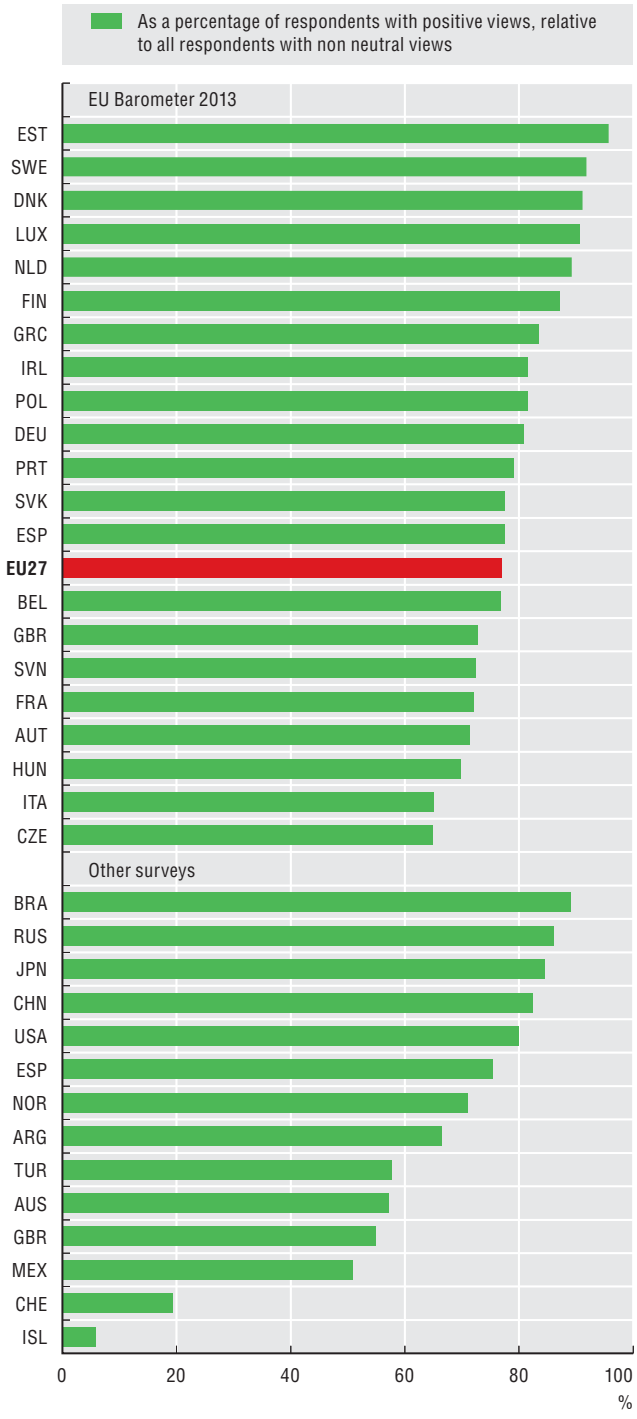
10. Public perceptions of science and technology

Public perception of impacts of science and technology on society, 2013

Net relative balance on: "Is the overall impact of science and technology on society positive or negative?"



Note: This is an experimental indicator. International comparability may be limited.

Source: OECD calculations based on European Commission (2013), Special Eurobarometer 401; and other national sources, June 2015. See chapter notes.

StatLink http://dx.doi.org/10.1787/888933274965

Developments in science and technology have visible impacts on people's lives. Surveys carried out across countries indicate that the public has a mainly positive view of the societal impact of science and technology. However, they also find a significant proportion of the population with mixed or critical views.

Personal attitudes towards science and technology can be influenced by a number of personal and contextual characteristics. Most studies in the area find a consistent difference based on gender, whereby men consistently rate science and technology more favourably than women.

While analysis of science, technology and innovation often focuses on its direct economic impacts, it can be relevant to analyse other pathways to societal impacts as well as how perceptions of science are formed and influenced by personal values. An experimental indicator explores the degree of correlation within countries between measures of attitudes towards science and selected measures of well-being and personal values. For a majority of countries, individuals who place a higher value on science in their daily lives also tend to report higher levels of health and satisfaction with life, altruism, freedom of choice and control over their own lives and importance of creativity. In Argentina, Brazil, Chile, China, Mexico and India, individuals reporting science as important are less likely to see themselves as "world citizens", while in the United States, many European countries, Japan and Korea the opposite applies.

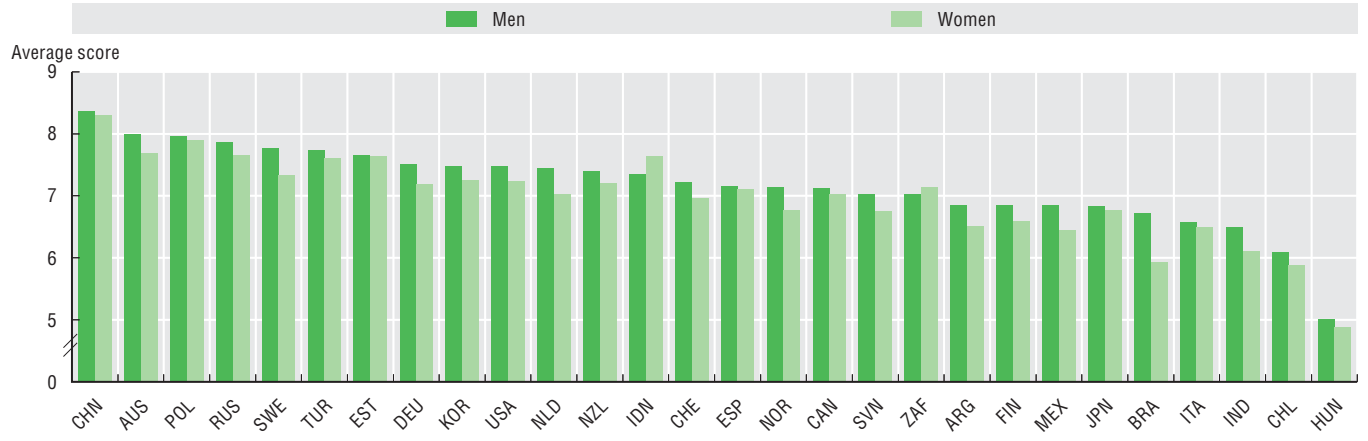
Definitions

Comparison of responses from surveys that provide different response options (see chapter notes) is undertaken by calculating a summary indicator as the ratio of the difference between positive and negative views, divided by the sum of both groups. This excludes respondents with a neutral position ("positive and negative are equal") and those who selected "Don't know" if surveys provided such options. This approach may retain some bias if neutral respondents, when unable to select such an option, are more likely to provide a positive answer than a negative one.

From the World Values Survey, responses to the following questions are used. *Importance of science*: "Is learning about science important to your daily life?" *Subjective well-being*: "How would you describe your state of health?"; "How satisfied are you with your life as a whole?"; "How much freedom of choice and control do you feel you have over your life?"; selected value items are based on the Schwarz value item for self-direction ("It is important to this person to think up new ideas and be creative; to do things one's own way") and global identity is based on agreement with statement ("I see myself as a world citizen").

Gender differences in attitudes towards science and technology, 2011

Average scores based on responses to: "The world is better off because of science and technology?"

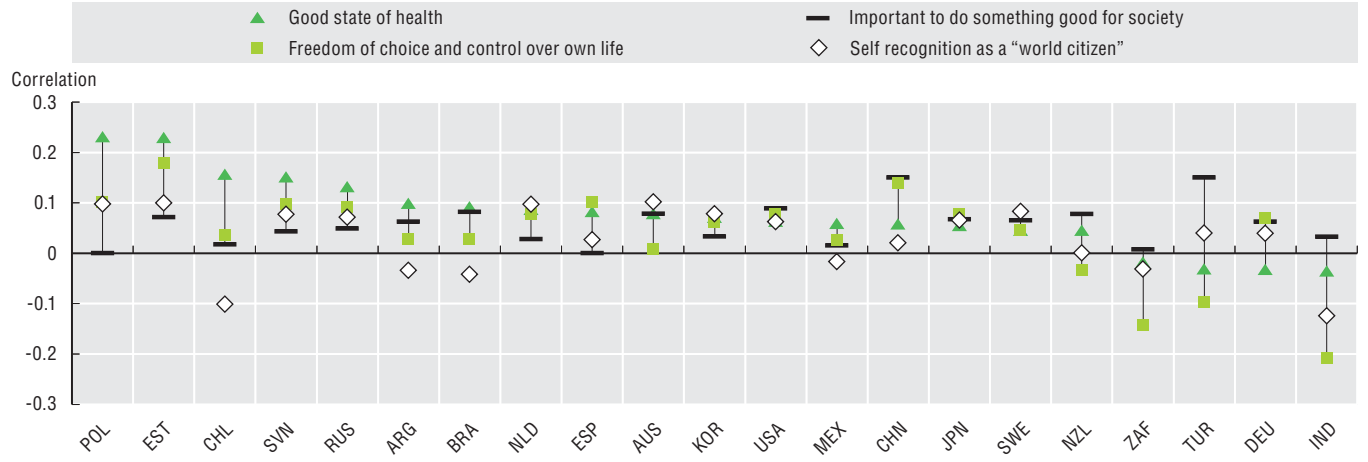


Note: This is an experimental indicator. International comparability may be limited.
Source: OECD, calculations based on World Values Survey, *www.worldvaluessurvey.org*, June 2015. See chapter notes.

StatLink http://dx.doi.org/10.1787/888933274978

The link between attitudes towards science, personal values and subjective well-being, 2011

Within-country correlations with personal scores on the importance of science in daily life



Note: This is an experimental indicator. International comparability may be limited. Correlations with other variables are available as "more data".
Source: OECD, calculations based on World Values Survey micro-data (v.20150418), *www.worldvaluessurvey.org*, June 2015. StatLink contains more data. See chapter notes.

StatLink http://dx.doi.org/10.1787/888933274982

Measurability

An OECD project has reviewed the scope for international comparability and the methodological challenges faced by surveys on the public perception of attitudes towards science and technology. In particular, available national data sources use slightly different questions and possible answers, while responses can vary according contextual factors.

The World Values Survey Association, a non-profit organisation comprising a global network of social scientists, carries out the World Values Survey. The survey was undertaken principally by means of face-to-face interviews, and targeting representative samples of a few thousand adult individuals per country. Publicly available micro-data were used to analyse gender patterns and correlations between science attitudes and measures of subjective wellbeing. While these are simple correlations, they point to potential pathways for understanding the drivers of public attitudes towards science and technology.

Notes and references

Cyprus

The following note is included at the request of Turkey:

"The information in this document with reference to 'Cyprus' relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the 'Cyprus issue'."

The following note is included at the request of all of the European Union Member States of the OECD and the European Union:

"The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus."

Israel

"The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities or third party. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law."

"It should be noted that statistical data on Israeli patents and trademarks are supplied by the patent and trademark offices of the relevant countries."

6.1. Enabling connectivity

Fixed broadband penetration by technology, December 2014

For Germany, DSL includes VDSL (FTTC), Cable excludes cable infrastructure based on FTTB/FTTH, FTTB/FTTH includes fibre lines provided by cable operators.

For Israel, Switzerland and the United States, data for 2014 are estimates.

For Mexico, data for 2014 are preliminary. Mexico is currently reviewing the Fixed broadband data in relation to implementation of the methodology.

For the United Kingdom, DSL includes FTTH, FTTP, FTTB and FTTC as the breakdown between these technologies is not yet available.

Mobile broadband penetration by technology, December 2014

For Mexico, data for 2014 are preliminary. Mexico is currently reviewing the Mobile broadband data in relation to implementation of the methodology.

For Israel and Switzerland, data for 2014 are estimates.

Penetration of machine-to-machine (M2M) SIM cards, December 2014

For Korea, data are based on the current M2M definition. Korea is in the process of reviewing the M2M definition by comparing the national definition with that of the OECD.

6.2. Online devices and applications

Devices used to access the Internet at home, 2014

The following national sources are used: for Canada, the Internet Use Survey 2012, as published in The Daily on 28 October 2013; for Korea, the Survey on the Internet Usage 2014 from the Korea Internet and Security Agency and the Ministry of Science, ICT and Future Planning of Korea; for Japan, the Communication Usage Trend Survey 2013 issued by the Ministry of Internal Affairs and Communications of Japan; and for the United States, the US Bureau of the Census.

Unless otherwise stated, "Mobile device other than portable computer" includes mobile phone or smartphone, media or games player and e-book reader.

For Canada, data refer to 2012 and relate to the percentage of households with Internet access by Internet access device. Data for laptop computers/netbooks refer to laptops only. "Mobile device other than portable computer" includes wireless handheld devices. Data on connected TV (Smart TV) are not available.

For Japan, data refer to 2013. Devices per user data are based on the Communication Usage Trend Survey 2013 and relate to the percentage of individuals (aged 6 and over) accessing the Internet using the corresponding device. Data refer to computer use at home instead of desktop computers. Data on laptop computers/netbooks are not available. "Mobile device other than portable computer" includes only smartphones. Data for connected TV (Smart TV) refers to "TV set capable of connecting to the Internet".

For Korea, data originate from the Survey on the Internet Usage 2014. Devices per user data relate to the percentage of households with Internet access by Internet access device. "Mobile device other than portable computer" includes only smartphones and mobile phones. Data for connected TV (Smart TV) refers to "Digital TV".

For the United States, data refer to 2011, relate to individuals aged 15 and over, and originate from the US Bureau of the Census. The category laptop computers/netbooks includes laptops only. The category "mobile device other than portable computer" refers to all cellular phones, smartphones, tablets and e-books. Games console refers to "game system or console". Connected TV (Smart TV) refers to "TV based device".

Smartphone apps availability and usage, 2013

For the number of apps installed, data refer to the question: "And of the apps you currently have installed on your smartphone, how many have you used actively in the last 30 days? Please type in a number. If you don't know the exact number please provide your best estimate."

For the number of apps actively used, data refer to the question: "And of the apps you currently have installed on your smartphone, how many have you purchased for a certain amount in an app distribution platform such as Apple App Store and Google Play? Please type in a number. If you don't know the exact number please provide your best estimate."

The average excludes zero values.

Individuals using cloud computing services, by age, 2014

Cloud computing refers to the use of storage space on the Internet to save or share documents, pictures, music, video or other files.

6.3. Digital natives

Individuals who participated in an online course, 2009 and 2013

For Chile, data refer to 2012 and 2014 with a recall period of 12 months.

For Korea, data refer to 2014.

For Poland, data refer to 2008 and 2011.

6.4. Internet users

General notes for all figures:

Unless otherwise stated, Internet users are defined for a recall period of 12 months. For China and Switzerland, the recall period is six months. For Brazil, Costa Rica, Indonesia, Israel and the Russian Federation, the recall period is three months. For South Africa and the United States, no time period is specified.

Total, daily and mobile Internet users, 2014

Notes for all users:

For Australia, data refer to the fiscal years 2005/06 and 2012/13, ending 30 June.

For Brazil, data refer to 2005 and 2013 and to individuals aged 10 and over and 15 and over, respectively. Data are sourced from the Instituto Brasileiro de Geografia e Estatística (IBGE).

For Canada, data refer to 2006 and 2012.

For China, data refer to individuals aged 6 and over using the Internet at least one hour per week. Data are sourced from the China Internet Network Information Center (CNNIC).

For Costa Rica, data refer to 2005 and 2012 and to individuals aged 5 and over. Data are sourced from ITU.

Notes and references

For India, data refer to Internet subscribers instead of Internet users. 2006 and 2014 data are sourced from ITU and the Telecom Regulatory Authority of India, respectively.

For Indonesia, data refer to 2005 and 2013. 2013 data refer to individuals aged 5 and over and are sourced from Statistics Indonesia. Data for 2005 are sourced from ITU.

For Israel, data refer to 2013 and to individuals aged 20 and over.

For Japan, data refer to 2013.

For New Zealand, data refer to 2006 and 2012.

For the Russian Federation, data refer to 2013 and to individuals aged 15-72 and over using the Internet at least once a week. Data are sourced from ITU.

For South Africa, data refer to 2005 and 2012, and to individuals aged 15 and over. Data are sourced from Research ICT Africa.

For the United States, data refer to 2013 and to individuals aged 18 and over living in a house with Internet access.

Notes for daily users:

For Canada and Japan, daily users refers to Internet users accessing the Internet "at least once a day". For Chile, Korea, Mexico and Switzerland, it refers to users accessing the Internet "every day or almost every day". For the United States, it refers to the percentage of individuals answering "yes" to the question "did you use the Internet yesterday?".

For Brazil, data refer to 2013 and are OECD estimates based on ITU and IBGE data.

For Canada, data are sourced from Statistics Canada (CANSIM Table 358-0155) and refer to individuals aged 16 and over.

For Japan, data for daily users refer to 2012 and are OECD estimates based on data sourced from the "Communication Usage Trend Survey", MIC (Ministry of Internal Affairs and Communications).

For the United States, data refer to 2012 and are sourced from the PEW Internet Project.

Notes for mobile users:

Unless otherwise stated, mobile Internet users refers to individuals who used a mobile phone (or smartphone) to access the Internet away from home or away from work.

For Korea, New Zealand and Switzerland, data refer to individuals who have used a mobile phone/smartphone/handheld device or tablet to access the Internet away from home via a wireless broadband connection, in the last three months (last 12 months for New Zealand).

For Brazil, data refer to 2013 and to individuals aged 10 years old and over. Data are sourced from IBGE.

For Canada, data refer to 2012 and to the percentage of individuals using the Internet with a wireless handheld device, aged 16 and over. Data are source from Statistics Canada (CANSIM Table 358-0219).

For Colombia, data refer to individuals who have used a mobile phone/smartphone device to access the Internet. Data are OECD estimates based on data sourced from the "Encuesta de Condiciones de Vida 2014", Departamento Administrativo Nacional de Estadística (DANE).

For Korea, data refer to individuals aged 3 and over. Data refer to 2013 and are sourced from the KISA Survey on Internet Usage.

General notes:

Internet users, by age, 2014 and;
Women Internet users, by age, 2014

For Australia, data refer to the fiscal year 2012/13, ending 30 June and to individuals aged 65 and over instead of 65-74.

For Brazil, data refer to 2013 and to individuals aged 15 and over, 15-24 and 50 and over instead of 16-74, 16-24 and 65-74. Data are sourced from the Instituto Brasileiro de Geografia e Estatística (IBGE).

For Israel, data refer to 2013 and to individuals aged 20 and over instead of 16-74, and 20-24 instead of 16-24.

For Costa Rica, data refer to 2012 and to individuals aged 5 and over instead of 16-74. Data are sourced from ITU.

For the Russian Federation, data refer to 2013 and to individuals aged 15-72 and over instead of 16-74 using the Internet at least once a week. Data are sourced from ITU.

Additional notes:

Internet users, by age, 2014

For Canada and New Zealand, data refer to 2012.

For Chile, data refer to individuals aged 55-74 instead of 65-74.

For China, data refer to individuals aged 6 and over instead of 16-74. Data are sourced from the China Internet Network Information Center (CNNIC).

For Colombia, data refer to individuals aged 55-74 instead of 65-74.

For India, data refer to Internet subscribers instead of Internet users aged 16-74. Data are sourced from the Telecom Regulatory Authority of India.

For Indonesia, data refer to 2013 and to individuals aged 5 and over. Data are sourced from Statistics Indonesia.

For Japan, data refer to 2013 and to individuals aged 15-69 instead of 16-74, 15-28 instead of 16-24 and 60-69 instead of 65-74.

For South Africa, data refer to 2012 and to individuals aged 15 and over. Data are sourced from Research ICT Africa.

For the United States, data refer to 2013 and to individuals aged 18 and over, living in a house with Internet access and to individuals aged 18-34 instead of 16-24 and 65 and over instead of 65-74.

Women Internet users, by age, 2014

For Canada, data refer to 2010.

For Japan, data refer to 2012 and to individuals aged 15-69 instead of 16-74, 15-28 instead of 16-24 and 60-69 instead of 65-74.

For New Zealand, data refer to 2012.

For the United States, data refer to 2011 and to individuals aged 18 and over living in a house with Internet access and to individuals aged 18-34 instead of 16-24 and 65 and over instead of 65-74.

6.5. User sophistication

Diffusion of selected online activities among Internet users, 2014

Unless otherwise stated, a recall period of three months is used for Internet users. For Australia, Canada, Chile, Japan, Korea, Mexico and New Zealand, the recall period is 12 months. For Switzerland, the recall period is six months. For the United States, no time period is specified.

For web-based radio/television data refer to 2012. For job search and software download categories data refer to 2013. For online purchases and e-government categories, the recall period is 12 months instead of three months and data relate to individuals who used the Internet in the last 12 months instead of three months.

For the countries in the European Statistical System, Chile, Korea and Mexico, data refer to 2014.

For Australia, data refer to the fiscal year 2012/13, ending 30 June.

For Canada and New Zealand, data refer to 2012.

For Australia, Chile and New Zealand, for any interaction with public authorities, data refer to obtaining information from public authorities.

For Israel, data refer to 2013.

For Japan, data refer to 2013, except for job search (2012), and to individuals aged 15-69.

For Korea, data for e-mail, social networking and e-banking categories refer to a recall period of one year instead of three months. Data for the telephoning/video calling category just refer to telephoning.

For the United States, data refer to 2013. The gaming and audio-video category only includes video, the job search category also includes job training and the e-banking category also includes investing or stock or futures trading.

Notes and references

Number of activities performed online, 2014

Data refer to the following 12 activities: using e-mail, telephoning or video calling over the Internet, participation in social networks, finding information about goods or services, reading online news, online banking, using services related to travel and accommodation, interacting online with public authorities, selling goods or services, buying physical goods, buying digital content and buying services.

Data by educational attainment level refer to 2013.

For Korea, data originate from special tabulations by KISA and refer to 2012. Due to lack of full correspondence with the list of activities provided in the Community Survey on ICT Usage in Households and by Individuals (Eurostat), the number of activities performed might be underestimated.

For Switzerland, data by educational attainment are not available.

For Turkey, data refer to 2013.

Individuals who purchased online in the last 12 months, by age class, 2014

The recall period is the last 12 months, with the exception of Israel and Switzerland, where the recall period is three and six months. For the United States, no time period is specified.

For Australia, data refer to the fiscal years 2009/10 and 2012/13, ending 30 June.

For Brazil and the Russian Federation, data refer to 2013 and are sourced from ITU.

For Canada, data refer to 2012 and to individuals aged 25-44 and 55-64 instead of 25-54 and 55-74, ordering goods or services over the Internet from any location (for personal or household use only).

For Chile, no recall period is specified in 2009.

For Costa Rica, data refer to 2012 and are sourced from ITU.

For Japan, data refer to 2013.

For Israel, data refer to 2013 and to all individuals aged 20 and over instead of individuals aged 16-74.

For New Zealand, data refer to 2006 and 2012 and relate to e-purchases for personal use only requiring an online payment.

For Switzerland, data refer to 2005 and 2014.

For the United States, data refer to 2013 and correspond to OECD estimates based on the proportion of all individuals who live in a household with Internet access and the proportion of individuals aged 3 and over, who have used the Internet for consumer services (e.g. online shopping, travel or household services).

6.6. E-consumers across borders

Enterprises having undertaken cross-border e-commerce sales, 2012

For Germany, data refer to 2010.

Individuals having undertaken cross-border online purchases, 2014

Partner countries refer to other EU countries for those in the European Statistical System and to the United States for Canada.

For Canada, data refer to 2012.

Individuals having purchased digitised products, 2009 and 2014

Internet users refers to individuals who used the Internet within the last 12 months.

Digitised products refers to films/music, books/magazines/e-learning material, or computer software, delivered or upgraded online.

For Germany, data refer to 2008 and 2014.

For Sweden, data refer to 2011.

6.7. E-government use

Individuals using the Internet to interact with public authorities, by age, 2014

E-government here refers to the usage of on-line public services and related information. These include notably citizen obligations (e.g. tax declaration, notification of moving), rights (e.g. social benefits), official documents (e.g. ID card, birth certificate), public educational services (e.g. public libraries, information on/and enrolment in public schools and universities) and public health services (e.g. services of public hospitals).

For Australia, data refer to the fiscal years 2010/11 and 2012/13, ending 30 June, and to individuals who have used the Internet either for downloading completing/submitting filled in forms from government organisation websites, in the last 12 months.

For Brazil, data refer to 2013 and to individuals who have used the Internet to obtain information from general government organisations. Data are sourced from ITU.

For Canada, data refer to 2009 and 2012. 2009 data refer to individuals who have used the Internet to obtain information from government organisation websites. 2012 data refer to individuals who visit or interact with Canadian municipal, provincial or federal government websites.

For Chile, Colombia and Korea, data refer to individuals aged 55-74 instead of 65-74.

For Colombia, data do not include individuals who have used the Internet just to obtain information from government or public services websites.

For Costa Rica, data refer to 2012 and to individuals who have used the Internet to obtain information from general government organisations. Data are sourced from ITU.

For Israel, data refer to 2010 and 2013 and to individuals aged 20 and over instead of 16-74 who used the Internet to obtain services online from government offices including downloading or completing official forms. National estimates for 2013 are based on the 2010 survey results.

For New Zealand, data refer to 2006 and 2012 and to individuals who have accessed a local or central government website in the last 12 months to download or complete a form.

For the Russian Federation, data refer to 2013 and to individuals who have used the Internet to interact with general government organisations. Data are sourced from ITU.

For Switzerland, data refer to 2010 and 2014 and to individuals who have used the Internet to obtain information from government organisation websites in the last 12 months.

For Turkey, data refer to 2010 and 2014.

Satisfaction with e-government services (left-hand panel) and problems linked to their use (right-hand panel), 2013

The category "At least one problem" includes website technical failure, unclear or outdated information, lack of support (online or offline), and other problems (unspecified).

Businesses using the Internet to interact with public authorities, by size, 2012

Interaction may include: obtaining information or documents (e.g. tax declaration) from public authority websites, returning filled in forms electronically (e.g. for customs, value added tax declaration) and undertaking an administrative procedure completely in electronic form (e.g. declaration, registration, authorisation request). Interaction may occur via a third party (e.g. accounting company).

Unless otherwise stated, only enterprises with ten or more persons employed are considered. Size classes are defined as: small (from 10 to 49 persons employed) and large (250 and more).

For countries in the European Statistical System, sector coverage consists of all activities in manufacturing and non-financial market services.

For Australia, data refer to the fiscal years 2009/10 and 2011/12, ending 30 June. Data include agriculture, forestry and fishing activities.

For Canada, data refer to 2013 and to businesses interacting online with government organisations to obtain information/download forms (excluding any interaction via e-mails). Large enterprises have 300 or more employees.

For Colombia, data refer to enterprises with ten or more persons employed in the manufacturing sector (excluding ISIC Rev. 4 Divisions 12-14, 17, 21 and 33) and enterprises with 75 or more persons employed in the non-financial market services (excluding Divisions 49-51, 58, 75 and 77). For industry G – Wholesale and retail trade, data refer to enterprises with 20 or more persons employed; for industries H – Transportation and storage (Divisions 52 and 53), I – Accommodation and food service activities and J – Information and communication (Divisions 59-61), data refer to enterprises with 40 or more persons employed.

For Korea, data refer to 2009 and 2013 and to businesses interacting online with government organisations to obtain information/download forms (excluding any interaction via e-mails).

For Mexico, data refer to 2008 and 2012. For 2008, data refer to businesses with 20 or more persons employed. For 2012, data refer to establishments with ten or more persons employed. Size categories refer to establishments with 10 to 50 and 251 and more persons employed.

For New Zealand, data refer to the fiscal years 2009/10 and 2013/14 ending 31 March and to businesses interacting online with government organisations to obtain information/download forms (excluding any interaction via e-mails).

For Switzerland, data refer to 2008 and 2011. For 2008, data refer to businesses with five or more persons employed.

For Turkey, data refer to 2009 and 2013.

6.8. R&D for social challenges

R&D budgets for energy and the environment, 2014

For Belgium, Chile, Estonia, the EU28 aggregate, Ireland, Israel, Korea, the OECD aggregate, Poland, Spain and the United Kingdom, data refer to 2013

For Canada and Switzerland, data refer to 2012.

For Hungary, data refer to 2005.

For Italy, data refer to 2005 and 2013.

For Mexico, data refer to 2011.

For New Zealand, data refer to 2006.

For the Russian Federation, data refer to 2001 and 2009.

For Turkey, data refer to 2008.

For Australia, Austria, Canada, Japan, Korea and the United States, government budget appropriations or outlays for R&D come from federal or central government only.

For Chile, around 9% of the total GBAORD is not allocated to any of the 14 socio-economic objectives.

For Iceland, significant methodological changes were introduced over the period 2003-13, which can distort the comparison of data over time.

Government budget funding of health-related R&D, 2014

Direct health GBAORD includes government budget appropriations or outlays for R&D primarily committed to the socio-economic objective of protecting and improving human health.

R&D related to Medical sciences and funded by General University Funds or other sources are drawn from a breakdown of funds under the general objective of "Advancement of knowledge".

R&D intensity ratios are normalised using official GDP figures. These are compiled according to the *System of National Accounts* (SNA) 2008 except for Chile, Japan, the Russian Federation and Turkey, where figures are available on the basis of SNA 1993.

For Belgium, Chile, Spain, Estonia, the EU28 aggregate, Finland, Ireland, Israel, Italy, Korea, Poland, Slovenia and the United Kingdom, data refer to 2013.

For Canada and Switzerland, data refer to 2012.

For Mexico, data refer to 2011.

For the Russian Federation, data refer to 2009.

For Sweden, data refer to 2015.

For Australia, Austria, Canada, Japan, Korea and the United States, government budget appropriations or outlays for R&D come from federal or central government only.

Biotechnology and nanotechnology R&D in the business sector, 2013

In Belgium, Denmark, France, Italy and the United States biotechnology and nanotechnology R&D are not mutually exclusive categories. Some R&D may be reported as both relating to biotechnology and nanotechnology R&D. These countries allow firms to report the same R&D in multiple research areas (e.g. biotechnology, nanotechnology, IT technology, etc.).

Notes for the biotechnology data: Biotechnology firms use biotechnology to produce goods or services and/or to perform biotechnology R&D. These firms are captured by biotechnology firm surveys.

Biotechnology R&D firms perform biotechnology R&D. These firms are captured by R&D surveys.

Dedicated biotechnology firms devote at least 75% of their production of goods and services, or R&D, to biotechnology. These firms are captured by biotechnology firm surveys.

Dedicated biotechnology R&D firms devote at least 75% of their total R&D to biotechnology. These firms are captured by R&D surveys.

For Canada, this includes medical biotechnology, environmental biotechnology, industrial biotechnology and agricultural biotechnology.

For Denmark and France, data are preliminary.

For Germany, 2013 Business Expenditures on R&D (BERD) was used to calculate the biotech R&D intensity, 2014 BERD was not available.

For Mexico, data refer to firms with 20 or more employees only.

For the Netherlands and Sweden, data refer to firms with 10 or more employees only.

For the Russian Federation, a proxy indicator is used: R&D expenditure by priority areas of S&T (Life sciences) which includes: Bioengineering; Biocatalysis, biosynthesis and biosensor technologies; Biomedical and veterinary technologies; Genomics and pharmaco-genetics; Living cell technologies.

For the United States, data refer to firms with five or more employees only.

Notes for the nanotechnology data: This is an experimental indicator. International comparability may be limited.

Nanotechnology firms use nanotechnology to produce goods or services and/or to perform nanotechnology R&D. These firms are captured by nanotechnology firm surveys.

Nanotechnology R&D firms perform nanotechnology R&D. These firms are captured by R&D surveys.

Dedicated nanotechnology firms devote at least 75% of their production of goods and services, or R&D, to nanotechnology. These firms are captured by nanotechnology firm surveys.

Dedicated nanotechnology R&D firms devote at least 75% of their total R&D to nanotechnology. These firms are captured by R&D surveys.

For Denmark and France, data are preliminary.

For Japan, number of business enterprises with a paid-in capital of JPY 100 million or more.

For Korea, data are underestimated. These numbers are based on the enterprises that responded and not all enterprises answered the question on R&D.

For the Russian Federation, data refer to preliminary estimates based on data gathered by the R&D survey.

For the United States, data refer to firms with 5 or more employees only.

6.9. Enabling technologies

General notes for all figures:

Data refer to IP5 patent families with members filed at the EPO or at the USPTO, by first filing date, according to the applicant's residence using fractional counts.

Data from 2012 are estimates.

Additional notes:

Health-related patents, 2000-03 and 2010-13

Patents are allocated to health-related fields on the basis of their International Patent Classification (IPC) codes, following the concordance provided by WIPO (2013). Only economies with more than 500 patents in health in 2010-13 are included.

Patents in climate change mitigation (CCM) technologies, 2000-03 and 2010-13

Environment-related patents are defined on the basis of their International Patent Classification (IPC) codes or Cooperative Patent Classification (CPC) codes. Only economies with more than 100 patents in CCM technologies in 2010-13 are included.

ICT-related patents, 2000-03 and 2010-13

Patents in ICT are identified following a new experimental classification based on their International Patent Classification (IPC) codes. Only economies with more than 1 000 patents in ICT in 2010-13 are included.

6.10. Public perceptions of science and technology

General note for all figures:

This is an experimental indicator. International comparability may be limited.

Public perception of impacts of science and technology on society, 2013

In order to summarise responses from surveys providing different options, this figure represents the ratio of the difference between positive and negative views on the impacts of science and technology, divided by the sum of respondents expressing non neutral views. The calculation thus excludes the view of respondents who hold a neutral position ("positive and negative are equal") and choose "Don't know" where surveys provide such options.

International comparability may be limited due to the fact that available national data sources use slightly different questions and possible responses. The first cluster of countries in the figure is based on EU barometer 2013, which does not provide a neutral category ("positive and negative are equal"), while the second cluster of countries, except Mexico, offered such an option. The approach used for calculation may retain some bias if neutral respondents, if deprived of a neutral response option, are more likely to provide a positive answer than a negative one.

Original data are derived from surveys conducted by means of face-to-face interviews. Results for Australia and Japan are based on a web-based questionnaire. Results for Brazil are based on CATI (Computer Assisted Telephone Interviewing).

For China, Norway, Turkey, Switzerland, and Iceland, data refer to 2010. For Argentina, data refer to 2012. For Japan and the Russian Federation, data refer to 2014. For Brazil, data refer to 2015.

EU27 includes the countries in EU28 except Croatia.

Surveys have been conducted for individuals aged 15 and over (Austria, Belgium, the Czech Republic, Denmark, Estonia, EU27, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom); 16 years and over (Brazil, the United Kingdom (national survey), the Russian Federation); 18 years and over (Argentina, Mexico, the United States) and individuals aged 20-69 (Japan).

In the EU Barometer 2013, the respondents were asked "Do you think that the overall influence of science and technology on society is positive or negative?". They were invited to choose from among the following options: "Very positive", "Fairly positive", "Fairly negative", "Very negative" and "Don't know".

For national surveys carried out in Argentina, Brazil, Japan, Spain, the Russian Federation and the United States, respondents were asked "Have the benefits of scientific research outweighed the harmful results?". For Japan, the Russian Federation and the United States, they were invited to choose from among the following options: "Benefits are much greater than harm", "Benefits are slightly greater than harm", "Benefits and harm are about equal", "Harm is slightly greater than benefits", "Harm is much greater than benefits", and "Don't know". In the case of Spain, respondents had to choose from among the options: "Benefits outweigh its harms", "Benefits and Harms are about equal", "Harm is greater than benefits", and "Don't know". For Argentina and Brazil, respondents were asked to choose from among the following options: "Only benefits", "More benefits than harm", "Both benefits and harm", "More harm than benefits", "Only harm", and "Don't know".

For Australia, China, Iceland, Mexico, Norway, Switzerland, Turkey and the United Kingdom (National survey), the question invited respondents to express their (dis)agreement with the statement "The benefits of science are greater than any harmful effects it may have". For Australia, respondents were asked to score their agreement from 0 to 10. For China, Iceland, Norway, Switzerland, Turkey and the United Kingdom (National survey), respondents were asked to choose from among "Totally agree", "Tend to agree", "Neither agree nor disagree", "Tend to disagree", "Totally disagree", and "Don't know". In Mexico, respondents were asked to choose from among "Strongly agree", "Agree", "Disagree", "Strongly disagree", and "Don't know".

National sources consisted of the following publications: Argentina: *Red de Indicadores de Ciencia y Tecnología – Iberoamericana e Interamericana (RICYT)* (2014). Australia: the Commonwealth Scientific and Industrial Research Organisation (CSIRO) (2014); Brazil: Centro de Gestão e Estudos Estratégicos (2015); China: Ministry of Science and Technology of the People's Republic of China (2010); Iceland, Norway, Switzerland and Turkey: European Commission (2010); Austria, Belgium, the Czech Republic, Denmark, Estonia, EU27, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden and the United Kingdom: European Commission (2013); Japan: National Institute of Science and Technology Policy (2014); Mexico: Instituto Nacional de Estadística y Geografía (2014); the Russian Federation: National Research University – Higher School of Economics (2014); Spain (National Survey): Spanish Foundation for the Science and Technology (2014); the United Kingdom (National Survey): Ipsos MORI (2014); and the United States: National Science Board (2014).

Gender differences in attitudes towards science and technology, 2011

Respondents were asked to provide a score from 1 to 10, regarding their view on the statement "The world is better off or worse off, because of science and technology". A score of 1 means that "the world is a lot worse off," and 10 means that "the world is a lot better off".

For Argentina and South Africa, data refer to 2013.

For Australia, China, Mexico, the Netherlands and Poland, data refer to 2012.

For Brazil and India, data refer to 2014.

For Canada and Indonesia, data refer to 2006.

For Finland and Italy, data refer to 2005.

For Hungary, data refer to 2009.

For Japan and Korea, data refer to 2010.

For Switzerland and Norway, data refer to 2007.

Data are based on surveys conducted by means of face-to-face interviews. Results for Australia and New Zealand are based on postal questionnaire. For the Netherlands and the United States, data are based on an online questionnaire. For Norway, data are based on a combination of face-to-face and telephone surveys.

Surveys are conducted among individuals aged 18 and over. For Indonesia and South Africa, data refer to individuals aged 16 and over. For Korea, data refer to individuals aged 19 and over.

The link between attitudes towards science, personal values and subjective well-being, 2011

Estimates report correlations between a self-reported measure of the daily importance of science and measures of subjective well-being based on micro-data of the World Values Survey. Correlations are computed across individuals within each country.

For Japan and Korea, data refer to 2010. For Australia, China, Mexico, the Netherlands and Poland, data refer to 2012. For Argentina and South Africa, data refer to 2013. For Brazil and India, data refer to 2014.

Original data are based on surveys conducted by means of face-to-face interviews. Results for Australia and New Zealand are based on a postal questionnaire. Data for the Netherlands and the United States are based on an online questionnaire.

Surveys are conducted for individuals aged 18 and over. For Korea, data refer to individuals aged 19 and over.

Science importance question: Respondents were asked to provide a score from 1 to 10, regarding whether learning about science is "not" important to their daily life. A score of 1 means "Completely disagree (science is important)" and 10 means "Completely agree (science is not important)".

Subjective well-being and value-related questions:

a) State of health (subjective): Respondents were asked "All in all, how would you describe your state of health these days?", and invited to choose from "very good (1), good (2), fair (3) and poor (4)". A positive correlation implies that better subjective health level is associated with a more positive valuation of science in daily life.

b) Satisfaction with life: Respondents were asked to provide a score from 1 to 10, regarding their satisfaction level with life. A score of 1 means "completely dissatisfied" while 10 means "completely satisfied". To facilitate comparison of the results with other indicators, the negative of the correlation value is reported. A high reported value implies a positive association between science importance and life satisfaction.

c) Freedom of choice and control over own life: Respondents were asked to provide a score from 1 to 10. A score of 1 means "no choice at all" while 10 means "a great deal of choice". To facilitate comparison of the results with other indicators, the negative of the correlation value is reported. A high reported value implies a positive association between science importance and freedom of choice/control over life.

d) Importance of creativity: Respondents were asked to compare themselves with the following description "It is important to this person to think up new ideas and be creative; to do things one's own way" and invited to choose from "very much like you (1), like you (2), somewhat like you (3), a little like you (4), not like you (5), or not at all like you (6)". A positive correlation implies the greater emphasis on creativity is associated with a more positive valuation of science in daily life.

e) Important to do something good for society: Respondents were asked to compare themselves with the description "It is important to this person to do something for the good of society", and invited to choose from "very much like you (1), like you (2), somewhat like you (3), a little like you (4), not like you (5), or not at all like you (6)". A positive correlation implies that a greater sense of the importance of doing something good is associated with a more positive valuation of science in daily life.

f) Self-recognition as a "world citizen": Respondents were asked to compare themselves with the following statement "I see myself as a world citizen", and invited to choose from "strongly agree (1), agree (2), disagree (3), strongly disagree (4)". A positive correlation implies that a greater sense of being a "world citizen" is associated with a more positive valuation of science in daily life.

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