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Costa Rica

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COSTA RICA

Costa Rica is known for its substantial export-led growth. In 2011 it was the second largest economy in Central America with GDP per capita of USD 12 157. The aim of the 2011-14 STI Strategic Plan (PNCTI) is to achieve further growth.

Hot issue 1: Improving overall human resources and skills.

Costa Rica has few top universities (Panel 1^b). At 20.9%, the tertiary-qualified adult population is at the bottom of the mid-range of OECD countries (Panel 1^t), and the performance of 15-year-olds in science is poor. The government therefore seeks to improve the country's human resource by investing in education, boosting secondary school coverage, promoting entrepreneurship, developing skills that meet firms' requirements, bringing ICTs to the education system, and matching the education programme with the needs of the private sector. It relies in part on a World Bank Higher Education Improvement Project Loan (see below). Following the recommendations of a 2010 assessment of the country's STI strategic priorities by the Inter-American Development Bank (IDB), the government has decided to allocate 50% of its S&T funds to development of human capital.

Hot issue 2: Improving framework conditions for innovation (including competitiveness).

To improve conditions for innovation, Costa Rica focuses on obtaining FDI in certain high-technology sectors. The Free Zone Regime (FZR) offers tax exemptions and other incentives to foreign companies that meet eligibility criteria, including specified investment targets in qualified priority industries. The Commission for Export Linkages promotes supply-chain links between domestic SMEs and MNEs through a matchmaking programme. It also helps identify and build capabilities in selected local firms to help them become suppliers to MNEs.

Hot issue 3: Strengthening public R&D capacity and infrastructures.

In July 2013, the government approved a USD 286 million (CRC 14.4 billion) initiative, financed by a World Bank Higher Education Improvement Project Loan, to develop research in public universities, particularly in priority sectors and technology areas. The government has allocated 30% of its S&T funds to research projects based on the

priorities identified in the above-mentioned IDB assessment.

Hot issue 4: Improving the governance of innovation system and policy.

In 2010 the government created the Presidential Council on Competitiveness and Innovation (CPCI). Its objective is to co-ordinate public policies among the institutions involved in Costa Rica's innovation system. The Council linked the different players to the priority sectors to contribute to the definition of the main strategies of the PNCTI (2011-14). The Council later established an inter-institutional working group on human capital for competitiveness. In defining the PNCTI for 2011-14, the Ministry of Science, Technology and Telecommunications focused on the following priority areas: human capital, innovation, productivity and the digital strategy. In 2011, a set of annually updated indicators was created to evaluate the achievement of the National Development Plan (PND) and PNCTI goals.

Highlights of the Costa Rican STI system

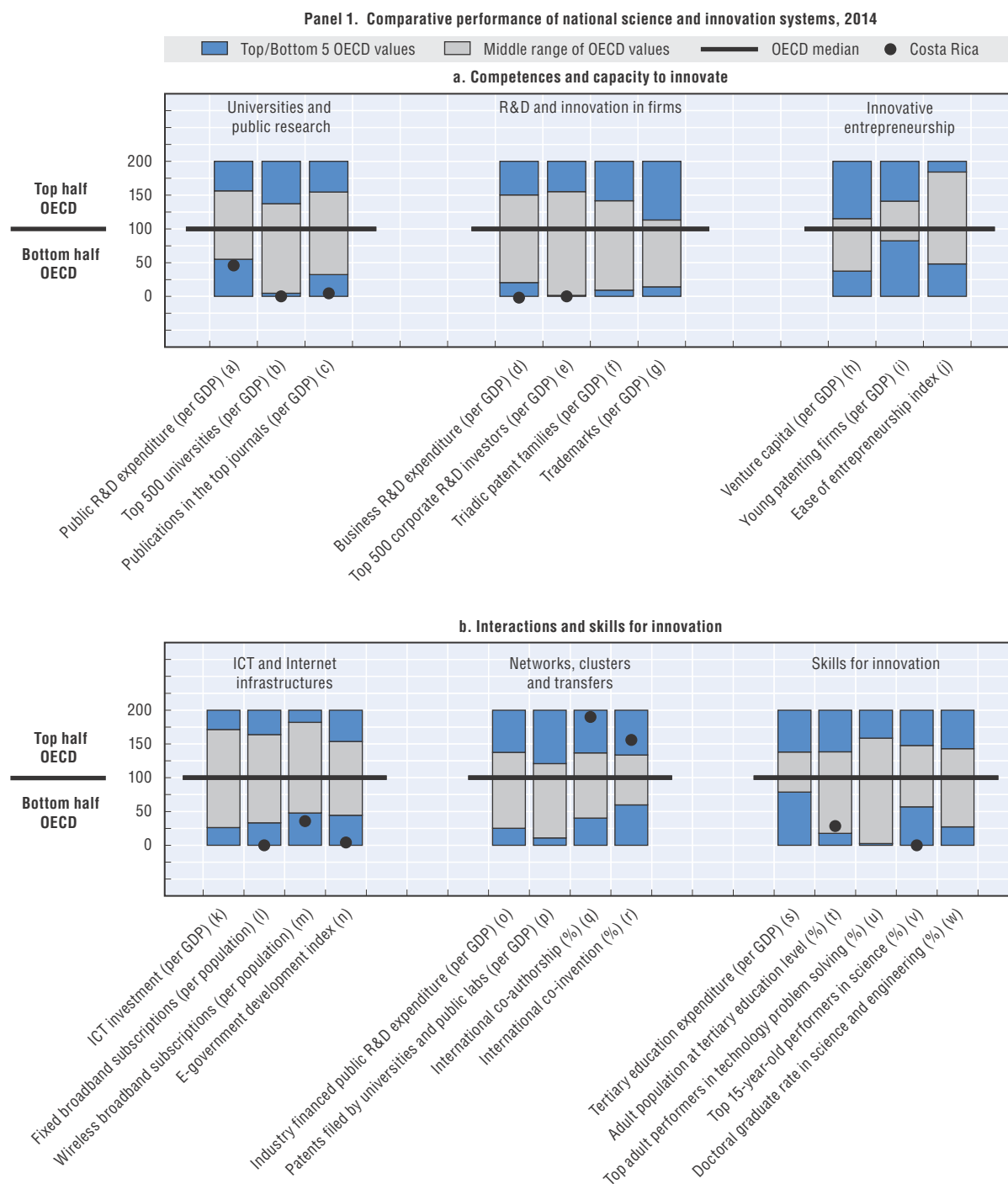
New sources of growth: The PND emphasises seven technology areas: renewable energy, nanotechnology, biotechnology, health, biodiversity, ICT, and Earth and space sciences. Tax concessions are also provided for FDI projects in high value-added electronics, manufacturing, materials and electrical components; medical devices, equipment and supplies; automotive devices and supplies; high-precision machinery parts and components; pharmaceuticals and biotechnology; and renewable energy.

Innovative entrepreneurship: Since the 2000s, Costa Rica has made a number of reforms to the country's intellectual property system. The Inter-institutional Commission for the Protection and Promotion of Intellectual Property (CIPPI) co-ordinates the introduction and enforcement of IP-related legislation. In 2011 it developed, with the support of the World Intellectual Property Organization, a national IP strategy. On that basis, Costa Rica is amending the patent law and has reinforced prosecution of IP violations. In 2012, the government's Funding Programme for SMEs (PROPYME) started to support SMEs for obtaining and protecting IPRs. In addition to the funding programmes (see below) other

Key figures, 2013

Economic and environmental performance	CRI	OECD	Gross domestic expenditure on R&D	CRI	OECD
Labour productivity			GERD		
GDP per hour worked, USD PPP, 2013	n.a.	47.7	Million USD PPP, 2011	275	1 107 398
(annual growth rate, 2008-13)	n.a.	(+0.8)	As a % of total OECD, 2011	0.0	100
Green productivity			GERD intensity and growth		
GDP per unit of CO ₂ emitted, USD, 2011	7.7	3.0	As a % of GDP, 2011	0.48	2.40
(annual growth rate, 2007-11)	(+1.5)	(+1.8)	(annual growth rate, 2007-11)	(+9.9)	(+2.0)
Green demand			GERD publicly financed		
NNI per unit of CO ₂ emitted, USD, 2011	n.a.	3.0	As a % of GDP,	n.a.	0.77
(annual growth rate, 2007-11)	n.a.	(+1.6)	(annual growth rate, 2008-11)	(+19.4)	(+2.8)

Figure 9.10. Science and innovation in Costa Rica



support programmes include EXPOPYME, an SME forum, CREAMPYME, a business consulting service, and diffusion of lectures and success stories about SMEs on PYME TV and PYME Radio.

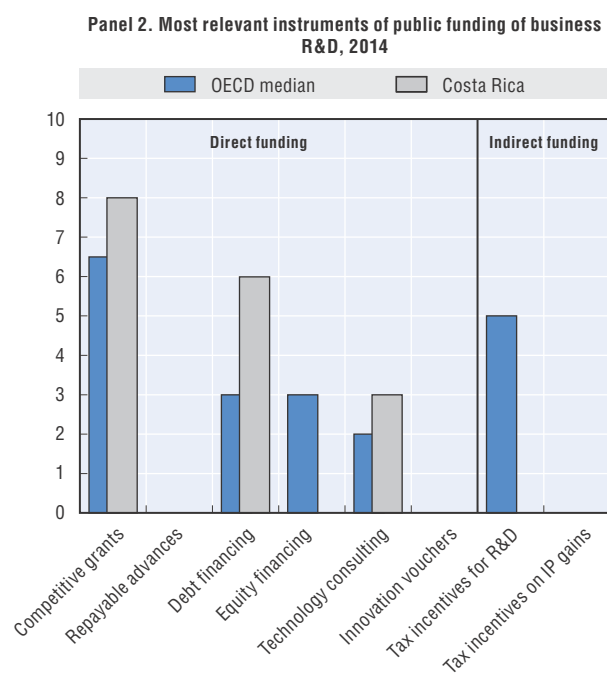
Innovation in firms: Costa Rica's BERD as a share of GDP was 0.08% in 2011 (0.18% in 2012 according to national source), well below the OECD median (Panel 1^d), but similar to that of Latin American countries such as Colombia (0.05%) and Argentina (0.16%). The 2010-14 PND recognised the private sector's weak performance in innovation and the need to provide further support. Over the last ten years, the government has shifted the emphasis of its policy mix from supply- to demand-side instruments. MINCITT has created and reinforced a set of promotional funds and non-financial programmes. PROPYME supports SME innovation in high-technology industries such as aerospace, automotive and electronics. A seed capital fund, managed by the Ministry of Economy, Industry and Commerce (MEIC), supports technology-oriented start-ups in conducting R&D and in commencing operations. Other funds include the Fondo de Incentivos, FINADE and FORINVES, which also supports business innovation through venture capital financing.

ICT and Internet infrastructures: In July 2013, the Ministry of Public Education announced a plan to increase the use of

ICTs in public schools with an investment of about USD 28.4 million (CRC 10 billion). The value of this plan is clear from the low levels of fixed and wireless broadband subscriptions in Costa Rica relative to the OECD median (Panel 1^{l, m}).

Globalisation: Costa Rica's research and innovation are well connected internationally. International co-authorships account for 74% of S&T publications, and international co-inventions for 46% of PCT patent application, both well above the OECD median (Panel 1^{q, r}). However, this also reflects the small size of the country's innovation system. Connecting domestic business to foreign MNEs to boost local industry is also an important policy approach.

Recent developments in STI expenditures: While Costa Rica's GERD was only 0.48% of GDP in 2011 (0.57% in 2012 according to national source), well below the OECD median, it grew at a rapid 9.9% annually over 2007-11. Publicly funded GERD increased from USD 118.9 million (CRC 30.7 billion) in 2008 to USD 225.5 million (CRC 79.4 billion) in 2012. At 0.40% of GDP, public expenditure on R&D is weak compared to the OECD median (Panel 1^a), but is similar to that of Latin American countries such as Argentina (0.57%) and Mexico (0.25%). The government plans to increase the share by the mid-2010s.



Note: Policy information comes from country responses to the OECD STI Outlook policy questionnaire 2014. Costa Rica's response is available in the OECD STI Outlook Policy Database, edition 2014 at <http://qdd.oecd.org/Table.aspx?Query=B021AE35-2564-410E-B9D2-24F0ED1BED72>.

Source: See reader's guide and methodological annex.

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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.

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