



From:  
**OECD Science, Technology and Industry Outlook  
2014**

Access the complete publication at:  
[http://dx.doi.org/10.1787/sti\\_outlook-2014-en](http://dx.doi.org/10.1787/sti_outlook-2014-en)

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## Brazil

**Please cite this chapter as:**

OECD (2014), "Brazil", in *OECD Science, Technology and Industry Outlook 2014*, OECD Publishing.  
[http://dx.doi.org/10.1787/sti\\_outlook-2014-39-en](http://dx.doi.org/10.1787/sti_outlook-2014-39-en)

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## BRAZIL

An emerging economy, Brazil has the world's seventh largest economy. It weathered the global economic downturn well, but growth has slowed over the last two years. To boost economic performance, the Greater Brazil Plan 2011-14, adopted in 2011, gives innovation a central role and includes proposals for significant changes in legislative frameworks.

**Hot issue 1: Innovation to contribute to structural adjustment and to a new approach to growth.** The National Strategy for Science, Technology and Innovation (ENCTI) 2012-15 aims to: i) close the technological gap with developed economies; ii) support Brazil's leadership in areas of the knowledge economy that take advantage of the country's rich natural resources, such as green innovation, agro-business and other natural-resource-based activities; iii) strengthen the internationalisation of the national research system; iv) foster the development of a green economy; and v) address the country's substantial social and regional inequalities. To achieve these objectives, the government targets GERD of 1.8% of GDP in 2014, up from 1.16% in 2010. Compared to other major emerging economies, Brazil's 2010 R&D intensity is second to China's (1.76% of GDP), ahead of India's (0.76%, 2007) and South Africa's (0.76%), and well ahead of Chile's (0.33%) and Mexico's (0.45%) of the same year.

**Hot issue 2: Promoting innovation in firms, entrepreneurship and SMEs.** Brazil is home to a few of the world's largest R&D-investing firms (Panel 1<sup>e</sup>). It is also at the forefront of high-technology fields such as deep-water oil extraction. This leadership in innovation, however, has not spilled over to the Brazilian economy; the country's overall innovation performance on non-technological innovation such as trademark registration is very weak (Panel 1<sup>s</sup>). To address this challenge, the ENCTI aims to increase BERD from 0.56% of GDP in 2010 to 0.9% in 2014. Difficult framework conditions for innovation are also responsible for weak STI performance, although barriers to entrepreneurship are lower in Brazil than in China or India (Panel 1<sup>j</sup>).

To promote business innovation, Brazil's innovation policy has progressively shifted from a strong focus on support for science to stronger support for business R&D. Several changes have been made in the legislative framework: the

Innovation Law (*Lei da Inovação* 2004), the Goodwill Law (*Lei do Bem*, 2005), and a 2007 modification of tax exemption rules to permit direct funding and to provide more incentives for businesses to engage in innovation. On 14 March 2013, the federal government launched the Innovative Company Plan (*Plano Inova Empresa*) to: raise the level of R&D in companies; encourage projects with greater technological risk; combine finance (credit) with non-refundable grants and equity financing; maximise the use of the state's purchasing power; decentralise policy implementation to reach microenterprises and SMEs and reduce administrative bureaucracy. Between 2013 and 2014, it allocated USD 21.6 billion (BRL 32.9 billion) for companies' investment in product and processes innovation.

**Hot issue 3: Supporting innovation to address social challenges (inclusiveness).** Funding agencies provide support for developing low-cost, easy-to-use applications that address social challenges. For example, HABITARE, an initiative with a budget of USD 14 million (BRL 22 million) for 2009-10, supports innovations in housing technology including for social housing. The programmes and measures to support entrepreneurship and start-ups described above can also help make innovation more inclusive, and measures for higher school enrolment rates (see below) also aim to reduce social exclusion.

### Highlights of the Brazilian STI system

**STI policy governance:** Brazil's STI policy governance has not changed significantly in recent years. Developments are underway to increase the decentralisation of instruments and strengthen the co-ordination of federal, state and private resources for innovation in the process of programmes implementation. The National Council for Industrial Development was redesigned in August 2011 to improve co-ordination and involvement of stakeholders. Ministries, the president of the National Bank for Economic and Social Development (BNDES), private businesses, and industry and labour union representatives participate in the Council.

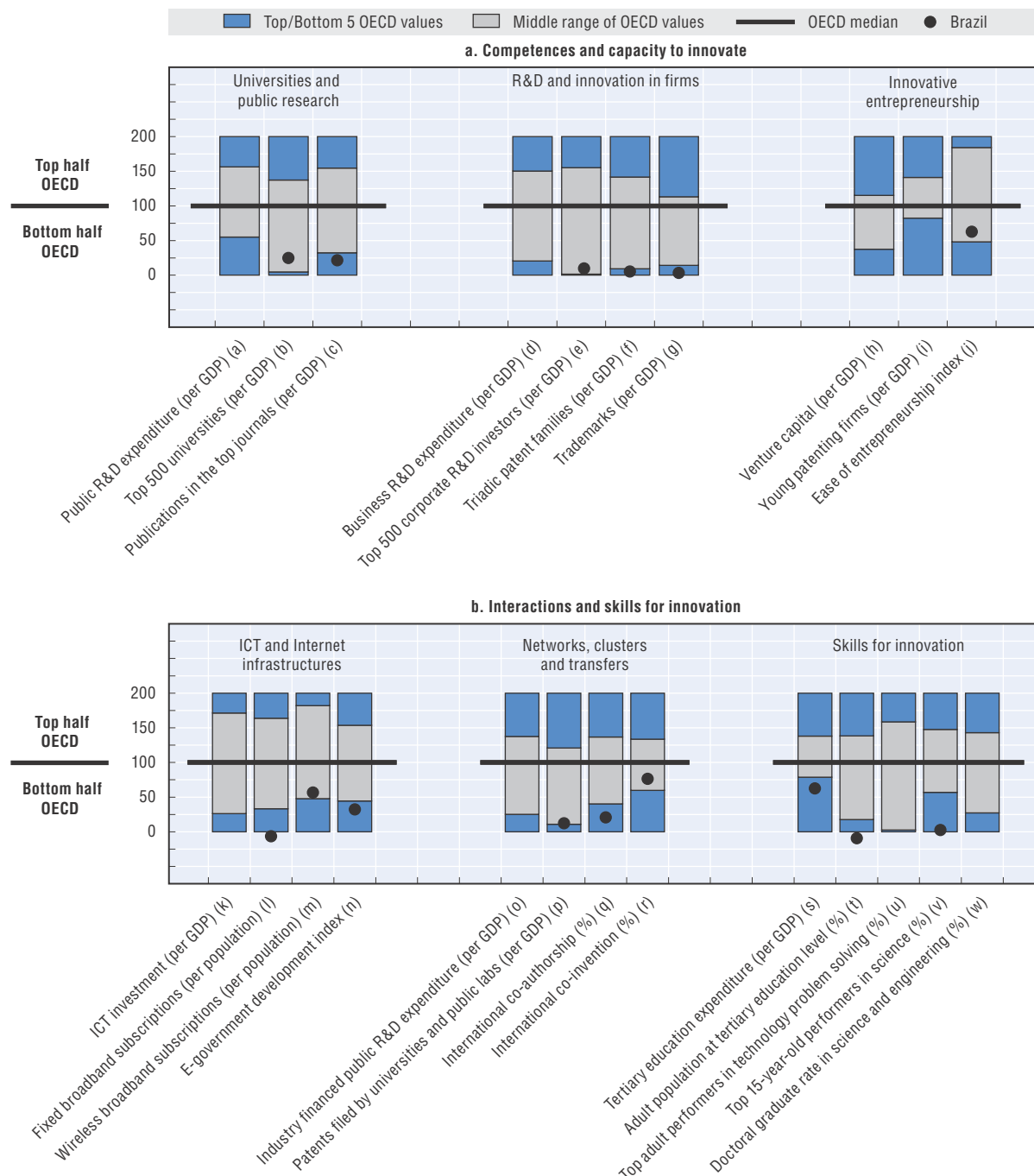
**New sources of growth:** Brazil's STI strategy seeks to strengthen its comparative advantage in the "green" economy. In environmental technologies, Brazil has an RTA above

### Key figures, 2013

Economic and environmental performance	BRA	OECD	Gross domestic expenditure on R&D	BRA	OECD
<b>Labour productivity</b>			<b>GERD</b>		
GDP per hour worked, USD PPP, 2013	n.a.	47.7	Million USD PPP, 2010	25 292	1 107 398
(annual growth rate, 2008-13)	n.a.	(+0.8)	As a % of total OECD, 2010	2.5	100
<b>Green productivity</b>			<b>GERD intensity and growth</b>		
GDP per unit of CO <sub>2</sub> emitted, USD, 2011	5.0	3.0	As a % of GDP, 2010	1.16	2.40
(annual growth rate, 2007-11)	(0.0)	(+1.8)	(annual growth rate, 2007-10)	(+6.1)	(+2.0)
<b>Green demand</b>			<b>GERD publicly financed</b>		
NNI per unit of CO <sub>2</sub> emitted, USD, 2011	n.a.	3.0	As a % of GDP, 2010	0.63	0.77
(annual growth rate, 2007-11)	n.a.	(+1.6)	(annual growth rate, 2007-10)	(+6.2)	(+2.8)

Figure 9.5. Science and innovation in Brazil

Panel 1. Comparative performance of national science and innovation systems, 2014



Note: Normalised index of performance relative to the median values in the OECD area (Index median = 100).

the BRIICS average, but below the OECD median; In bio- and nano-technologies, Brazil displays an advantage with respect to both the OECD and the EU28 (Panel 2). Support programmes include sectoral funds (CT-Energy, CT-Petro). In February 2012, a new Climate Fund under BNDES was announced to finance projects that help reduce greenhouse gas emissions.

**Universities and public research:** Brazil has relatively few universities among the world's top 500 (Panel 1<sup>b</sup>). Performance, measured by science and engineering publications in top-quartile scientific journals (Panel 1<sup>c</sup>) is weak by OECD standards, although Brazilian S&E articles increased on average by 6.4% a year between 2001 and 2011, according to the US National Science Foundation. The increase was, however, less than that of other major emerging economies: China (15.6%) but also India (7.6%).

**Innovative entrepreneurship:** Many Brazilian SMEs innovate little. Several government initiatives therefore support start-ups and provide funding support mainly in the form of grants. For example, PRIME, the *Primeira Empresa Inovadora* programme, supported 1 381 enterprises with USD 104 million (BRL 166 million) between 2009 and 2011. As part of the decentralisation of financing for microenterprises and SMEs, the Brazilian Innovation Agency's (FINEP) Inovared programme, established in September 2012, aims to improve funding support by decentralising financing operations through development banks, public research promotion agencies and state commercial banks. From 2012 to 2018, the programme plans to certify 20 financial agents and to fund approximately 2 000 firms with a total of

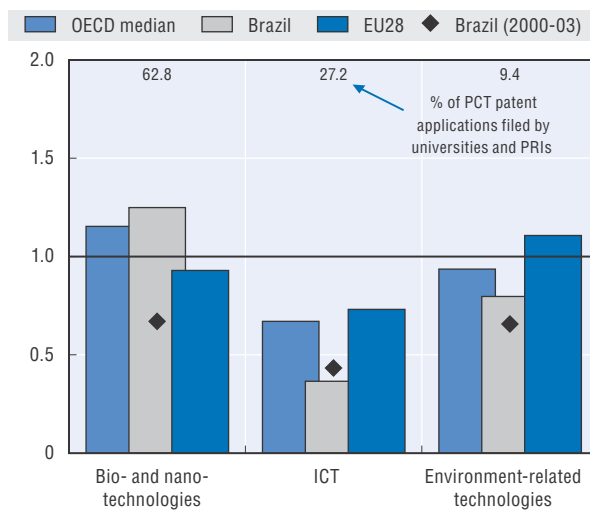
USD 788 million (BRL 1.2 billion). In addition, the *Pró-Inova* programme, introduced in 2005, encourages business innovation and entrepreneurship by diffusing information about the available tools, facilities and mechanisms.

**Technology transfer and commercialisation:** The government has strongly emphasised supporting the commercialisation of technological innovations. On 10 July 2013, FINEP issued a new USD 420 million (BRL 640 million) call to support incubators and technological parks as well as their resident companies. Public support will be provided to incubators and technological parks through loans to and equity investments in the resident companies as well as to firms having graduated in less than two years. Brazil also has several programmes to encourage cross-sector mobility of researchers (e.g. PAPPE, the Programme for Support of Research in Enterprise, and SEBRAE, the Brazilian Support Service for Small Enterprises) to facilitate knowledge flows between universities and PRIs and the business sector.

**Skills for innovation:** Human capital is a major innovation system bottleneck in Brazil. The share of the adult population with tertiary education is very small (Panel 1<sup>d</sup>). The education system needs improvement, and the performance of 15-year-olds in science is very poor (Panel 1<sup>v</sup>), although there were marked improvements in the OECD Pisa scores over 2003-12. Efforts have been made to increase the quality of education at all levels, including the introduction of entrance examinations for teachers. To support higher enrolment rates, funding for basic and professional education has increased and conditions for student loans have eased.

**Panel 2. Revealed technology advantage in selected fields, 2009-11**

Index based on PCT patent applications



Note: Policy information comes from country responses to the OECD STI Outlook policy questionnaires 2014 and 2012. Brazil's responses are available in the OECD STI Outlook Policy Database, edition 2014 at <http://qdd.oecd.org/Table.aspx?Query=4C6D0A7D-252B-47C9-9BB8-2B3B1DFC7275>.

Source: See reader's guide and methodological annex.

StatLink  <http://dx.doi.org/10.1787/888933152054>

## STI country profiles reader's guide

The country profiles (CPs) in the 2014 *OECD STI Outlook* (STIO) are designed to provide a concise overview of science, technology and innovation (STI) policy and performance in OECD members and selected non-OECD economies. Each country profile is based on information gathered from the country's response to the OECD STIO policy questionnaires 2012 and 2014, as well as various additional OECD and non-OECD sources.

Headings in the country profiles are linked to the STIO policy profiles, which examine the main global STI policy trends across countries. Issues featuring in both the policy and country profiles are: i) innovation policy governance; ii) new sources of growth; iii) new challenges; iv) universities and public research; v) innovation in firms; vi) innovative entrepreneurship; vii) technology transfer and commercialisation; viii) clusters and smart specialisation; ix) globalisation; and x) skills for innovation.

The table of key figures presents indicators on the country's economic performance (labour productivity), environmental performance (green productivity and demand), the size of its R&D system as measured by gross domestic expenditure on R&D (GERD), the degree of public commitment to S&T as measured by the share of GERD that is publicly financed, and the changes in these indicators over the past five years. In the text, all amounts are given both in USD in purchasing power parities (PPP) of the relevant year (if available) and in national currencies.

Panel 1 contains a double figure that sheds light on the strengths and weaknesses of the country's STI performance. It uses indicators on the country's national innovation system and performance with respect to: universities and public research, business R&D and innovation, innovative entrepreneurship, information and communication technology (ICT) and Internet infrastructure, networks, clusters and transfers, and skills for innovation. The dot for each indicator positions the country relative to the OECD median and to the top and bottom five OECD countries. Non-OECD countries are also compared to the OECD benchmarks, and may fall out of the range indicated in the figure (e.g. below the lowest OECD country). All indicators are normalised (by GDP and population cohorts) to take account of the size of the economy and the relevant population cohorts, and are presented as indices (OECD median = 100) for benchmarking purposes.

Panel 2 shows the structural composition of business expenditure on R&D (BERD) in terms of performance of the main industry sectors, firm size and firms' national affiliation. It reflects the country's industry structure and its business innovation efforts. Panel 3 presents the country's revealed technological advantage (RTA), as measured by international patent applications filed under the Patent Cooperation Treaty (PCT) in three key technology fields (bio- and nano-technology, ICTs, and environment-related technologies). It also shows the number of patents filed by universities and public research institutions in these fields.

Panel 4 gives an overview of the country's policy mix for public R&D, i.e. the orientation and funding modes of public research. It also illustrates changes in the policy mix for R&D over the past five years. Finally, Panel 5, a new feature in STIO 2014, reflects the balance and relative importance of various government measures to support business R&D and innovation. It is based on the country's self-assessment in its reply to the OECD STIO 2014 policy questionnaire.

Further details on the methodology, data sources and descriptions of indicators used in the country profile are provided in Annex 9.A. Data, metadata as well as the original sources and databases of the indicators used in the STIO 2014 are accessible at the statistical portal IPP.Stat (cut-off date: 8 July 2014).

### Abbreviations used in the country profiles

BERD:	Business expenditure on research and development
EU:	European Union
FDI:	Foreign direct investment
GDP:	Gross domestic product
GERD:	Gross expenditure on research and development
HEIs:	Higher education institutions
IPRs:	Intellectual property rights
MNEs:	Multinational enterprises
PRIs:	Public research institutes
R&D:	Research and development
S&E:	Science and engineering
SSS:	Smart specialisation strategy (also known as 3S)
STI:	Science, technology and innovation
S&T:	Science and technology
3S:	See SSS
STEM:	Science, technology, engineering and mathematics
USD:	United States dollars (converted using the purchasing power parities of the relevant year)
VC:	Venture capital



## Synthetic table

**Table 9.1. Comparative performance of national science and innovation systems, 2014**

Country relative position: in the top 5 OECD or above (★), in the middle range on par or above OECD median (▲), in the middle range below OECD median (△) and in the bottom 5 OECD or below (○)

		Competences and capacity to innovate									
		Universities and public research			R&D and innovation in firms				Innovative entrepreneurship		
		Public R&D expenditure (per GDP)	Top 500 universities (per GDP)	Publications in the top-quartile journals (per GDP)	Business R&D expenditure (per GDP)	Top 500 corporate R&D investors (per GDP)	Triadic patent families (per GDP)	Trademarks (per GDP)	Venture capital (per GDP)	Young patenting firms (per GDP)	Ease of entrepreneurship index
		PUB_XGDP	UNI500_GDP	PUB25_GDP	BE_XGDP	CORPRD500_GDP	PTRIAD_GDP	TRDMRK_GDP	VC_XGDP	PTYG_GDP	EASE_I
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Argentina	ARG	△	△	○	○	○	○	○			
Australia	AUS	▲	▲	▲	▲	△	△	▲	△		▲
Austria	AUT	▲	★	▲	▲	▲	▲	△	△	★	▲
Belgium	BEL	△	▲	▲	▲	△	▲	△	▲	△	△
Brazil	BRA		△	○		△	○	○			△
Canada	CAN	▲	▲	▲	△	△	▲	★	★	○	▲
Chile	CHL	○	△	○	○	○	○	△			△
China	CHN	△	△	○	▲	△	△	○			○
Colombia	COL	○	○	○	○						
Costa Rica	CRI	○	○	○	○	○					
Czech Republic	CZE	▲	△	△	△	△	△	△	○		△
Denmark	DNK	★	▲	★	▲	★	▲	▲	▲		▲
Estonia	EST	▲		▲	▲	○	△	△	▲		▲
Finland	FIN	★	★	▲	★	★	★	▲	★	★	▲
France	FRA	▲	△	△	▲	▲	▲	▲	▲	△	▲
Germany	DEU	★	▲	△	▲	▲	★	▲	▲	★	▲
Greece	GRC	○	△	△	○	△	○	○	○		△
Hungary	HUN	○	△	△	△	△	△	○	△		△
Iceland	ISL	★	○	★	▲	▲	△	★			△
India	IND	△	○	○	○	○	△	○			○
Indonesia	IDN		○	○	○		○	○			△
Ireland	IRL	△	▲	▲	△	▲	▲	▲	★	○	△
Israel	ISR	△	★	▲	★	▲	▲	▲	★		○
Italy	ITA	△	△	△	△	△	△	△	○	▲	★
Japan	JPN	▲	△	○	★	▲	★	△	△	○	▲
Korea	KOR	▲	△	△	★	▲	▲	▲	▲		△
Latvia	LVA	△	○	○	○		△				
Lithuania	LTU	△	○	○	○		△				
Luxembourg	LUX	○	○	△	△	★	▲	★	△		△
Malaysia	MYS	△	△	○	△	△					
Mexico	MEX	○	○	○	○	○	○	△			○
Netherlands	NLD	▲	▲	★	▲	▲	▲	▲	▲	▲	★
New Zealand	NZL	△	★	▲	△	△	△	★	△		★
Norway	NOR	▲	▲	△	△	▲	△	△	△	▲	△
Poland	POL	△	△	△	○	○	△	○	○		○
Portugal	PRT	△	▲	▲	△	△	△	△	△		▲
Russian Federation	RUS	△	○	○	△	△	○	○	△		△
Slovak Republic	SVK	△	○	○	○	○	○	○			★
Slovenia	SVN	△	▲	▲	▲	△	△	△	△		△
South Africa	ZAF	○	△	○	△	△	△	△	△		○
Spain	ESP	△	△	△	△	△	△	△	○	○	○
Sweden	SWE	★	★	★	★	★	★	▲	▲	★	△
Switzerland	CHE	▲	▲	★	▲	★	★	★	▲	★	▲
Turkey	TUR	△	○	○	△	△	○	○			○
United Kingdom	GBR	△	▲	▲	△	▲	▲	▲	▲	△	▲
United States	USA	▲	△	△	▲	▲	▲	▲	★	○	★
EU28	EU28	▲	▲	★	▲	△	▲	△	▲	▲	

Table 9.1. **Comparative performance of national science and innovation systems, 2014** (cont.)

Country relative position: in the top 5 OECD or above (★), in the middle range on par or above OECD median (▲), in the middle range below OECD median (△) and in the bottom 5 OECD or below (○)

		Interactions and skills for innovation												
		ICT and Internet infrastructures				Networks, clusters and transfers				Skills for innovation				
		ICT investment (per GDP)	Fixed broadband subscribers (per population)	Wireless broadband subscribers (per population)	E-government readiness index	Industry financed public R&D expenditure (per GDP)	Patents filed by universities and public labs (per GDP)	International co-authorship (%)	International co-invention (%)	Tertiary education expenditure (per GDP)	Adult population at tertiary education level (%)	Top adult performers in technology problem solving (%)	Top 15 year-old performers in science (%)	Doctoral graduate rate in science and engineering (%)
		ICTINV_XGDP	FBBAND_HAB	WBBAND_HAB	EGOV_I	PUB_BEF_XGDP	PATPRI_XGDP	INTCOA_XSA	COPAT_XPCT	TER_XGDP	ADTERPOP_XT	TOPAD_PST_XAD	TOP15_SCI_XT	PHDR_SCIENG_XCOH
		(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)	(v)	(w)
Argentina	ARG	○	○	○	○	○		△	★	▲	○		○	○
Australia	AUS	▲	△	★	▲	▲	▲	△	△	▲	▲	▲	★	▲
Austria	AUT	▲	△	▲	△	▲	△	★	▲	△	△	△	△	▲
Belgium	BEL	▲	▲	△	△	▲	▲	★	★	△	▲		▲	▲
Brazil	BRA		○	△	○		△	○	△	○	○		○	○
Canada	CAN	△	▲	△	▲	▲	▲	△	▲	★	★	▲	▲	▲
Chile	CHL		○	○	△	○	△	▲	△	★	○		○	○
China	CHN		○	○	○	▲	△	○	○		○			○
Colombia	COL		○	○	△			▲	△	★	△		○	
Costa Rica	CRI		○	○	○			★	★		△		○	
Czech Republic	CZE	△	△	△	○	△	△	△	▲	△	△	△	△	△
Denmark	DNK	★	★	★	★	△	★	▲	▲	▲	△	★	△	▲
Estonia	EST		△	▲	△	△		▲	★	▲	▲	○	★	△
Finland	FIN	△	▲	★	▲	★	▲	▲	△	★	▲	★	★	★
France	FRA	△	★	△	▲	△	★	▲	△	▲	△		▲	▲
Germany	DEU	△	▲	△	▲	★	▲	△	△	△	△	▲	▲	★
Greece	GRC	○	△	△	△	△	○	△	▲	▲	△		○	△
Hungary	HUN		△	○	△	▲	○	▲	▲	○	△		△	○
Iceland	ISL		▲	▲	△	★		★	▲	○	▲		△	△
India	IND		○	○	○		△	○	▲	○				
Indonesia	IDN		○	○	○			▲	★	○	○		○	○
Ireland	IRL	○	△	▲	△	○	★	▲	▲	▲	▲	○	▲	▲
Israel	ISR		△	△	▲	▲	★	△	△	▲	★		△	▲
Italy	ITA	△	△	△	△	○	△	△	○	○	○		△	△
Japan	JPN	★	▲	▲	▲	△	▲	○	○	▲	★	▲	★	△
Korea	KOR	▲	★	★	★	▲	★	○	○	★	★	○	▲	△
Latvia	LVA		△	△	△	▲		△	★	▲	△		○	△
Lithuania	LTU		△	○	△	★		△	△		▲		△	
Luxembourg	LUX	○	▲	▲	▲	△	△	★	★	○	▲		▲	
Malaysia	MYS		○	○	△			△	△	★	○		○	
Mexico	MEX	○	○	○	○	○	○	△	▲	△	○		○	○
Netherlands	NLD	▲	★	▲	★	★	▲	▲	△	▲	△	★	▲	△
New Zealand	NZL	★	▲	▲	▲	★	△	▲	△	▲	▲		★	▲
Norway	NOR		▲	▲	▲	▲	△	▲	△	▲	▲	★	△	▲
Poland	POL		○	▲	○	△	△	○	★	△	△	○	▲	○
Portugal	PRT	▲	△	○	△	○	○	△	▲	△	○		○	△
Russian Federation	RUS		○	△	△	★	○	○	△	△	★		○	○
Slovak Republic	SVK	○	○	△	○	△		△	▲	○	△	○	△	▲
Slovenia	SVN	△	△	△	△	▲	△	△	△	△	△		▲	▲
South Africa	ZAF		○	○	○	△	△	△	△	○	○			○
Spain	ESP	△	△	△	△	▲	▲	△	△	△	△		△	△
Sweden	SWE	★	▲	★	▲	▲	○	▲	△	▲	▲	★	△	★
Switzerland	CHE	★	★	△	▲	▲	▲	★	★	△	▲		▲	★
Turkey	TUR		○	○	○	▲	○	○	○	△	○		○	○
United Kingdom	GBR	▲	▲	▲	★	△	▲	△	▲	△	▲		▲	★
United States	USA	▲	▲	▲	★	△	▲	○	○	★	★	△	△	△
EU28	EU28	△	▲	▲		△	▲	▲	▲		△		△	▲

Note: Non-OECD countries are also compared to OECD countries and may therefore be out of range (e.g. lower than the lowest OECD country). They appear in this table with top five and bottom five OECD values

Israel: "The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. 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."

Source: See references and methodological annex of the OECD STI Outlook 2014 country profiles.

## References

### General references

- European Commission (EC) (2013), *Monitoring Industrial Research: the 2013 EU Industrial R&D Investment Scoreboard*, European Commission, Luxembourg, <http://iri.jrc.ec.europa.eu/scoreboard13.html>.
- International Energy Agency (IEA) (2013), *CO<sub>2</sub> Emissions from Fuel Consumption*, OECD Publishing, Paris, [http://dx.doi.org/10.1787/co2\\_fuel-2013-en](http://dx.doi.org/10.1787/co2_fuel-2013-en).
- Flanagan, K., E. Uyarra and M. Laranja (2010), "The policy mix for innovation: rethinking innovation policy in a multilevel, multi-actor context", *Munich Personal RePEc Archive (MPRA)* No. 23567, July 2010.
- OECD (2010a), *OECD Science, Technology and Industry Outlook 2010*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264083479-en>.
- OECD (2010b), "Monitoring innovation and policies: developing indicators for analysing the innovation policy mix", internal working document of the Directorate for Science, Technology and Industry (DSTI), OECD, Paris.
- OECD (2010c), *Measuring Innovation: A New Perspective*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264059474-en>.
- OECD (2010d), *SMEs, Entrepreneurship and Innovation*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264080355-en>.
- OECD (2011), *Towards Green Growth: Monitoring Progress: OECD Indicators*, OECD Green Growth Studies, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264111356-en>.
- OECD (2012), *OECD Internet Economy Outlook 2012*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264086463-en>.
- OECD (2013a), *OECD Science, Technology and Industry Scoreboard 2013: Innovation for Growth*, OECD Publishing, Paris, [http://dx.doi.org/10.1787/sti\\_scoreboard-2013-en](http://dx.doi.org/10.1787/sti_scoreboard-2013-en).
- OECD (2013b), *OECD Skills Outlook 2013: First Results from the Survey of Adult Skills*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264204256-en>.
- OECD (2014a), *OECD Economic Surveys*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/16097513>.
- OECD (2014b), *National Accounts at a Glance 2014*, OECD Publishing, Paris, [http://dx.doi.org/10.1787/na\\_glance-2014-en](http://dx.doi.org/10.1787/na_glance-2014-en).
- OECD (2014c), *Education at a Glance 2014: OECD Indicators*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/eag-2014-en>.
- OECD (2014d), *Entrepreneurship at a Glance 2014*, OECD Publishing, Paris, [http://dx.doi.org/10.1787/entrepreneur\\_aag-2014-en](http://dx.doi.org/10.1787/entrepreneur_aag-2014-en).
- OECD (2014e), *Measuring the Digital Economy: A New Perspective*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264221796-en>.
- Van Steen, J. (2012), "Modes of public funding of R&D: Towards internationally comparable indicators", *OECD Science, Technology and Industry Working Papers*, No. 2012/4, OECD Publishing, Paris, <http://dx.doi.org/10.1787/5k98ssns1gzs-en>.

### Databases and data sources

- Academic Ranking of World Universities (ARWU) (2013), "Shanghai ranking" 2003-13, [www.shanghairanking.com](http://www.shanghairanking.com).
- Bureau Van Dijk (2011), *ORBIS Database*, Bureau Van Dijk Electronic Publishing.
- Elsevier B.V. (2014), *Elsevier Research Intelligence*, [www.elsevier.com/online-tools/research-intelligence/products-and-services/scival](http://www.elsevier.com/online-tools/research-intelligence/products-and-services/scival) (data retrieved online on 31 January 2014).
- Eurostat (2014), *Education and Training (ETR) Databases*, June, <http://epp.eurostat.ec.europa.eu/portal/page/portal/education/data/database>.
- Graham, S. et al. (2013), "The USPTO trademark case files dataset: Descriptions, lessons, and insights", *SSRN Working Paper*, <http://ssrn.com/abstract=2188621>.
- International Energy Agency (IEA) (2013), *IEA CO<sub>2</sub> Emissions from Fuel Combustion Statistics*, <http://dx.doi.org/10.1787/co2-data-en>.

- International Monetary Fund (IMF) (2014), *World Economic Outlook (WEO) Database*, April, [www.imf.org/external/pubs/ft/weo/2014/01/weodata/index.aspx](http://www.imf.org/external/pubs/ft/weo/2014/01/weodata/index.aspx).
- International Telecommunication Union (ITU) (2013), *World Telecommunication/ICT Indicators 2013*, [www.itu.int/pub/D-IND-WTID.OL](http://www.itu.int/pub/D-IND-WTID.OL).
- National Science Foundation (NSF) (2014), “Academic research and development”, in *Science and Engineering Indicators 2014*, [www.nsf.gov/statistics/seind14/index.cfm](http://www.nsf.gov/statistics/seind14/index.cfm).
- OECD (2012), *STructural ANalysis (STAN) Database*, November, [www.oecd.org/sti/stan](http://www.oecd.org/sti/stan).
- OECD (2013), *Activity of Multinational Enterprises (AMNE) Database*, October, [www.oecd.org/industry/ind/amne.htm](http://www.oecd.org/industry/ind/amne.htm).
- OECD (2013), *Green Growth Indicators Database*, [www.oecd.org/greengrowth/greengrowthindicators.htm](http://www.oecd.org/greengrowth/greengrowthindicators.htm).
- OECD (2013), “Modes of public funding of R&D: Interim results from the second round of data collection on GBAORD”, internal working document of the Working Party of National Experts on Science and Technology Indicators (NESTI), OECD, Paris.
- OECD (2013), *OECD/NESTI data collection on R&D tax incentives*, April, [www.oecd.org/sti/rd-tax-stats.htm](http://www.oecd.org/sti/rd-tax-stats.htm).
- OECD (2013), “PISA: Programme for International Student Assessment”, *OECD Education Statistics*, December, [www.pisa.oecd.org](http://www.pisa.oecd.org) and <http://dx.doi.org/10.1787/data-00365-en>.
- OECD (2014), *Entrepreneurship Financing Database*.
- OECD (2014), *Main Science and Technology Indicators (MSTI) Database*, June, [www.oecd.org/sti/msti](http://www.oecd.org/sti/msti).
- OECD (2014), *OECD ANBERD Database*, March, [www.oecd.org/sti/anberd](http://www.oecd.org/sti/anberd).
- OECD (2014), *OECD Broadband Portal*, June, [www.oecd.org/sti/broadband/oecdbroadbandportal.htm](http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm).
- OECD (2014), *OECD Education Statistics*, June, <http://dx.doi.org/10.1787/edu-db-data-en>.
- OECD (2014), *OECD Educational Attainment Database*, June.
- OECD (2014), *OECD National Accounts Statistics*, April, <http://dx.doi.org/10.1787/naag-data-en>.
- OECD (2014), *OECD Product Market Regulation Database*, March, [www.oecd.org/economy/pmr](http://www.oecd.org/economy/pmr).
- OECD (2014), *OECD Productivity Database*, May, [www.oecd.org/std/productivity-stats](http://www.oecd.org/std/productivity-stats).
- OECD (2014), *OECD Patent Database*, March, [www.oecd.org/sti/ipr-statistics](http://www.oecd.org/sti/ipr-statistics).
- OECD (2014), *OECD Research and Development Statistics (RDS) Database*, March, [www.oecd.org/sti/rds](http://www.oecd.org/sti/rds).
- OECD (2014), *OECD Science, Technology and Industry Outlook Policy Database*, <http://qdd.oecd.org/subject.aspx?Subject=a2ebc2a0-b8dc-4d1a-82be-3fea780b86a6>.
- UNESCO Institute for Statistics (UIS) (2014), *Education Database*, May, [http://data.uis.unesco.org/Index.aspx?DataSetCode=SCN\\_DS](http://data.uis.unesco.org/Index.aspx?DataSetCode=SCN_DS).
- UIS (2014), *Science, Technology and Innovation Database*, June 2014, [http://data.uis.unesco.org/Index.aspx?DataSetCode=EDULIT\\_DS](http://data.uis.unesco.org/Index.aspx?DataSetCode=EDULIT_DS).
- United Nations (UN) (2013), *UN e-Government Survey*, United Nations, NY, <http://unpan3.un.org/egovkb/Reports/UN-E-Government-Survey-2014>.
- World Bank (WB) (2014), *World Development Indicators (WDI) Databank*, <http://wdi.worldbank.org>.