.3	46 ○	
3.3.2	Environmental performance*	62.5	12	
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	2.1	43	
Market sophistication		**58.0**	**10 ●**	
4.1	**Credit**	47.3	24	
4.1.1	Finance for startups and scaleups*	48.5	17	
4.1.2	Domestic credit to private sector, % GDP	122.4	20	
4.1.3	Loans from microfinance institutions, % GDP	n/a	n/a	
4.2	**Investment**	39.9	15	
4.2.1	Market capitalization, % GDP	92.7	18	
4.2.2	Venture capital investors, deals/bn PPP$ GDP	0.2	20	
4.2.3	Venture capital recipients, deals/bn PPP$ GDP	0.1	9 ●	
4.2.4	Venture capital received, value, % GDP	0.0	14	
4.3	**Trade, diversification, and market scale**	86.7	8 ● ◆	
4.3.1	Applied tariff rate, weighted avg., %	1.5	20	
4.3.2	Domestic industry diversification	95.0	26	
4.3.3	Domestic market scale, bn PPP$	3,322.3	9 ● ◆	

		Score/ Value	Rank	
Business sophistication		**53.2**	**17**	
5.1	**Knowledge workers**	68.4	8 ●	
5.1.1	Knowledge-intensive employment, %	47.4	15	
5.1.2	Firms offering formal training, %	67.9	3 ●	
5.1.3	GERD performed by business, % GDP	1.6	15	
5.1.4	GERD financed by business, %	56.7	18	
5.1.5	Females employed w/advanced degrees, %	24.8	19	
5.2	**Innovation linkages**	41.8	25	◇
5.2.1	University-industry R&D collaboration†	49.8	48 ○	◇
5.2.2	State of cluster development and depth†	57.7	32	
5.2.3	GERD financed by abroad, % GDP	0.2	22	
5.2.4	Joint venture/strategic alliance deals/bn PPP$ GDP	0.1	26	◇
5.2.5	Patent families/bn PPP$ GDP	3.0	13	
5.3	**Knowledge absorption**	49.3	17	
5.3.1	Intellectual property payments, % total trade	1.5	24	
5.3.2	High-tech imports, % total trade	10.0	42	
5.3.3	ICT services imports, % total trade	3.0	16	
5.3.4	FDI net inflows, % GDP	1.8	81 ○	
5.3.5	Research talent, % in businesses	62.9	9	
Knowledge and technology outputs		**45.5**	**15**	
6.1	**Knowledge creation**	44.9	17	
6.1.1	Patents by origin/bn PPP$ GDP	7.7	13	
6.1.2	PCT patents by origin/bn PPP$ GDP	2.2	15	
6.1.3	Utility models by origin/bn PPP$ GDP	0.3	45 ○	
6.1.4	Scientific and technical articles/bn PPP$ GDP	25.5	36	
6.1.5	Citable documents H-index	78.6	5 ● ◆	
6.2	**Knowledge impact**	41.3	21	
6.2.1	Labor productivity growth, %	0.1	85 ○	
6.2.2	New businesses/th pop. 15–64	5.3	28	
6.2.3	Software spending, % GDP	0.5	14	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	7.3	38	
6.2.5	High-tech manufacturing, %	52.1	10	
6.3	**Knowledge diffusion**	50.4	18	
6.3.1	Intellectual property receipts, % total trade	1.9	13	
6.3.2	Production and export complexity	72.4	19	
6.3.3	High-tech exports, % total trade	11.2	15	
6.3.4	ICT services exports, % total trade	2.5	54 ○	
Creative outputs		**52.5**	**6 ●**	
7.1	**Intangible assets**	76.9	3 ● ◆	
7.1.1	Intangible asset intensity, top 15, %	91.6	3 ● ◆	
7.1.2	Trademarks by origin/bn PPP$ GDP	99.0	13 ◆	
7.1.3	Global brand value, top 5,000, % GDP	169.3	6 ●	
7.1.4	Industrial designs by origin/bn PPP$ GDP	11.7	8 ● ◆	
7.2	**Creative goods and services**	27.7	36	◇
7.2.1	Cultural and creative services exports, % total trade	1.1	26	
7.2.2	National feature films/mn pop. 15–69	5.4	21	
7.2.3	Entertainment and media market/th pop. 15–69	48.5	16	
7.2.4	Printing and other media, % manufacturing	0.9	54 ○	
7.2.5	Creative goods exports, % total trade	1.6	34	
7.3	**Online creativity**	28.5	25	
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	42.2	17	
7.3.2	Country-code TLDs/th pop. 15–69	25.4	27	
7.3.3	GitHub commit pushes received/mn pop. 15–69	28.3	25	
7.3.4	Mobile app creation/bn PPP$ GDP	18.1	15	

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 France.

Missing data for France

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)

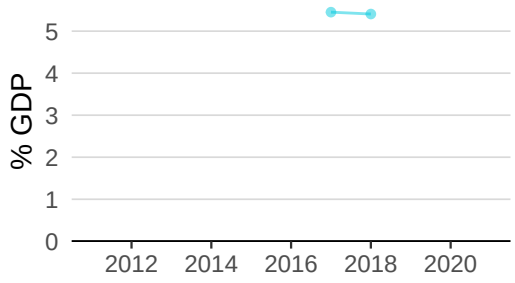
Outdated data for France

Code	Indicator name	Economy year	Model year	Source
2.1.1	Expenditure on education, % GDP	2018	2020	UNESCO Institute for Statistics
4.2.1	Market capitalization, % GDP	2018	2020	World Federation of Exchanges

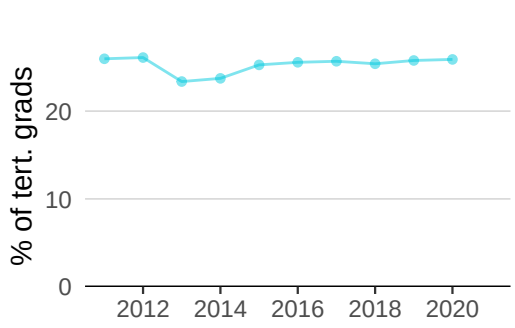
FRANCE'S INNOVATION SYSTEM

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

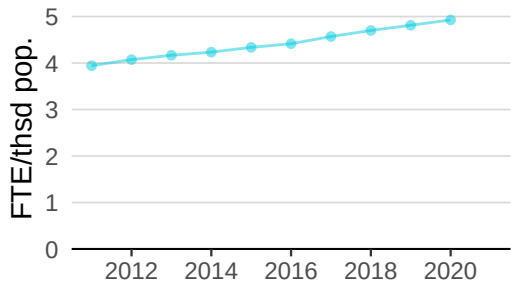
Innovation inputs



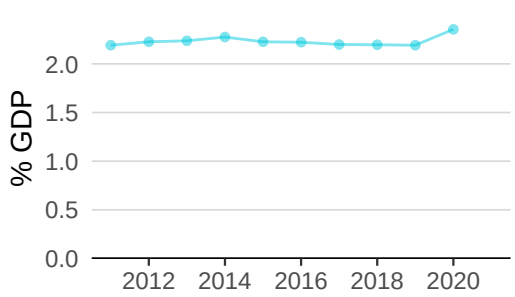
2.1.1 Expenditure on education was equal to 5.4% GDP in 2018–down by 1 percentage point from the year prior–and equivalent to an indicator rank of 30.



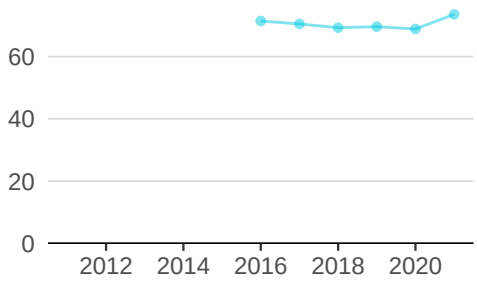
2.2.2 Graduates in science and engineering was equal to 25.9% of tert. grads in 2020–effectively unchanged from the year prior–and equivalent to an indicator rank of 35.



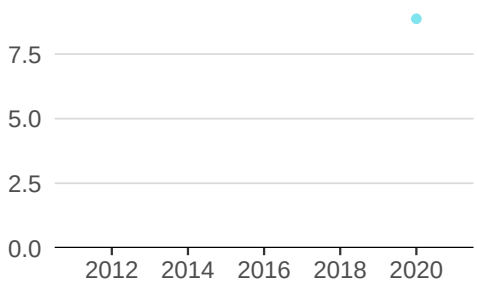
2.3.1 Researchers was equal to 4.9 FTE/thsd pop. in 2020–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 17.



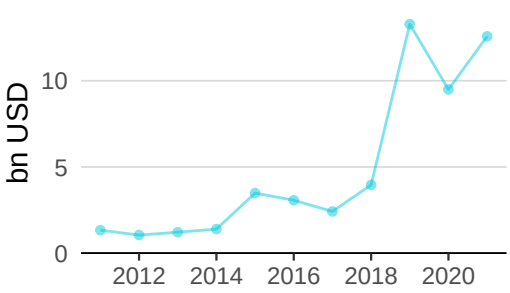
2.3.2 Gross expenditure on R&D was equal to 2.4% GDP in 2020–up by 7 percentage points from the year prior–and equivalent to an indicator rank of 14.



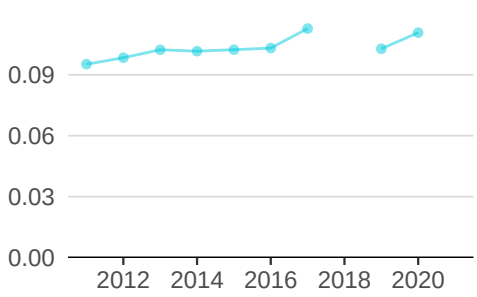
2.3.4 QS university ranking was equal to 73.5 in 2021–up by 7 percentage points from the year prior–and equivalent to an indicator rank of 10.



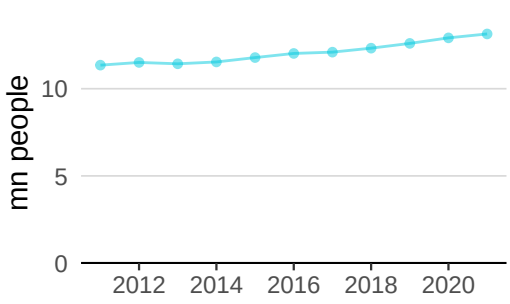
3.1.1 ICT access was equal to 8.9 in 2020 and equivalent to an indicator rank of 58.



4.2.4 Venture capital received was equal to 12.6 bn USD in 2021–up by 32 percentage points from the year prior–and equivalent to an indicator rank of 14.

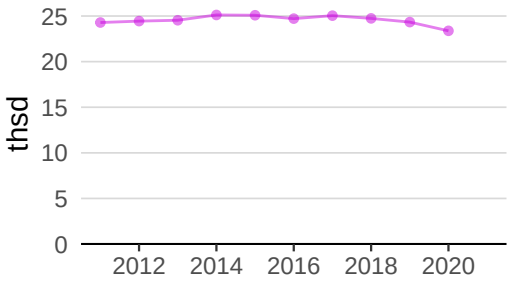


4.3.2 Domestic industry diversification was equal to 0.1 in 2020–up by 8 percentage points from the year prior–and equivalent to an indicator rank of 26.

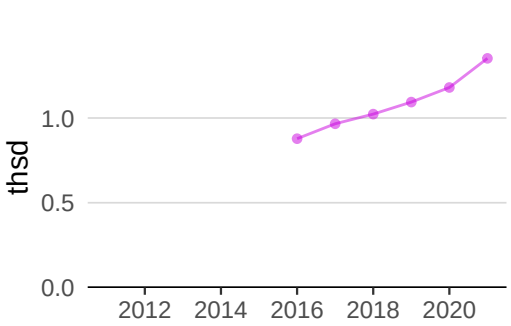


5.1.1 Knowledge-intensive employment was equal to 13.1 mn people in 2021–up by 2 percentage points from the year prior–and equivalent to an indicator rank of 15.

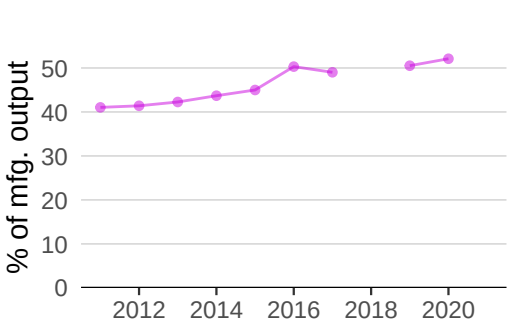
Innovation outputs



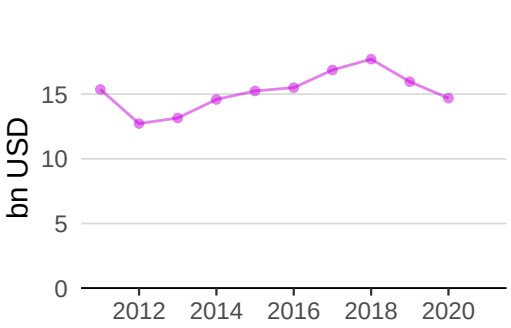
6.1.1 Patents by origin was equal to 23.4 thsd in 2020–down by 4 percentage points from the year prior–and equivalent to an indicator rank of 13.



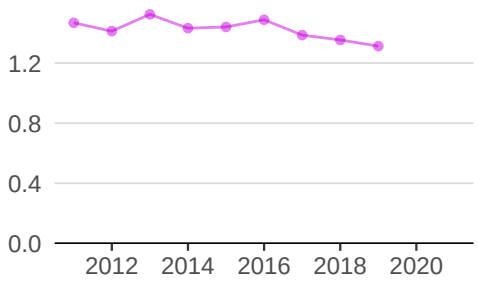
6.1.5 Citable documents H-index was equal to 1.4 thsd in 2021–up by 15 percentage points from the year prior–and equivalent to an indicator rank of 5.



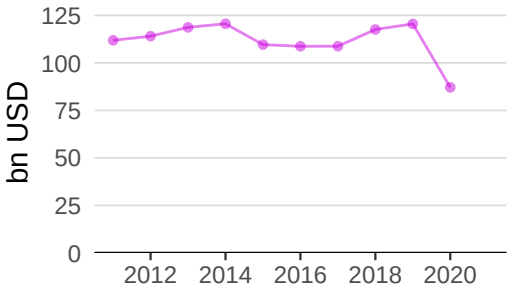
6.2.5 High-tech manufacturing was equal to 52.1% of mfg. output in 2020–up by 3 percentage points from the year prior–and equivalent to an indicator rank of 10.



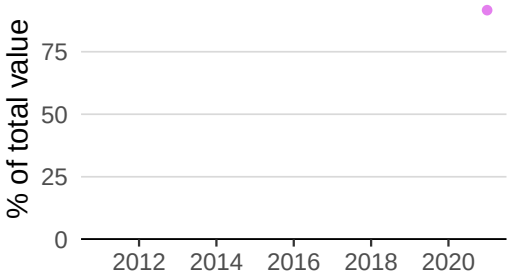
6.3.1 Intellectual property receipts was equal to 14.7 bn USD in 2020–down by 8 percentage points from the year prior–and equivalent to an indicator rank of 13.



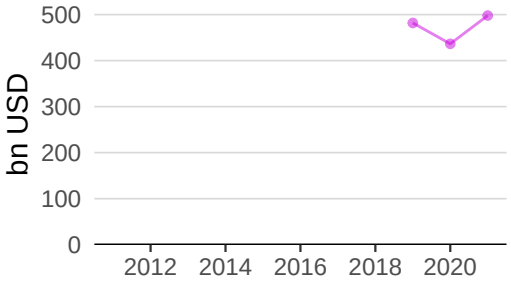
6.3.2 Production and export complexity was equal to 1.3 in 2019–down by 3 percentage points from the year prior–and equivalent to an indicator rank of 19.



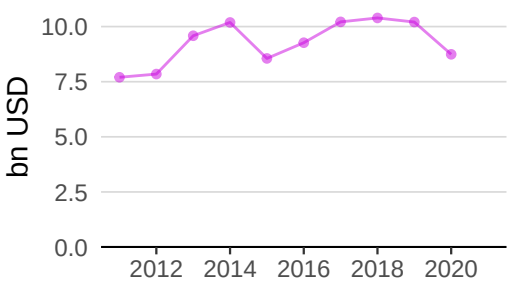
6.3.3 High-tech exports was equal to 87.1 bn USD in 2020–down by 28 percentage points from the year prior–and equivalent to an indicator rank of 15.



7.1.1 Intangible asset intensity was equal to 91.6% of total value in 2021 and equivalent to an indicator rank of 3.



7.1.3 Global brand value was equal to 497.9 bn USD in 2021–up by 14 percentage points from the year prior–and equivalent to an indicator rank of 6.



7.2.1 Cultural and creative services exports was equal to 8.7 bn USD in 2020–down by 14 percentage points from the year prior–and equivalent to an indicator rank of 26.

FRANCE'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]	[%]	[%]	
SANOFI	Pharmaceuticals & Biotechnology	5,527	-8.1	15.3	24
PEUGEOT	Automobiles & Parts	3,613	-11.0	5.9	48
RENAULT	Automobiles & Parts	2,749	-25.6	6.3	58

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
UNIVERSITÉ PSL	77.6	44
INSTITUT POLYTECHNIQUE DE PARIS	72.0	59
SORBONNE UNIVERSITY	67.1	72

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
LVMH MOET HENNESSY LOUIS VUI	1
L'OREAL	2
CHRISTIAN DIOR	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

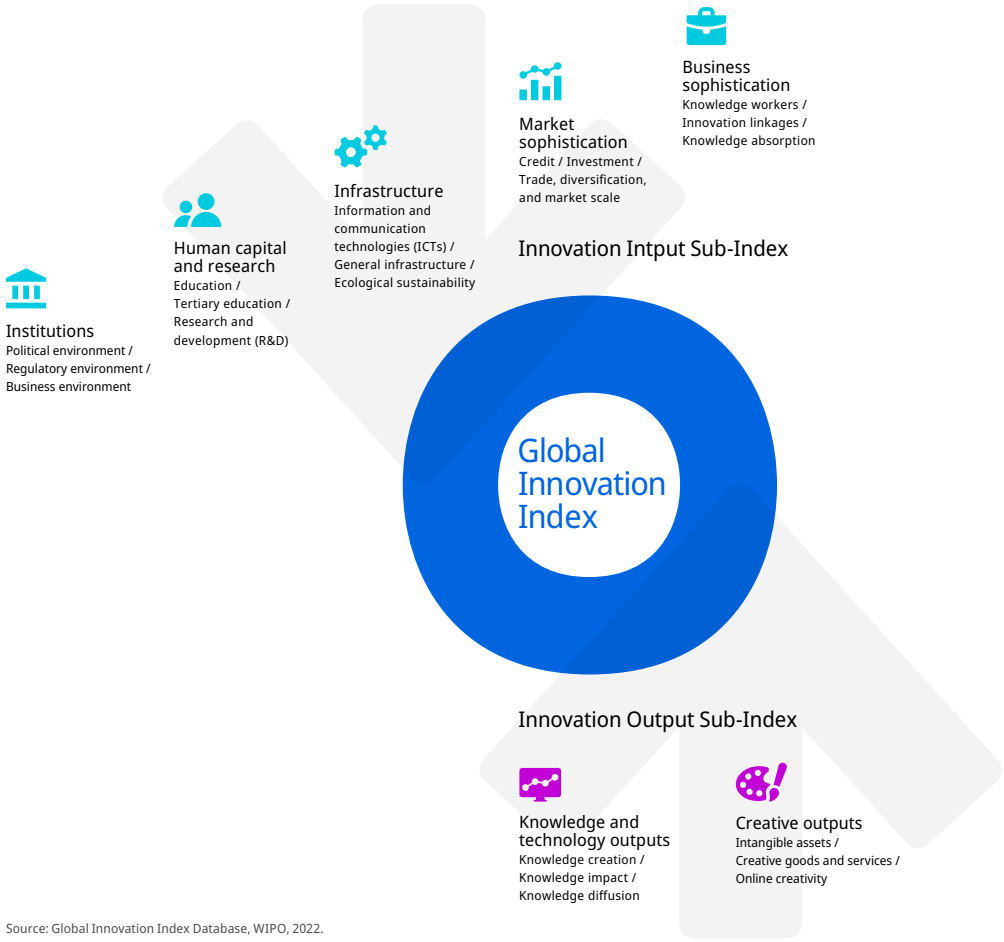
Brand	Industry	Rank
LOUIS VUITTON	Apparel	1
ORANGE	Telecoms	2
AXA	Insurance	3

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.



Source: Global Innovation Index Database, WIPO, 2022.

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.