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Israel

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ISRAEL

Israel's strong technology sector, particularly ICT, is a key driver of the economy. The global financial crisis only briefly slowed its growth and the recent discovery of natural gas fields has boosted GDP. However, the country's technology-driven growth has not been sufficiently inclusive; poverty and inequality have risen and the country is going through a period of fiscal consolidation. Given the pressures on public budgets and the consequent adjustments in public spending on STI, greater competition in the business sector could help make innovation more inclusive. Israeli STI policy follows a bottom-up approach with specific policies in various areas rather than an overall national strategy that guides STI policy orientations.

Hot issue 1: Encouraging innovation in firms and supporting entrepreneurship and SMEs. Israel's STI ecosystem relies both on foreign multinationals (Panel 2), and large corporate R&D investors (Panel 1^e) as well as on start-ups (Panel 1^h). BERD as a share of GDP is the second highest in the OECD area (Panel 1^d), and venture capital (VC) as a share of GDP tops the OECD ranking (Panel 1^h). Although seed funding declined during the global economic crisis, the new Young Companies programme helps firms up to three years old to raise private investment by supporting them with early funding and signalling business potential. However, the Ease of Entrepreneurship Index (Panel 1^j) is at the bottom of OECD countries and shows a need for significant improvement in various aspects of the regulatory framework for business.

Hot issue 2: Reforming and improving public research (including university research). In spite of its modest public R&D expenditure, Israel hosts a number of world-class universities and produces high-impact publications (Panel 1^{a, b, c}). The six-year Higher Education Plan was introduced in 2011 with USD 1.9 billion (NIS 7.5 billion) to promote academic excellence and upgrade research and teaching infrastructures. Universities' budgets have been increased, with a 30% rise in the budget of the Council for Higher Education; they have also become more competitive, with the doubling of the Israel Science Foundation's (ISF) competitive grants and an increased share of block funding allocated on performance criteria. Long-term funding has also been strengthened through larger block grants about USD 186 million (NIS 750 million). The most important ini-

tiative has been the creation of 16 centres of excellence (I-core) financed with USD 114 million (NIS 450 million) to advance cutting-edge academic research and offer an attractive research environment.

Hot issue 3: Addressing challenges of STI globalisation and increasing international co-operation. As a small country, Israel depends on exports and international openness, but research and innovation need to be better integrated in global networks, as illustrated by international co-patenting data (Panel 1^f). Israel has made international co-operation a policy priority. Competitive grants have been offered to support strategic R&D collaboration and encourage high-technology exports to emerging markets. The share of GERD financed from abroad increased from 28% to 47% over 2007-11. Israel received USD 798 million (NIS 3.2 billion) from the EU Seventh Framework Programme (FP7) of which almost two-thirds went to universities. By the end of 2010, FP7 funding of USD 302 million (NIS 1.2 billion) was almost on par with ISF funding of USD 252 million (NIS 1.0 billion). Israel has just finalised its participation in EU Horizon 2020.

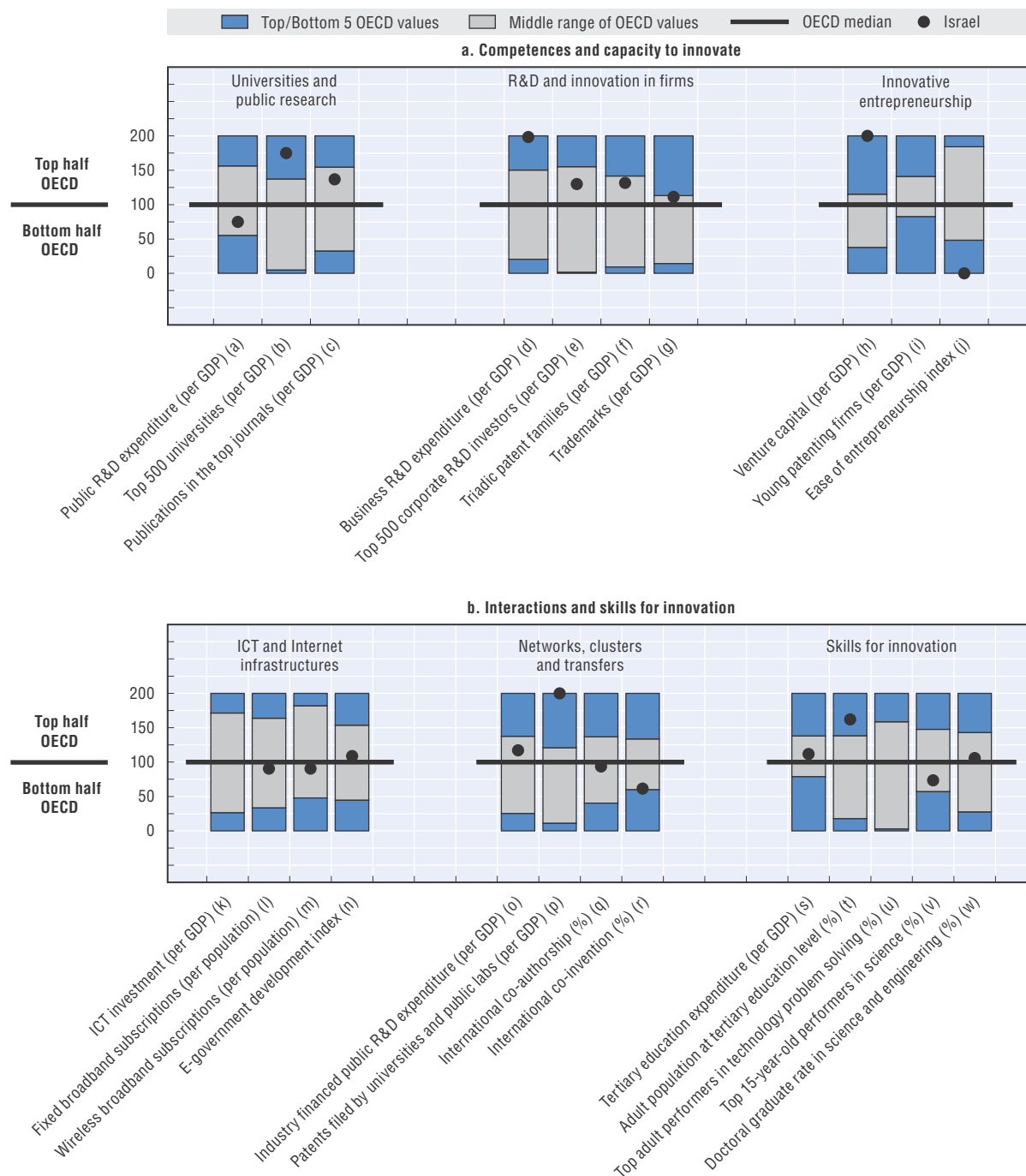
Hot issue 4: Innovation to contribute to sustainable/green growth. Inclusive innovation is one of the main challenges of Israel's STI policy. The government seeks to link the rest of the economy better to the high-technology growth engine, thereby enhancing the sustainability of growth. Because Israel faces challenges relating to water scarcity and security, several policy initiatives promote oil independence and water technologies. The Fuel Choice initiative intends to make Israel a centre of knowledge and industrial best practices in fuel alternatives for transport, and USD 25 million (NIS 100 million) are provided annually for the next decade to finance R&D, demonstrators, international prizes and awareness seminars. The Master Water Management Plan makes policy recommendations on water management systems and tariffs. In the search for new markets, Israel launched the Grand Challenges Israel programme in 2014 to encourage innovation to solve global health and food security challenges in the developing world. USD 3 million (NIS 12 million) were allocated in the form of grants to increase innovation-related exports to emerging and low-income markets.

Key figures, 2013

Economic and environmental performance	ISR	OECD	Gross domestic expenditure on R&D	ISR	OECD
Labour productivity			GERD		
GDP per hour worked, USD PPP, 2013	36.2	47.7	Million USD PPP, 2012	9 735	1 107 398
(annual growth rate, 2008-13)	(+1.1)	(+0.8)	As a % of total OECD, 2012	0.9	100
Green productivity			GERD intensity and growth		
GDP per unit of CO ₂ emitted, USD, 2011	3.1	3.0	As a % of GDP, 2012	3.93	2.40
(annual growth rate, 2007-11)	(+2.4)	(+1.8)	(annual growth rate, 2007-12)	(+0.9)	(+2.0)
Green demand			GERD publicly financed		
NNI per unit of CO ₂ emitted, USD, 2011	3.1	3.0	As a % of GDP, 2010	0.57	0.77
(annual growth rate, 2007-11)	(+2.7)	(+1.6)	(annual growth rate, 2007-10)	(+0.2)	(+2.8)

Figure 9.23. Science and innovation in Israel

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).

Highlights of the Israeli STI system

STI policy governance: Maintaining STI leadership in the current fiscal context requires better co-ordination of government agencies and policy evaluation. The lack of a formal platform for all key players to exchange ideas on innovation strategies has been identified as a possible barrier to co-ordination. Such a platform is under development in order to involve STI policy shapers and implementers. There is also an on-going debate about the need for a more top-down strategy. Evaluation of STI policy has received particular attention. The new Strategy and Economic Research Unit (SERU) and a comprehensive evaluation methodology have supported the institutionalisation of evaluation, with a more impact-oriented approach. Major entrepreneurial programmes (e.g. Tnufa, the technological incubator and seed company programmes) have been evaluated recently with a view to assessing their impact on the innovation ecosystem. National reports and STI policy documents have also underlined the need to establish and develop an information system by means of innovation surveys and a database to support policy making.

Innovation in firms: Israel has the world's second most R&D-intensive business sector; firms spend 3.3% of GDP on R&D (Panel 1^d). Competitive grants and tax incentives are the two main policy instruments in support of business R&D. The budget of the Office of the Chief Scientist (OCS), the main government agency for industrial R&D support, has been reduced significantly since the early 2000s and is likely to remain unchanged in the coming years. The OCS dedicates 85% of its USD 374 million (NIS 1.5 billion) to SMEs. Public support remains industry – and technology – neutral.

ICT and Internet infrastructures: Although the Internet and ICT infrastructures are modestly developed (Panel 1^{l, m}), owing to the digital gap in Israeli society, Israel has an RTA in ICT as measured by patent applications which has continued over the past decade (Panel 3). The Cyber-Security initiative is a recent policy initiative to advance the development and adoption of secure technologies. A national cyber-security incubator based on a public-private partnership has been established and a National Cyber-Security Centre of Excel-

lence has been created with the United States under a bilateral R&D co-operation agreement.

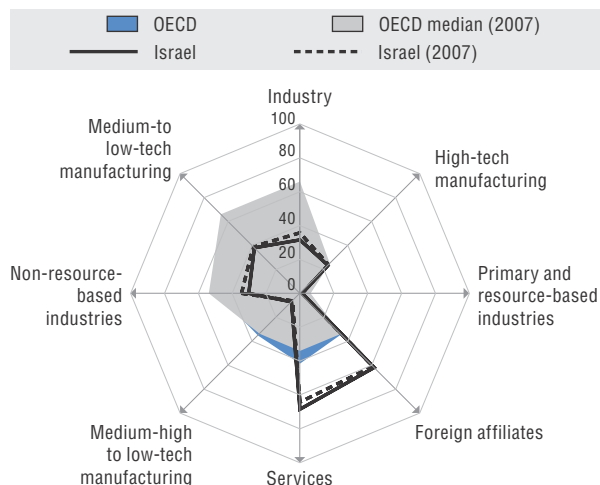
Technology transfer and commercialisation: Links between industry and science are relatively well developed and universities and PRIs patent their research results actively (Panel 1^{o, p}). The OCS Magnet programme has supported knowledge transfer since 1994 through grants for new pre-competitive research consortia. The Magnet programme promotes industry-science co-operation that already exists for up to a 24-month period and the Nofar programme aims to advance applied research in bio- and nano-technology and its transfer to industry.

Clusters and smart specialisation: The Fuel Choices Initiative (formerly the Oil Substitutes Initiative) and the Cyber Security initiative are Israel's main smart specialisation programmes. The Fuel Choices Initiative includes a one-stop shop for firms, a VC-backed programme and assistance in establishing pilot facilities in petroleum substitutes. It has USD 380 million (NIS 1.5 billion) for 2011-20. The Cyber Security initiative comprises of a few dedicated funds to encourage R&D in the field, summing to USD 50 million (NIS 180 million) for 2012-14. The initiative encourages the development of human capital in the cyber security field and is engaged in linking relevant military know-how to the industry.

Skills for innovation: The shortage of professional manpower will be a major obstacle for the Israeli STI system in the coming years, as the demand for engineers and technical professionals begins to outpace supply. Although adult educational attainment is high, youth do not perform very well in science by international standards and the rate of doctoral graduates in science and engineering is relatively modest (Panel 1^{u, v, w}). The Higher Education Plan (2011-15) aims to improve the quality and competitiveness of the higher education system. About 1 600 new researchers will be hired in universities to replace retiring senior researchers, resulting in a net gain of about 850 academic staff over the next six years. This new policy also aims to increase participation in tertiary education, in particular by encouraging minorities to study at universities.

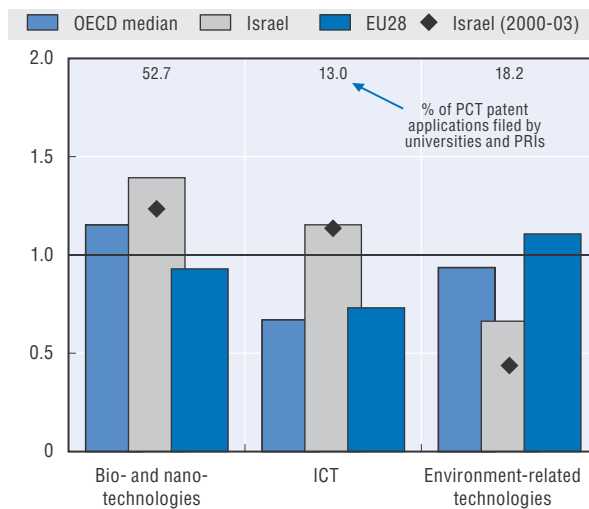
Panel 2. Structural composition of BERD, 2011

As a % of total BERD or sub-parts of BERD

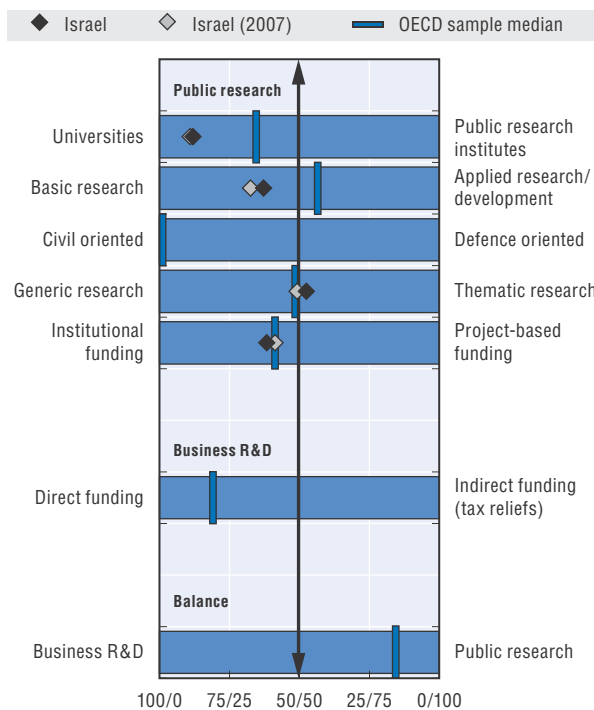


Panel 3. Revealed technology advantage in selected fields, 2009-11

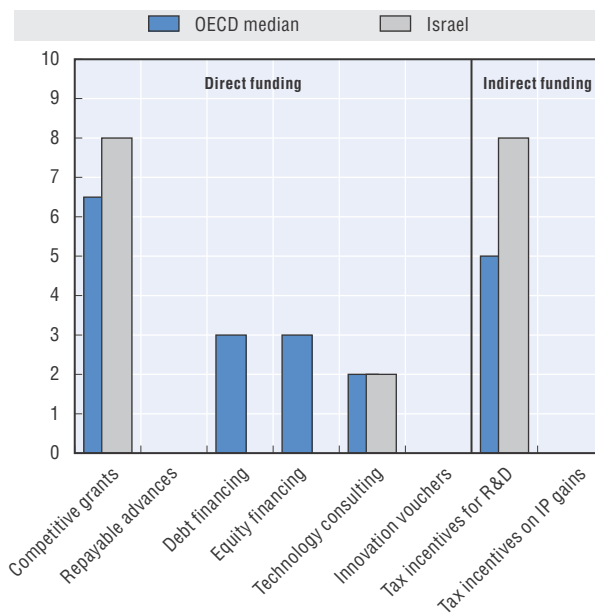
Index based on PCT patent applications



Panel 4. Allocation of public funds to R&D, by sector, type and mode of funding, 2012



Panel 5. Most relevant instruments of public funding of business R&D, 2014



Note: Policy information comes from country responses to the OECD STI Outlook policy questionnaires 2014 and 2012. Israel's responses are available in the OECD STI Outlook Policy Database, edition 2014 at <http://qdd.oecd.org/Table.aspx?Query=13245801-8246-44D3-B9B6-364D3A28929A>.
 Source: See reader's guide and methodological annex.

StatLink <http://dx.doi.org/10.1787/888933152232>

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), *CO₂ Emissions from Fuel Consumption*, OECD Publishing, Paris, 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.
- 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.
- 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.
- 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.
- 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 (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 CO₂ 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.
- International Telecommunication Union (ITU) (2013), *World Telecommunication/ICT Indicators 2013*, 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.
- OECD (2012), *STructural ANalysis (STAN) Database*, November, www.oecd.org/sti/stan.
- OECD (2013), *Activity of Multinational Enterprises (AMNE) Database*, October, www.oecd.org/industry/ind/amne.htm.
- OECD (2013), *Green Growth Indicators Database*, 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.
- OECD (2013), “PISA: Programme for International Student Assessment”, *OECD Education Statistics*, December, 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.
- OECD (2014), *OECD ANBERD Database*, March, www.oecd.org/sti/anberd.
- OECD (2014), *OECD Broadband Portal*, June, 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.
- OECD (2014), *OECD Productivity Database*, May, www.oecd.org/std/productivity-stats.
- OECD (2014), *OECD Patent Database*, March, www.oecd.org/sti/ipr-statistics.
- OECD (2014), *OECD Research and Development Statistics (RDS) Database*, March, 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.
- UIS (2014), *Science, Technology and Innovation Database*, June 2014, 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>.