



## SWITZERLAND

**1st** Switzerland ranks 1st 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 Switzerland 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 Switzerland in the GII 2022 is between ranks 1 and 1.

### Rankings for Switzerland (2020–2022)

| GIIYR | GII | Innovation inputs | Innovation outputs |
|-------|-----|-------------------|--------------------|
| 2020  | 1   | 2                 | 1                  |
| 2021  | 1   | 4                 | 1                  |
| 2022  | 1   | 3                 | 1                  |

- Switzerland performs better in innovation outputs than innovation inputs in 2022.
- This year Switzerland ranks 3rd in innovation inputs, higher than last year but lower than 2020.
- As for innovation outputs, Switzerland ranks 1st. This position is the same as both 2021 and 2020.

**1st** Switzerland ranks 1st among the 48 high-income group economies.

**1st** Switzerland ranks 1st among the 39 economies in Europe.

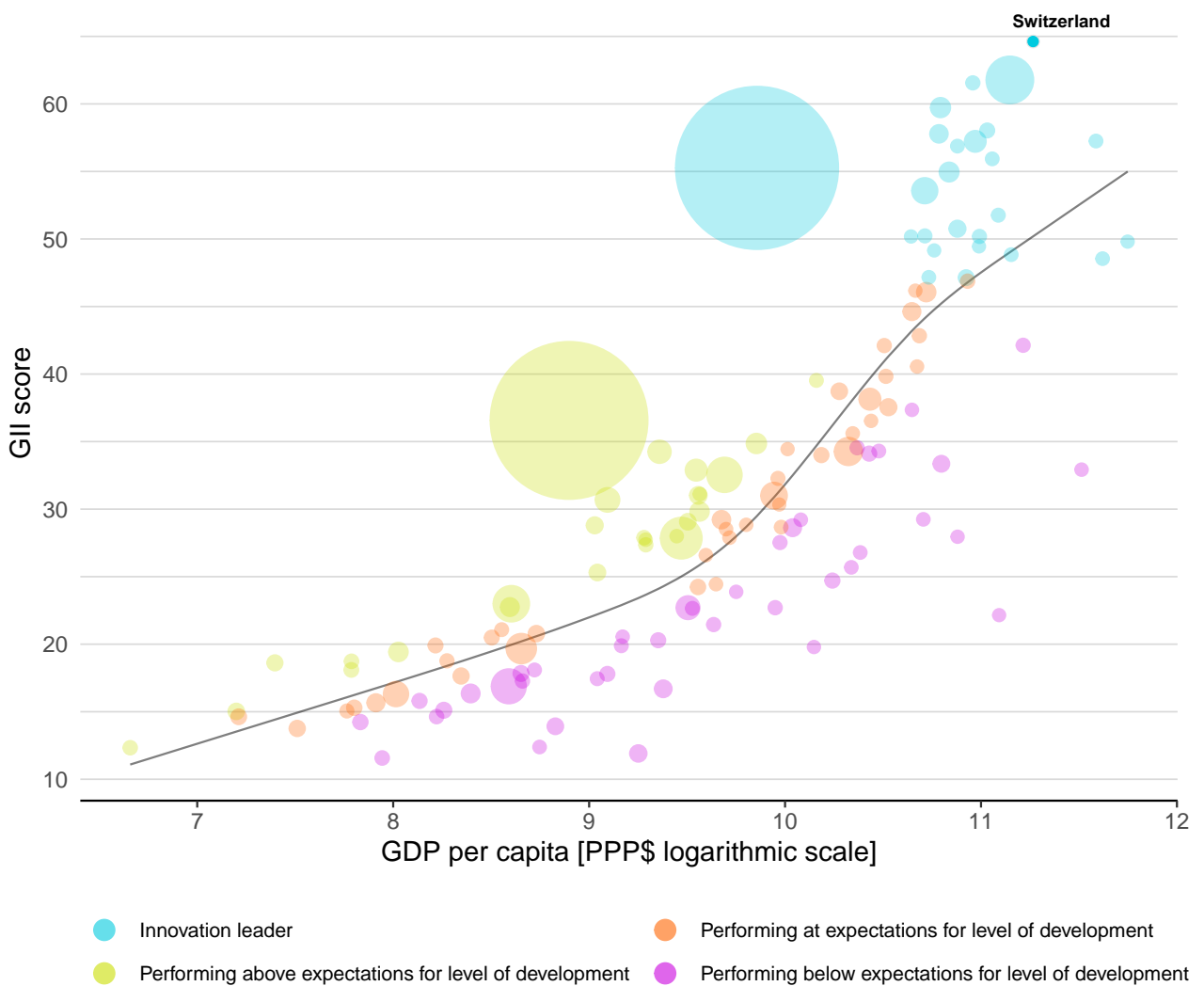


## EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

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

### The positive relationship between innovation and development



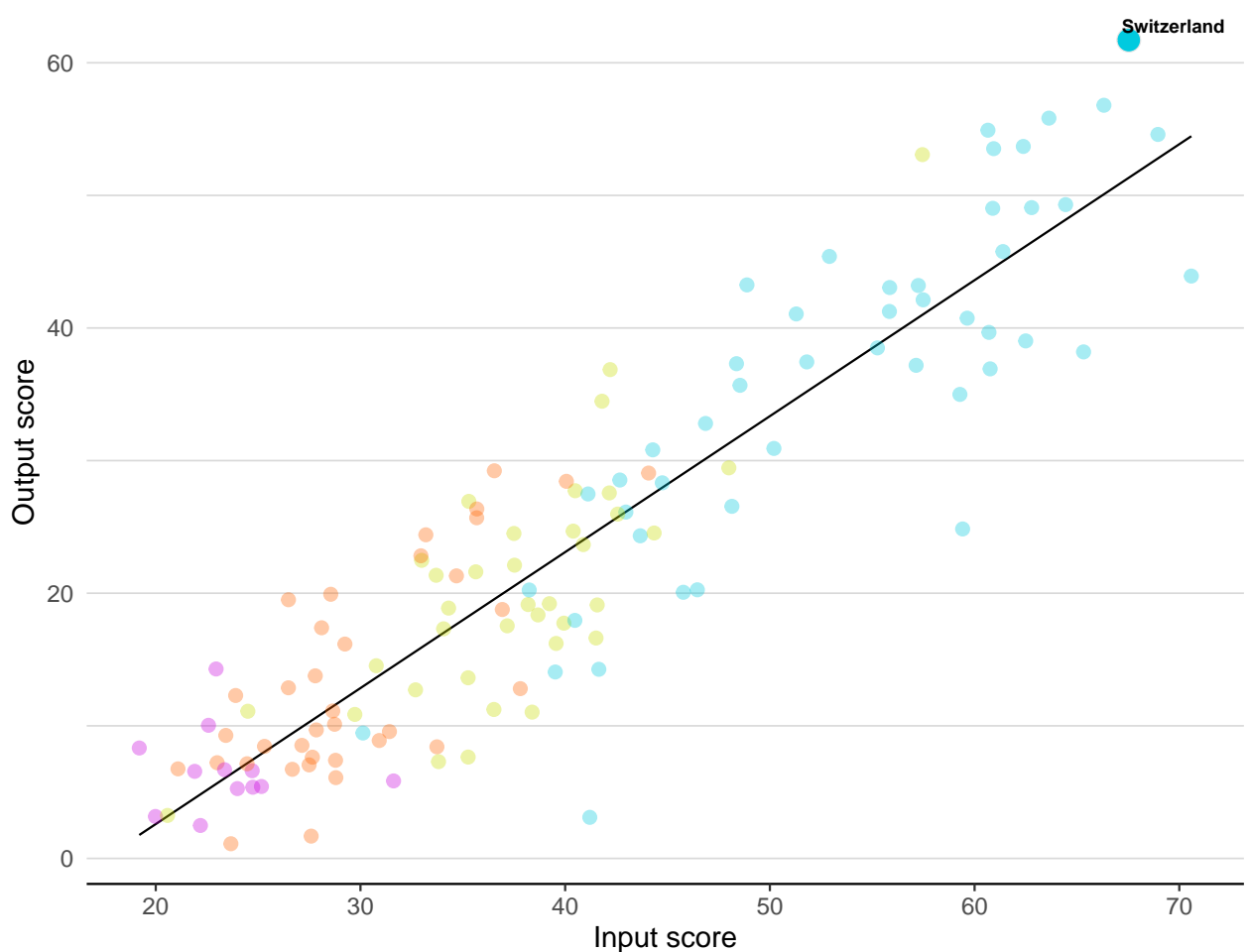


## EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

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.

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

### Innovation input to output performance

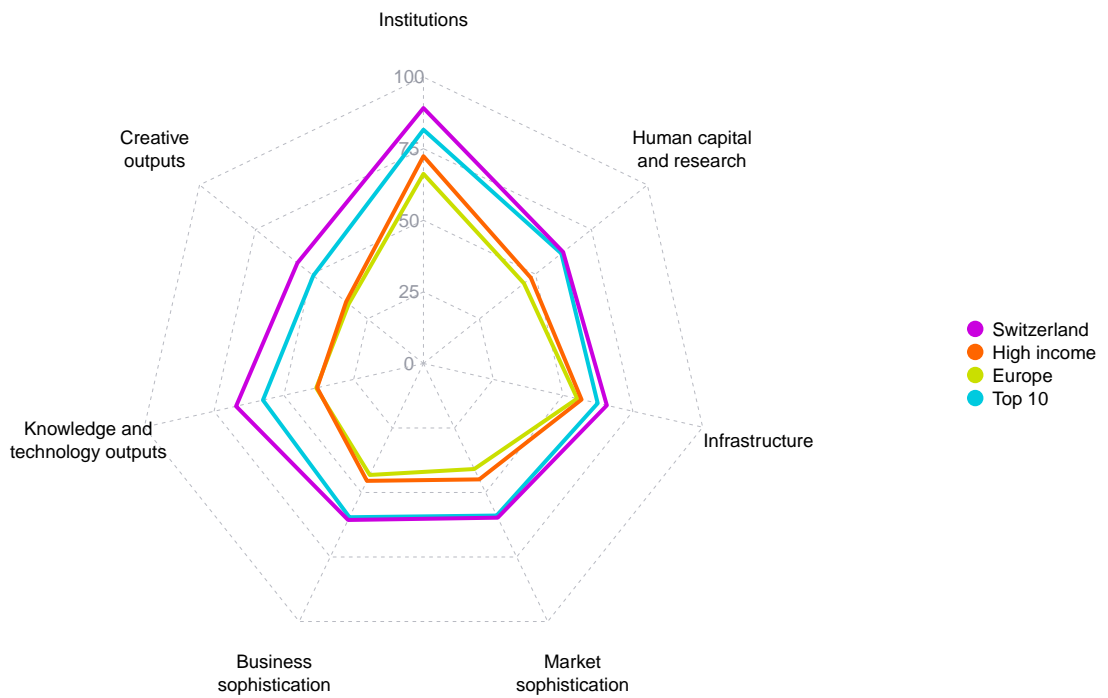


Income ● High income ● Upper middle ● Lower middle ● Low income — Fitted line



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

### The seven GII pillar scores for Switzerland



#### High-income group economies

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

#### Europe

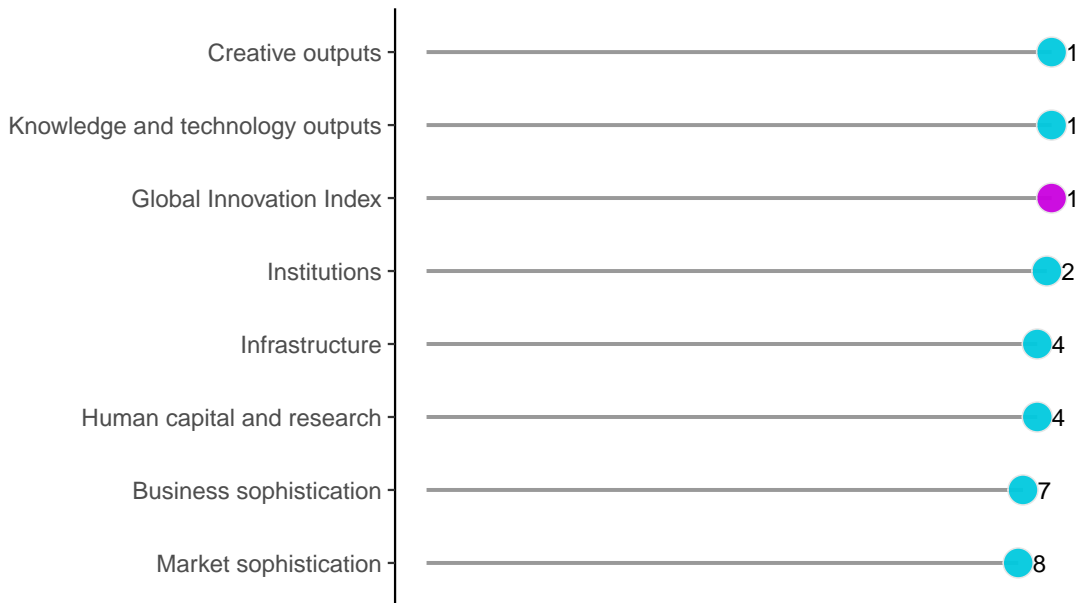
Switzerland performs above the regional average in all GII pillars.



## OVERVIEW OF RANKINGS IN THE SEVEN GII 2022 AREAS

Switzerland performs best in Knowledge and technology outputs and Creative outputs and its weakest performance is in Market sophistication.

### The seven GII pillar ranks for Switzerland



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

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

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



## INNOVATION STRENGTHS AND WEAKNESSES








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

### Strengths and weaknesses for Switzerland

| Strengths |   |      | Weaknesses |   |      |
|-----------|---|------|------------|---|------|
| Code      | Indicator name                                | Rank | Code       | Indicator name  | Rank |
| 1.1.2     | Government effectiveness                      | 2    | 2.1.1      | Expenditure on education, % GDP                       | 47   |
| 1.3.1     | Policies for doing business                   | 1    | 2.2.1      | Tertiary enrolment, % gross                           | 47   |
| 3.1.2     | ICT use                                       | 3    | 4.3.2      | Domestic industry diversification                     | 69   |
| 5.2.1     | University-industry R&D collaboration         | 3    | 5.3.2      | High-tech imports, % total trade                      | 109  |
| 5.2.2     | State of cluster development and depth        | 3    | 5.3.4      | FDI net inflows, % GDP                                | 131  |
| 5.2.5     | Patent families/bn PPP\$ GDP                  | 3    | 6.2.1      | Labor productivity growth, %                          | 63   |
| 5.3.1     | Intellectual property payments, % total trade | 1    | 6.3.4      | ICT services exports, % total trade                   | 55   |
| 6.1.1     | Patents by origin/bn PPP\$ GDP                | 1    | 7.2.1      | Cultural and creative services exports, % total trade | 45   |
| 6.1.2     | PCT patents by origin/bn PPP\$ GDP            | 1    | 7.2.2      | National feature films/mn pop. 15–69                  | 36   |
| 6.2.3     | Software spending, % GDP                      | 2    | 7.2.4      | Printing and other media, % manufacturing             | 39   |
| 6.2.5     | High-tech manufacturing, %                    | 2    |            |   |      |
| 6.3.1     | Intellectual property receipts, % total trade | 2    |            |   |      |
| 6.3.2     | Production and export complexity              | 2    |            |   |      |
| 7.1.3     | Global brand value, top 5,000, % GDP          | 3    |            |   |      |
| 7.2.3     | Entertainment and media market/th pop. 15–69  | 2    |            |   |      |
| 7.3.2     | Country-code TLDs/th pop. 15–69               | 1    |            |   |      |
| 7.3.3     | GitHub commit pushes received/mn pop. 15–69   | 3    |            |   |      |

## Switzerland

| Output rank | Input rank | Income | Region | Population (mn) | GDP, PPP\$ (bn) | GDP per capita, PPP\$ |
|-------------|------------|--------|--------|-----------------|-----------------|-----------------------|
| 1           | 3          | High   | EUR    | 8.7             | 677.3           | 78,112                |

|   | Score/<br>Value | Rank  |   | Score/<br>Value | Rank    |
|---|-----------------|-------|---|-----------------|---------|
|  <b>Institutions</b>               | 89.2            | 2 ● ◆ |  <b>Business sophistication</b>          | 60.7            | 7       |
| <b>1.1 Political environment</b>  | 89.3            | 6     | <b>5.1 Knowledge workers</b>  | 67.9            | 10      |
| 1.1.1 Political and operational stability*  | 85.5            | 10    | 5.1.1 Knowledge-intensive employment, %   | 50.9            | 7       |
| 1.1.2 Government effectiveness*   | 93.2            | 2 ● ◆ | 5.1.2 Firms offering formal training, %   | n/a             | n/a     |
| <b>1.2 Regulatory environment</b>   | 92.4            | 7     | 5.1.3 GERD performed by business, % GDP   | 2.1             | 8       |
| 1.2.1 Regulatory quality*   | 84.6            | 12    | 5.1.4 GERD financed by business, %  | 64.7            | 7       |
| 1.2.2 Rule of law*  | 93.5            | 6     | 5.1.5 Females employed w/advanced degrees, %  | 20.9            | 29      |
| 1.2.3 Cost of redundancy dismissal  | 10.1            | 30    | <b>5.2 Innovation linkages</b>  | 64.3            | 5 ◆     |
| <b>1.3 Business environment</b>   | 85.8            | 4 ◆   | 5.2.1 University-industry R&D collaboration†  | 77.6            | 3 ● ◆   |
| 1.3.1 Policies for doing business†  | 91.5            | 1 ● ◆ | 5.2.2 State of cluster development and depth†   | 71.9            | 3 ● ◆   |
| 1.3.2 Entrepreneurship policies and culture*  | 80.0            | 7     | 5.2.3 GERD financed by abroad, % GDP  | 0.2             | 21      |
|   |                 |       | 5.2.4 Joint venture/strategic alliance deals/bn PPP\$ GDP   | 0.2             | 8       |
|   |                 |       | 5.2.5 Patent families/bn PPP\$ GDP  | 7.9             | 3 ● ◆   |
|  <b>Human capital and research</b> | 62.4            | 4     | <b>5.3 Knowledge absorption</b>   | 49.7            | 16      |
| <b>2.1 Education</b>  | 61.7            | 27    | 5.3.1 Intellectual property payments, % total trade   | 4.1             | 1 ● ◆   |
| 2.1.1 Expenditure on education, % GDP   | 4.9             | 47 ○  | 5.3.2 High-tech imports, % total trade  | 5.9             | 109 ○   |
| 2.1.2 Government funding/pupil, secondary, % GDP/cap  | 22.6            | 35    | 5.3.3 ICT services imports, % total trade   | 3.5             | 12      |
| 2.1.3 School life expectancy, years   | 16.5            | 26    | 5.3.4 FDI net inflows, % GDP  | -18.3           | 131 ○ ◆ |
| 2.1.4 PISA scales in reading, maths and science   | 498.2           | 21    | 5.3.5 Research talent, % in businesses  | 48.3            | 28      |
| 2.1.5 Pupil-teacher ratio, secondary  | 9.7             | 27    |   |                 |         |
| <b>2.2 Tertiary education</b>   | 47.2            | 19    |  <b>Knowledge and technology outputs</b> | 67.1            | 1 ● ◆   |
| 2.2.1 Tertiary enrolment, % gross   | 63.3            | 47 ○  | <b>6.1 Knowledge creation</b>   | 86.7            | 1 ● ◆   |
| 2.2.2 Graduates in science and engineering, %   | 25.2            | 39    | 6.1.1 Patents by origin/bn PPP\$ GDP  | 15.1            | 1 ● ◆   |
| 2.2.3 Tertiary inbound mobility, %  | 17.8            | 9     | 6.1.2 PCT patents by origin/bn PPP\$ GDP  | 8.0             | 1 ● ◆   |
| <b>2.3 Research and development (R&amp;D)</b>   | 78.3            | 3 ●   | 6.1.3 Utility models by origin/bn PPP\$ GDP   | n/a             | n/a     |
| 2.3.1 Researchers, FTE/mn pop.  | 5,552.2         | 12    | 6.1.4 Scientific and technical articles/bn PPP\$ GDP  | 56.9            | 6 ◆     |
| 2.3.2 Gross expenditure on R&D, % GDP   | 3.1             | 8     | 6.1.5 Citable documents H-index   | 65.9            | 10      |
| 2.3.3 Global corporate R&D investors, top 3, mn USD   | 89.9            | 6     | <b>6.2 Knowledge impact</b>   | 51.3            | 5 ◆     |
| 2.3.4 QS university ranking, top 3*   | 84.3            | 4     | 6.2.1 Labor productivity growth, %  | 0.9             | 63 ○    |
|   |                 |       | 6.2.2 New businesses/th pop. 15-64  | 4.6             | 31      |
|   |                 |       | 6.2.3 Software spending, % GDP  | 0.7             | 2 ● ◆   |
|   |                 |       | 6.2.4 ISO 9001 quality certificates/bn PPP\$ GDP  | 12.0            | 25      |
|   |                 |       | 6.2.5 High-tech manufacturing, %  | 67.3            | 2 ● ◆   |
|  <b>Infrastructure</b>           | 65.7            | 4 ◆   | <b>6.3 Knowledge diffusion</b>  | 63.4            | 7       |
| <b>3.1 Information and communication technologies (ICTs)</b>  | 88.7            | 17    | 6.3.1 Intellectual property receipts, % total trade   | 6.4             | 2 ● ◆   |
| 3.1.1 ICT access*   | 93.2            | 21    | 6.3.2 Production and export complexity  | 91.7            | 2 ● ◆   |
| 3.1.2 ICT use*  | 88.2            | 3 ● ◆ | 6.3.3 High-tech exports, % total trade  | 6.7             | 29      |
| 3.1.3 Government's online service*  | 82.9            | 36    | 6.3.4 ICT services exports, % total trade   | 2.4             | 55 ○    |
| 3.1.4 E-participation*  | 90.5            | 18    |   |                 |         |
| <b>3.2 General infrastructure</b>   | 54.3            | 18    |  <b>Creative outputs</b>               | 56.3            | 1 ● ◆   |
| 3.2.1 Electricity output, GWh/mn pop.   | 7,915.5         | 19    | <b>7.1 Intangible assets</b>  | 63.6            | 8       |
| 3.2.2 Logistics performance*  | 86.0            | 13    | 7.1.1 Intangible asset intensity, top 15, %   | 81.6            | 8       |
| 3.2.3 Gross capital formation, % GDP  | 26.9            | 37    | 7.1.2 Trademarks by origin/bn PPP\$ GDP   | 71.4            | 25      |
| <b>3.3 Ecological sustainability</b>  | 54.0            | 4 ◆   | 7.1.3 Global brand value, top 5,000, % GDP  | 216.2           | 3 ● ◆   |
| 3.3.1 GDP/unit of energy use  | 24.8            | 5 ◆   | 7.1.4 Industrial designs by origin/bn PPP\$ GDP   | 4.6             | 25      |
| 3.3.2 Environmental performance*  | 65.9            | 9     | <b>7.2 Creative goods and services</b>  | 37.1            | 12      |
| 3.3.3 ISO 14001 environmental certificates/bn PPP\$ GDP   | 3.6             | 27    | 7.2.1 Cultural and creative services exports, % total trade   | 0.6             | 45 ○    |
|   |                 |       | 7.2.2 National feature films/mn pop. 15-69  | 3.3             | 36 ○    |
|   |                 |       | 7.2.3 Entertainment and media market/th pop. 15-69  | 99.5            | 2 ● ◆   |
|   |                 |       | 7.2.4 Printing and other media, % manufacturing   | 1.1             | 39 ○    |
|   |                 |       | 7.2.5 Creative goods exports, % total trade   | 2.4             | 21      |
|  <b>Market sophistication</b>    | 59.8            | 8     | <b>7.3 Online creativity</b>  | 61.0            | 2 ● ◆   |
| <b>4.1 Credit</b>   | 57.9            | 8     | 7.3.1 Generic top-level domains (TLDs)/th pop. 15-69  | 59.6            | 11      |
| 4.1.1 Finance for startups and scaleups*  | 51.3            | 10    | 7.3.2 Country-code TLDs/th pop. 15-69   | 100.0           | 1 ● ◆   |
| 4.1.2 Domestic credit to private sector, % GDP  | 168.5           | 5     | 7.3.3 GitHub commit pushes received/mn pop. 15-69   | 69.5            | 3 ● ◆   |
| 4.1.3 Loans from microfinance institutions, % GDP   | n/a             | n/a   | 7.3.4 Mobile app creation/bn PPP\$ GDP  | 14.8            | 25      |
| <b>4.2 Investment</b>   | 59.0            | 10    |   |                 |         |
| 4.2.1 Market capitalization, % GDP  | 237.6           | 5 ◆   |   |                 |         |
| 4.2.2 Venture capital investors, deals/bn PPP\$ GDP   | 0.5             | 9     |   |                 |         |
| 4.2.3 Venture capital recipients, deals/bn PPP\$ GDP  | 0.2             | 8     |   |                 |         |
| 4.2.4 Venture capital received, value, % GDP  | 0.0             | 27    |   |                 |         |
| <b>4.3 Trade, diversification, and market scale</b>   | 62.4            | 42    |   |                 |         |
| 4.3.1 Applied tariff rate, weighted avg., %   | 1.4             | 18    |   |                 |         |
| 4.3.2 Domestic industry diversification   | 80.9            | 69 ○  |   |                 |         |
| 4.3.3 Domestic market scale, bn PPP\$   | 677.3           | 34    |   |                 |         |

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 Switzerland.

### Missing data for Switzerland

| 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) |
| 5.1.2 | Firms offering formal training, %           | n/a          | 2019       | World Bank Enterprise Surveys                              |
| 6.1.3 | Utility models by origin/bn PPP\$ GDP       | n/a          | 2020       | World Intellectual Property Organization                   |

### Outdated data for Switzerland

| Code  | Indicator name                            | Economy year | Model year | Source   |
|-------|---|--------------|------------|--|
| 2.1.1 | Expenditure on education, % GDP           | 2018         | 2020       | UNESCO Institute for Statistics                    |
| 2.3.1 | Researchers, FTE/mn pop.                  | 2019         | 2020       | UNESCO Institute for Statistics                    |
| 2.3.2 | Gross expenditure on R&D, % GDP           | 2019         | 2020       | UNESCO Institute for Statistics                    |
| 4.1.2 | Domestic credit to private sector, % GDP  | 2016         | 2020       | International Monetary Fund                        |
| 4.3.2 | Domestic industry diversification         | 2016         | 2019       | United Nations Industrial Development Organization |
| 5.1.3 | GERD performed by business, % GDP         | 2019         | 2020       | UNESCO Institute for Statistics                    |
| 5.3.5 | Research talent, % in businesses          | 2019         | 2020       | UNESCO Institute for Statistics                    |
| 6.2.2 | New businesses/th pop. 15–64              | 2019         | 2020       | World Bank, Entrepreneurship Database              |
| 6.2.5 | High-tech manufacturing, %                | 2016         | 2019       | United Nations Industrial Development Organization |
| 7.2.4 | Printing and other media, % manufacturing | 2014         | 2019       | United Nations Industrial Development Organization |

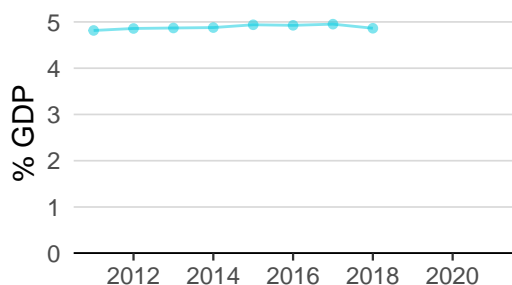




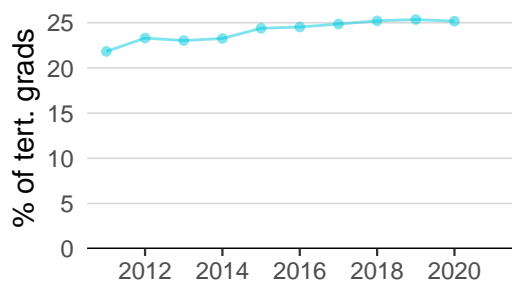
## SWITZERLAND'S INNOVATION SYSTEM

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

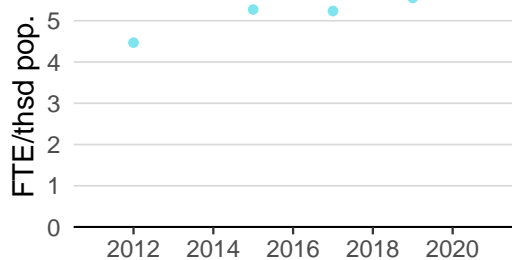
### Innovation inputs



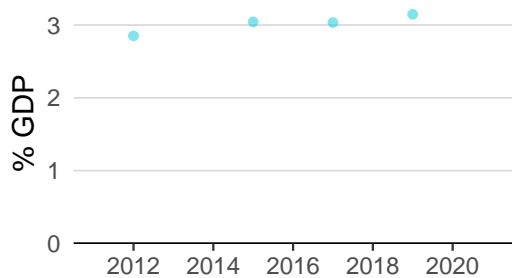
**2.1.1 Expenditure on education** was equal to 4.9% GDP in 2018—down by 2 percentage points from the year prior—and equivalent to an indicator rank of 47.



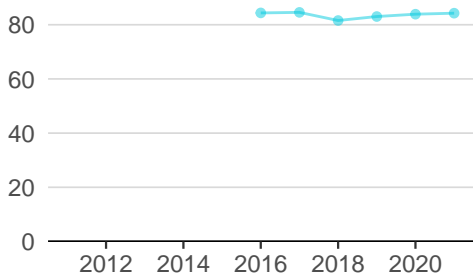
**2.2.2 Graduates in science and engineering** was equal to 25.2% of tert. grads in 2020—down by 1 percentage point from the year prior—and equivalent to an indicator rank of 39.



**2.3.1 Researchers** was equal to 5.6 FTE/thsd pop. in 2019 and equivalent to an indicator rank of 12.



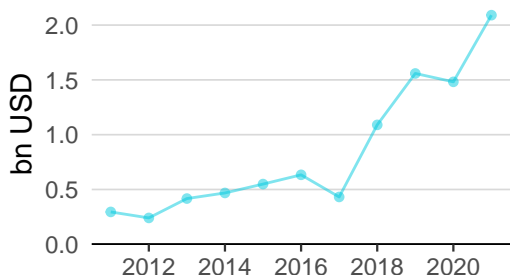
**2.3.2 Gross expenditure on R&D** was equal to 3.1% GDP in 2019 and equivalent to an indicator rank of 8.



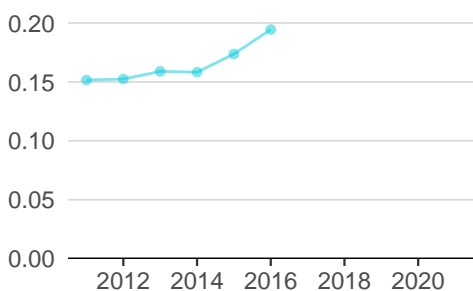
**2.3.4 QS university ranking** was equal to 84.3 in 2021—effectively unchanged from the year prior—and equivalent to an indicator rank of 4.



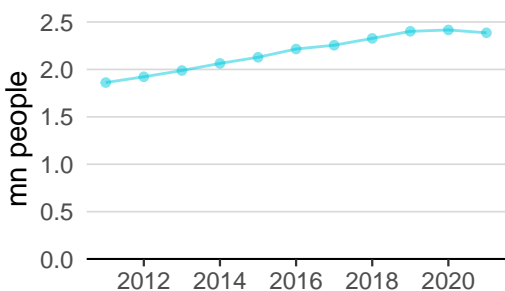
**3.1.1 ICT access** was equal to 9.3 in 2020 and equivalent to an indicator rank of 21.



**4.2.4 Venture capital received** was equal to 2.1 bn USD in 2021—up by 41 percentage points from the year prior—and equivalent to an indicator rank of 27.

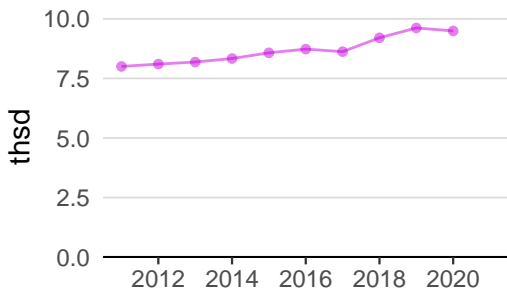


**4.3.2 Domestic industry diversification** was equal to 0.2 in 2016—up by 12 percentage points from the year prior—and equivalent to an indicator rank of 69.

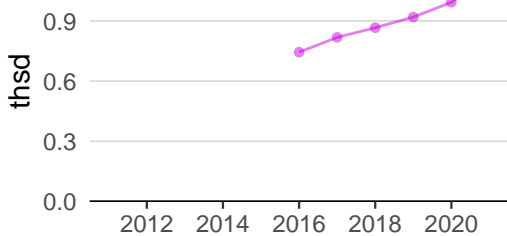


**5.1.1 Knowledge-intensive employment** was equal to 2.4 mn people in 2021—down by 1 percentage point from the year prior—and equivalent to an indicator rank of 7.

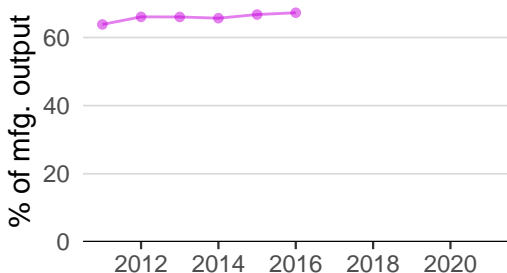
## Innovation outputs



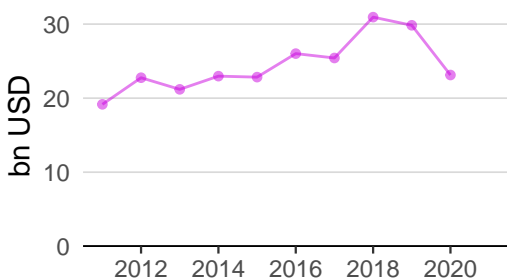
**6.1.1 Patents by origin** was equal to 9.5 thsd in 2020—down by 1 percentage point from the year prior—and equivalent to an indicator rank of 1.



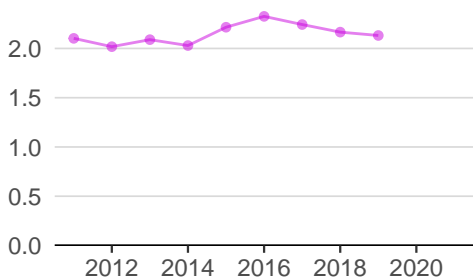
**6.1.5 Citable documents H-index** was equal to 1.1 thsd in 2021—up by 15 percentage points from the year prior—and equivalent to an indicator rank of 10.



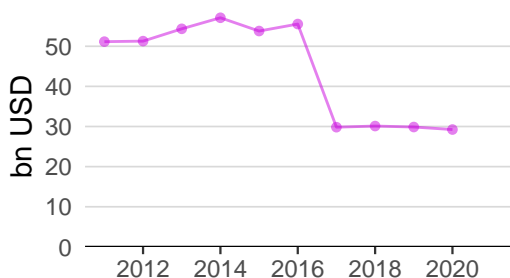
**6.2.5 High-tech manufacturing** was equal to 67.3% of mfg. output in 2020—up by 1 percentage point from the year prior—and equivalent to an indicator rank of 2.



**6.3.1 Intellectual property receipts** was equal to 23.1 bn USD in 2020—down by 23 percentage points from the year prior—and equivalent to an indicator rank of 2.



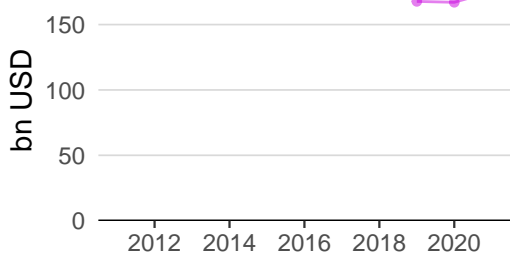
**6.3.2 Production and export complexity** was equal to 2.1 in 2019—down by 2 percentage points from the year prior—and equivalent to an indicator rank of 2.



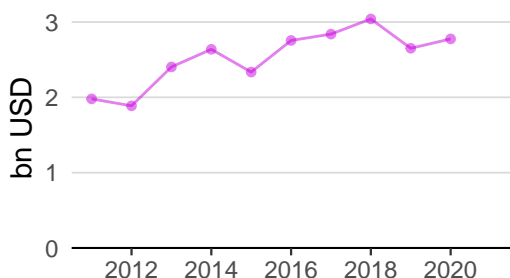
**6.3.3 High-tech exports** was equal to 29.2 bn USD in 2020—down by 2 percentage points from the year prior—and equivalent to an indicator rank of 29.



**7.1.1 Intangible asset intensity** was equal to 81.6% of total value in 2021 and equivalent to an indicator rank of 8.



**7.1.3 Global brand value** was equal to 175.3 bn USD in 2021—up by 5 percentage points from the year prior—and equivalent to an indicator rank of 3.



**7.2.1 Cultural and creative services exports** was equal to 2.8 bn USD in 2020—up by 5 percentage points from the year prior—and equivalent to an indicator rank of 45.

## SWITZERLAND'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] | [%]        | [%]           |      |
| ROCHE    | Pharmaceuticals & Biotechnology | 11,247   | 3.9        | 20.8          | 8    |
| NOVARTIS | Pharmaceuticals & Biotechnology | 7,114    | 0.7        | 17.5          | 18   |
| NESTLE   | Food Producers                  | 1,635    | -11.3      | 2.1           | 96   |

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 |
|--|-------|------|
| ECOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE | 90.2  | 14=  |
| UNIVERSITY OF ZURICH                     | 67.2  | 70=  |
| ETH ZURICH                               | 95.4  | 8=   |

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 |
|----------|------|
| NESTLE   | 1    |
| ROCHE    | 2    |
| NOVARTIS | 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

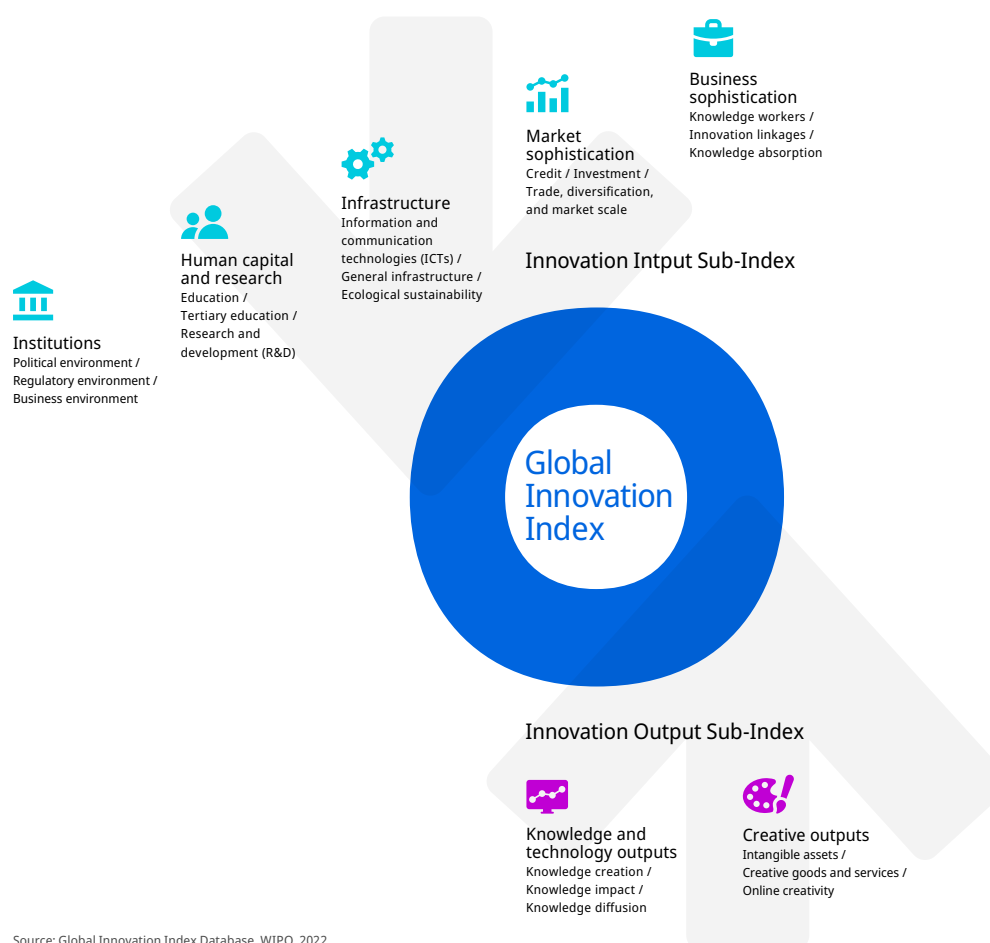
| Brand  | Industry | Rank |
|--------|----------|------|
| NESTLÉ | Food     | 1    |
| UBS    | Banking  | 2    |
| ROCHE  | Pharma   | 3    |

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.