

Main Science and Technology Indicators

1 General description

The OECD Main Science and Technology Indicators (MSTI) are a statistical publication prepared by the Science and Technology Policy (STP) Division of the OECD Directorate for Science, Technology, and Innovation under the aegis of the OECD Working Party of National Experts on Science and Technology Indicators (NESTI), a subsidiary body of the OECD Committee for Scientific and Technological Policy. MSTI provides a set of indicators that reflect the level and the structure of the efforts undertaken by OECD member countries and selected non-member economies. Its contents draw principally on data on financial and human resources devoted to research and experimental development (R&D) as defined in the OECD Frascati Manual, complemented by additional indicators of outputs and potential outcomes of scientific and technological activities, namely patent data and international trade in R&D-intensive industries. In addition to these, MSTI comprises several economic and demographic series from other OECD sources which are used to calculate adjusted indicators which account for differences in the relative size of economies, purchasing power and the effect of inflation.

2 Territorial coverage

MSTI coverage is defined by the reporting by countries to OECD of R&D statistics that are consistent with the Frascati Manual. These are based on data provided by responsible national bodies to the OECD annual call for R&D data from OECD member countries and selected non-member economies. In its latest available edition, MSTI reports indicators on all 38 OECD Member countries with most recent data typically reaching up to 2022 (2023 for a few countries in the case of R&D budgets).

Bulgaria and Croatia have been included in MSTI for the first time in the March 2024 edition.

Indicators are also compiled for the OECD aggregate zone, the European Union (EU-27 zone), as well as for the following non-member economies: Argentina, Bulgaria, People's Republic of China (hereafter "China"), Croatia, Romania, Russian Federation, Singapore, South Africa and Chinese Taipei.

In response to Russia's large-scale aggression against Ukraine, the OECD Council decided on 8 March 2022 to immediately suspend the participation of Russia and Belarus in OECD bodies. In view of this decision, the OECD suspended its solicitation of official statistics on R&D from Russian authorities, leading to the absence of more recent R&D statistics for this country in the OECD database. Previously collected and compiled indicators are still available.

Mexico clarified that the biennial National Survey on Research and Technological Development (ESIDET) has not been conducted since 2017 and data reported to OECD had been extrapolated. Accordingly, the OECD decided to suppress R&D estimates from Mexico from reference year 2018 until further confirmation that data collection and estimation procedures consistent with Frascati Manual guidance have been resumed.

3 R&D indicators

The OECD has been collecting R&D data on a regular basis since the early 1960s, expanding as several countries joined the OECD. During the 1990s, the scope of data collection was widened to include selected non-Member economies. This publication presents various indicators of the level and trends in total national R&D efforts. The flagship measure is the Gross Domestic Expenditure on Research and

Experimental Development (GERD), which captures all spending on R&D carried out within each economy each year, comprising sectoral breakdowns by performing and funding sectors.

3.1 Definitions and Coverage

3.1.1 OECD Standards

The R&D data used in this publication have been collected and presented in line with the standard OECD methodology for R&D statistics as laid out in the OECD “Frascati Manual 2015: *Guidelines for Collecting and Reporting Data on Research and Experimental Development*” (see <http://oe.cd/frascati>).

3.1.2 Two Types of data on R&D resources

Most R&D data are derived from retrospective surveys of the units carrying out or “performing” R&D. The indicators on (or derived from) Gross Domestic Expenditure on R&D (GERD) and R&D personnel are based on the sum of performers' reported R&D expenditures and personnel on national territory (*i.e.* excluding payments to international organisations and other performers abroad). Personnel data are expressed as full-time equivalent (FTE) spent working on R&D (*i.e.* a person working half-time on R&D is counted as 0.5 person-years) and headcount.

Because of the time such surveys take to undertake, it is difficult to obtain very up to date series; some recent data are provisional figures, national estimates, or projections (these data are annotated).

More up to date information on government support for R&D can be derived from budgetary sources. The indicators based on Government Budget Allocations for R&D (GBARD) as reported by the funding ministry or agency and include payments to international organisations and other performers abroad (*i.e.* a funder-based perspective).

3.1.3 Fields of R&D

In general, the tables cover R&D in both Natural Sciences and Engineering (NSE, including agricultural and medical sciences) and Social Sciences and Humanities (SSH). A large number of countries collect data on R&D activities in the Business Enterprise sector for NSE only.

3.1.4 Sectors of Performance and Sources of Funds

Domestic R&D efforts (expenditure or personnel) are divided into four *sectors of performance* for statistical purposes, Business Enterprise, Higher Education, Government, and Private Non-Profit institutions (PNP).

R&D expenditure is also classified by sources of funds, including: funds from Business Enterprises, from Government, from Higher Education, from PNPs, and from the rest of the world. By convention and for international comparison purposes, public general university funds (GUF) are recorded as funds originating from the government sector. Since the amounts financed by the Higher Education and PNP sectors are small, they have been combined.

3.1.5 R&D in the Business Enterprise Sector

The Business Enterprise sector covers private and public enterprises and institutes serving such enterprises. The industry breakdown is made according to the main activity of the enterprises. National statistical regulations prevent publication of results where there are very few firms in a given category, hence there are many gaps in the tables broken down by industry.

The industrial classification used is the International Standard Industrial Classification, Revision 4 (ISIC Rev.4). The indicators on BERD by industry concern R&D-intensive manufacturing industries as well as ‘total manufacturing’, ‘total services’ and the ‘information and communication services’:

| | ISIC Rev.4 |
|---|------------|
| Total manufacturing | 10-33 |
| Pharmaceutical industry | 21 |
| Computer, electronic and optical industry | 26 |
| Aerospace industry | 303 |
| Total services | 45-99 |
| Information and communication services | 58-63 |

These indicators are calculated primarily using the Analytical Business Enterprise R&D database (ANBERD) for OECD Member countries and those selected non-member economies covered by the database. For further information on this database see <http://oe.cd/anberd>.

3.1.6 Government Budget Allocations for R&D (GBARD)

These statistics are assembled by national authorities using data collected for government budgeting purposes. Their compilation entails identifying all the budget items funding R&D and estimating their R&D content. These estimates, based on funders' reports, have a different conceptual basis from the "performer reported" data but as they are derived from the budget, they can be linked back to policy issues by means of a classification by "objectives" or "goals". Budgets are allocated to socio economic objectives on the basis of intentions at the time funds are committed and not the actual content of the projects concerned. These breakdowns reflect policies at a given moment in time.

The classification used is the European Commission's Nomenclature for the Analysis and Comparison of Scientific Programmes and Budgets - (NABS) 2007, specially developed for R&D analysis (see "Frascati Manual 2015", section 12.4).

The breakdown is as follows:

| | |
|--------------------------|---|
| Defence | All defence R&D financed by government, including military nuclear and space but excluding civilian R&D financed by ministries of defence (e.g. meteorology). |
| Civil | Total GBARD less Defence. |
| Economic | R&D programmes financed for the purpose of transport, telecommunication and other infrastructures; energy; industrial production and technology; and agriculture (NABS chapters 04, 05, 06 and 08 respectively). |
| Health and Environment | R&D programmes funded for the purpose of the exploration and exploitation of the earth; environment; and health (NABS chapters 01, 02 and 07 respectively). |
| Education and Society | R&D programmes funded for the purpose of education; culture, recreation, religion and mass media; and political and social systems, structure and processes (NABS chapters 09, 10 and 11 respectively). |
| Space | Civil space R&D programmes (NABS chapter 03). |
| Non-oriented Research | Research programmes financed in view of the general advancement of knowledge, except General University Funds (NABS chapter 13). |
| General University Funds | The estimated R&D content of "block grants" paid by government to the Higher Education sector. This category (NABS chapter 12) is generally absent or underestimated for countries where only federal government is included. |

Budget data can be timelier than those derived from performer surveys. Readers are warned that GBARD data vary in coverage from government-financed GERD series and that these two types of data should not be combined.

3.1.7 Expenditure in Current Dollars

National currency data have been converted to USD using purchasing power parity (PPP) series from the OECD National Accounts Division (see www.oecd.org/std/prices-ppp). Due to lags in availability, the PPP series are estimated in the most recent years by comparing the growth in prices (implicit GDP deflator) in each country with that in the United States. These estimated parities are footnoted "e" in the tables as are any data converted to current dollars using them.

3.1.8 Expenditure in Constant Dollars

R&D expenditure series have been deflated using the implicit GDP deflator taken from the OECD National Accounts database. For Canada and Norway, where oil and gas resource extraction industries account for a large share of GDP, the deflator used is the 'final domestic demand price' to eliminate the effect of the oil and gas export prices. Deflators are estimated for the most recent years based upon projections published in the biannual *OECD Economic Outlook*. Any expenditure series calculated on the basis of these estimated rates are footnoted "e".

3.1.9 Compound Annual Growth Rates

Average annual growth is calculated at compound rates when the intervals are not annual. Expenditure growth is calculated at constant prices.

3.1.10 Comparisons with Economic Indicators

R&D expenditures are shown as a percentage of selected indicators drawn from the OECD National Accounts database where available and estimated for the most recent years on the basis of the projections published in the *OECD Economic Outlook*. Any ratios where such estimated economic series are the denominator are footnoted "e" in the tables concerned. R&D expenditure data are typically expressed as a percentage of GDP to allow cross-country comparisons. R&D personnel are expressed "per thousand" in relation to selected indicators from the OECD National Accounts on total employment and population.. These economic indicators are also available within MSTI.

Impact of changes to the measurement of GDP on R&D to GDP ratios: the 2008 update to the System of National Accounts (SNA) implemented various accounting changes which impacted the level of GDP, one key change was recognising the role of R&D as an activity leading to the creation of knowledge assets. One implication of recognising R&D as an asset-creating activity is that the level of GDP was, in many countries, revised upwards by a magnitude close to the value of domestic business investment in R&D. This reduced the R&D to GDP ratio, as the numerator stayed constant while the denominator increased to incorporate an element that was previously missing from the GDP estimate. For further details on the similarities and differences with respect to R&D estimates included under the SNA reporting frameworks, please consult: Ker, D. and F. Galindo-Rueda (2017), "Frascati Manual R&D and the System of National Accounts", OECD Science, Technology and Industry Working Papers, 2017/06, OECD Publishing, Paris. <http://dx.doi.org/10.1787/edb6e020-en>.

When possible, economic indicators for the non-member economies are also drawn from OECD databases. Alternatively, other international databases are used, such as the Eurostat National Accounts database, the International Monetary Fund's World Economic Outlook database and the World Bank's World Development Indicators database.

3.1.11 Zone Totals

Zone totals have been calculated for the OECD and the EU-27 for most tables. The OECD zone includes all Member countries of the OECD, i.e. Australia, Austria, Belgium, Canada, Chile, Colombia, Costa

Rica, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Türkiye, the United Kingdom, and the United States.

MSTI indicators on R&D personnel do not currently cover Colombia. Therefore, OECD totals include Colombia for all indicators except those on R&D personnel (and except the economic series used in the calculation of R&D personnel indicators, i.e. “Labour Force”, “Total Employment” and “Industrial Employment”).

MSTI covers Costa Rica for all indicators other than those related to GBARD. Consequently, for indicators on GBARD, OECD totals exclude Costa Rica.

The EU-27 includes Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain and Sweden.

From the March 2021 edition onwards, EU zone totals exclude the United Kingdom (UK) to reflect the new EU country composition following the UK’s withdrawal on 1 February 2020. In order to maintain consistency over time, the EU-27 aggregate excludes the UK for the entire time series.

In order to obtain a full set of figures for the OECD and EU-27 zone calculations, the Secretariat has made a number of country-level estimates to fill data gaps, to bring data series up-to-date, to split combined components (e.g. where PNPERD is included in GOVERD), and to adjust historical data when significant breaks in series have occurred. These estimates are used only for the calculation of the zones and are not published. These estimates were computed using simple statistical routines or information from national publications and observations of trends. Data points where such estimates would exceed 25% of the zone total have been suppressed.

Data for EU countries not covered in MSTI but used to calculate the EU-27 zone totals have been provided by Eurostat.

OECD estimates for the EU-27 zone may slightly differ from those published by Eurostat. In this publication, in line with standard OECD practice, national estimates are aggregated using USD Purchasing Power Parity (PPP) indices instead of EUR exchange rates applied by Eurostat. For example, the EU-27 measure of GERD to GDP ratio will be an average of EU countries’ GERD intensities, weighted by the share of countries’ GDP to EU GDP expressed in USD by applying PPP conversion as opposed to EUR-based GDP shares.

3.2 Sources

The data are derived from national R&D surveys and budgets and are supplied by national statistical agencies to the Secretariat via an OECD/Eurostat co-ordinated collection.

4 Patents

Patent data can be considered as a proxy for the output of R&D in the form of inventions. The data presented show the total number and national percentages of triadic patent families, as well as the number of patent applications to the European Patent Office (EPO) in two specific sectors of interest: Information and Communications Technology (ICT) and biotechnology.

4.1 Definitions and Coverage

4.1.1 Patents and Patent Families

A patent family is defined as a set of patents protecting a single invention across various jurisdictions. Inventors seeking protection file a first application (priority), often in their country of residence. Following this, there is a period where protection may also be applied for in other jurisdictions. Patent families, as opposed to patents, are provided with the intention of improving international comparability (the “home advantage” is suppressed; the patent data are more homogeneous).

The patent families presented in this publication refer to triadic families: i.e. a patent is included if and only if it is filed at the European Patent Office (EPO), the Japan Patent Office (JPO), and the US Patent & Trademark Office (USPTO).

In addition, the number of patent applications filed under the Patent Co-operation Treaty (PCT) is provided for two specific sectors of interest: the ICT and biotechnology sectors, alongside the total number of applications filed across all sectors. These sectors are defined according to selected classes of the International Patent Classification (IPC), www.wipo.int/classifications/ipc/en/index.html. The PCT procedure offers the possibility to seek patent rights in a large number of countries by filing a single international application with a single patent office, and then to enter the national stage in the desired countries at a later date.

4.1.2 Presentation and availability

For patent counts, the choice of the country and date of reference among the set of information included in patent documents is important. Patents are presented here according to the country (or countries) of residence of the inventor(s), giving an indication of technological innovativeness of researchers and laboratories located in a country.

The priority date, the date of the first international filing of a patent, is chosen as the reference date. It is the earliest available date and therefore the closest to the invention date. Although the application date may provide more recent series, counts by application date introduce a bias between residents and foreigners for a selected patent office with respect to the priority date. Residents usually first file a patent application at their domestic office, the extension of application to other countries takes one year following the traditional procedure, and up to two and a half years for the PCT procedure.

However, counting patent families according to the earliest priority date exacerbate one drawback of traditional patent counts: timeliness. The time lag between the priority date and the availability of information on patent applications could be up to 4 years. From 2020 onwards, patent families for individual countries are Secretariat estimates, based on the latest trends in patent filings observed at the three patent offices. Furthermore, because of changes in the rules and regulations at the USPTO, triadic patent families before 2001 are based on USPTO granted patents.

The PCT procedure expanded after 1990 and is increasingly used by applicants from all signatory states: since the early 2000s, most countries are well represented. For the transition period (1990-2000), cross-country comparisons and time series should be interpreted with care.

A broader set of patent-related indicators is available on-line at <http://oe.cd/ipstats>, along with methodological notes. These present patents by main technology classes and by region, as well as indicators on international co-operation in patenting. For further details on patent data, refer to the OECD Patent Statistics Manual, 2009, www.oecd.org/science/inno/oecdpatentstatisticsmanual.htm.

4.2 Sources

The data on patents filed at intellectual property offices (EPO, JPO, USPTO) are mainly derived from EPO's Worldwide Statistical Patent Database (PATSTAT, Autumn 2023). Triadic patent families series have been compiled by the Secretariat. PCT applications series are based on EPO's PATSTAT EP Register (Autumn 2023).

5 Trade Balance and Export Market Shares for R&D-Intensive Industries

Indicators of trade performance in R&D intensive industries can be used as proxy measures of the industrial and economic impact of scientific and technological activity. The tables concerned give trade balances and export market shares for three selected groups of R&D intensive industries: "pharmaceuticals", "computer, electronic, and optical industry", and "aerospace".

5.1 Definitions and Coverage

These tables present indicators concerning the international trade in goods of selected R&D intensive industries. Data are categorized in accordance with the International Standard Industrial Classification, Revision 4 (ISIC Rev.4).

These series are taken from the OECD's Bilateral Trade in Goods by Industry and End-use Category database (BTDIxE), derived from the OECD International Trade Statistics and United Nations Statistics Division COMTRADE databases, which have been converted from the Harmonised System (HS) to International Standard Industrial Classification (ISIC).

Industries covered are as follows:

| | ISIC Rev.4 |
|---|------------|
| Pharmaceutical industry | 21 |
| Computer, electronic and optical industry | 26 |
| Aerospace industry | 303 |

A note indicating a break in series is assigned to the first available year of ISIC Revision 4 data. Prior to 1993, the data for Belgium include Luxembourg.

The OECD and EU-27 totals have not been adjusted to exclude trade between member countries.

5.2 Sources

OECD Bilateral Trade in Goods by Industry and End-use Category database (BTDIxE),
<http://oe.cd/btd>.

6 Notes

The following standard footnotes are used in the MSTI database:

- b) Time series break
- c) Confidential statistical information
- d) Definition differs

- e) Estimated value
- k) Data included in another category
- l) Overestimated or based on overestimated data
- m) Underestimated or based on underestimated data
- p) Provisional value
- s) Unrevised breakdown not adding to the revised total
- v) The sum of the breakdown does not add to the total
- w) Includes data from another category

7 Abbreviations

7.1 R&D Terminology

| | |
|--------|---|
| BERD | Business enterprise Expenditure on R&D (intramural) |
| FTE | Full Time Equivalent (on R&D) |
| GBARD | Government Budget Allocations for R&D |
| GERD | Gross Domestic Expenditure on R&D (intramural) |
| GOVERD | Government Expenditure on R&D (intramural) |
| GUF | General University Funds |
| HERD | Higher Education Expenditure on R&D (intramural) |
| NSE | Natural Sciences and Engineering |
| PNP | Private Non Profit Institutions |
| R&D | Research and Experimental Development |
| SSH | Social Sciences and Humanities |

For further explanations of the above terms, please see the OECD Frascati Manual 2015 <http://oe.cd/frascati>, which includes in particular a glossary of key terms (www.oecd.org/sti/inno/Frascati-2015-Glossary.pdf).

7.2 Other

| | |
|------|--|
| GDP | Gross Domestic Product |
| ISIC | International Standard Industrial Classification |
| PCT | Patent Co-operation Treaty |
| PPP | Purchasing Power Parity |

8 List of indicators

1. Gross Domestic Expenditure on R&D (GERD) - million current PPP \$
2. GERD - million national currency
3. GERD as a percentage of GDP
4. GERD - million 2015 dollars, constant prices and PPP
5. GERD - constant USD PPP, index 2007=100
6. GERD - compound annual growth rate (constant prices)
7. GERD (current PPP \$) per capita population
8. Civil GERD as a percentage of GDP
9. Basic research expenditure as a percentage of GDP
10. Percentage of GERD performed by the Business Enterprise sector
11. Percentage of GERD performed by the Higher Education sector
12. Percentage of GERD performed by the Government sector
13. Percentage of GERD performed by the Private Non-Profit sector

14. Business Enterprise Expenditure on R&D (BERD) - million current PPP \$
15. BERD - million national currency
16. BERD as a percentage of GDP
17. BERD - million 2015 dollars, constant prices and PPP
18. BERD - constant USD PPP, index 2007=100
19. BERD - compound annual growth rate (constant prices)
20. Business-financed BERD - million 2015 dollars, constant prices and PPP
21. Business-financed BERD - compound annual growth rate (constant prices)
22. Percentage of BERD financed by the business enterprise sector
23. Percentage of BERD financed by government
24. Percentage of BERD financed by the Higher Education and PNP sectors
25. Percentage of BERD financed by the rest of the world

26. BERD performed in total manufacturing (million current PPP \$)
27. Percentage of BERD performed in total manufacturing
28. BERD performed in the pharmaceutical industry (million current PPP \$)
29. Percentage of BERD performed in the pharmaceutical industry
30. BERD performed in the computer, electronic and optical industry (million current PPP \$)
31. Percentage of BERD performed in the computer, electronic and optical industry
32. BERD performed in the aerospace industry (million current PPP \$)
33. Percentage of BERD performed in the aerospace industry
34. BERD performed in service industries (million current PPP \$)
35. Percentage of BERD performed in service industries
36. BERD performed in information and communication services (million current PPP \$)
37. Percentage of BERD performed in information and communication services

38. Higher Education Expenditure on R&D (HERD) - million current PPP \$
39. HERD - million national currency
40. HERD as a percentage of GDP
41. HERD - million 2015 dollars, constant prices and PPP
42. HERD - constant USD PPP, index 2007=100
43. HERD - compound annual growth rate (constant prices)
44. Percentage of HERD financed by the business enterprise sector

45. Government Intramural Expenditure on R&D (GOVERD) - million current PPP \$
46. GOVERD - million national currency
47. GOVERD as a percentage of GDP
48. GOVERD - million 2015 dollars, constant prices and PPP

49. GOVERD - constant USD PPP, index 2007=100
50. GOVERD - compound annual growth rate (constant prices)
51. Percentage of GOVERD financed by the business enterprise sector
52. GERD financed by the business enterprise sector in national currency, million
53. GERD financed by the business enterprise sector in current USD PPP, million
54. GERD financed by the business enterprise sector in constant USD PPP, million
55. GERD financed by the business enterprise sector as a percentage of GDP
56. GERD financed by the business enterprise sector as a percentage of total GERD
57. GERD financed by government in national currency, million
58. GERD financed by government in current USD PPP, million
59. GERD financed by government in constant USD PPP, million
60. GERD financed by government as a percentage of GDP
61. GERD financed by government as a percentage of total GERD
62. GERD financed by the Higher Education and PNP sectors in national currency, million
63. GERD financed by the Higher Education and PNP sectors in current USD PPP, million
64. GERD financed by the Higher Education and PNP sectors in constant USD PPP, million
65. GERD financed by the Higher Education and PNP sectors as a percentage of GDP
66. GERD financed by the Higher Education and PNP sectors as a percentage of total GERD
67. GERD financed by the rest of the world in national currency, million
68. GERD financed by the rest of the world in current USD PPP, million
69. GERD financed by the rest of the world in constant USD PPP, million
70. GERD financed by the rest of the world as a percentage of GDP
71. GERD financed by the rest of the world as a percentage of total GERD
72. Total R&D personnel (FTE)
73. Total R&D personnel (FTE) - compound annual growth rate
74. Total R&D personnel (FTE) per thousand total employment
75. Total researchers (FTE)
76. Total researchers (FTE) - compound annual growth rate
77. Total researchers (FTE) per thousand total employment
78. Total researchers (headcount)
79. Women researchers (headcount)
80. Women researchers as a percentage of total researchers (based on headcount)
81. Total Business Enterprise R&D personnel (FTE)
82. Total Business Enterprise R&D personnel (FTE) - compound annual growth rate
83. Total Business Enterprise R&D personnel (FTE) as a percentage of national total
84. Business Enterprise researchers (FTE)
85. Business Enterprise researchers (FTE) - compound annual growth rate
86. Business Enterprise researchers (FTE) as a percentage of national total
87. Business Enterprise Sector: Total researchers (headcount)
88. Business Enterprise Sector: Women researchers (headcount)
89. Business Enterprise Sector: Women researchers as a percentage of total researchers (based on headcount)
90. Higher Education Total R&D personnel (FTE)
91. Higher Education Total R&D personnel (FTE) - compound annual growth rate
92. Higher Education Total R&D personnel (FTE) as a percentage of national total
93. Higher Education researchers (FTE)
94. Higher Education researchers (FTE) - compound annual growth rate
95. Higher Education researchers (FTE) as a percentage of national total
96. Higher Education sector: Total researchers (headcount)
97. Higher Education sector: Women researchers (headcount)

98. Higher Education sector: Women researchers as a percentage of total researchers (based on headcount)
99. Government Total R&D personnel (FTE)
100. Government Total R&D personnel (FTE) - compound annual growth rate
101. Government Total R&D personnel (FTE) as a percentage of national total
102. Government researchers (FTE)
103. Government researchers (FTE) - compound annual growth rate
104. Government researchers (FTE) as a percentage of national total
105. Government Sector: Total researchers (headcount)
106. Government Sector: Women researchers (headcount)
107. Government Sector: Women researchers as a percentage of total researchers (based on headcount)
108. Total Government Budget Allocations for R&D (GBARD) - million current PPP \$
109. Total GBARD - million national currency
110. Total GBARD - million 2015 dollars, constant prices and PPP
111. Total GBARD - constant USD PPP, index 2007=100
112. Defence Budget R&D as a percentage of Total GBARD
113. Civil Budget R&D as a percentage of Total GBARD
114. Civil GBARD for Economic Development programmes (million current PPP \$)
115. Economic Development programmes as a percentage of Civil GBARD
116. Civil GBARD for Health and Environment programmes (million current PPP \$)
117. Health and Environment programmes as a percentage of Civil GBARD
118. Civil GBARD for Education and Society (million current PPP\$)
119. Education and Society as a percentage of Civil GBARD
120. Civil GBARD for Space programmes (million current PPP \$)
121. Space programmes as a percentage of Civil GBARD
122. Civil GBARD for Non-oriented Research programmes (million current PPP \$)
123. Non-oriented Research programmes as a percentage of Civil GBARD
124. Civil GBARD for General University Funds (GUF) (million current PPP \$)
125. General University Funds (GUF) as a percentage of Civil GBARD
126. Number of triadic patent families (priority year)
127. Number of patent applications to the PCT (priority year)
128. Share of countries in triadic patent families (priority year)
129. Number of patent applications to the PCT in the ICT sector (priority year)
130. Number of patent applications to the PCT in the biotechnology sector (priority year)
131. Export market share: Pharmaceutical industry
132. Total imports: Pharmaceutical industry (million current dollars)
133. Total exports: Pharmaceutical industry (million current dollars)
134. Trade Balance: Pharmaceutical industry (million current dollars)
135. Export market share: Computer, electronic and optical industry
136. Total imports: Computer, electronic and optical industry (million current dollars)
137. Total exports: Computer, electronic and optical industry (million current dollars)
138. Trade Balance: Computer, electronic and optical industry (million current dollars)
139. Export market share: Aerospace industry
140. Total imports: Aerospace industry (million current dollars)
141. Total exports: Aerospace industry (million current dollars)
142. Trade Balance: Aerospace industry (million current dollars)
143. Gross Domestic Product - million national currency
144. Gross Domestic Product (million current PPP \$)
145. Implicit GDP Price Indices (2015 = 1.00)

- 146. Purchasing Power Parities (national currency per dollar)
- 147. Population (thousands)
- 148. Total Employment (thousands)