

## Release of Main Science and Technology Indicators - Latest estimates of R&D investment in OECD and major economies

### *China appears on course to match OECD R&D intensity by 2020*

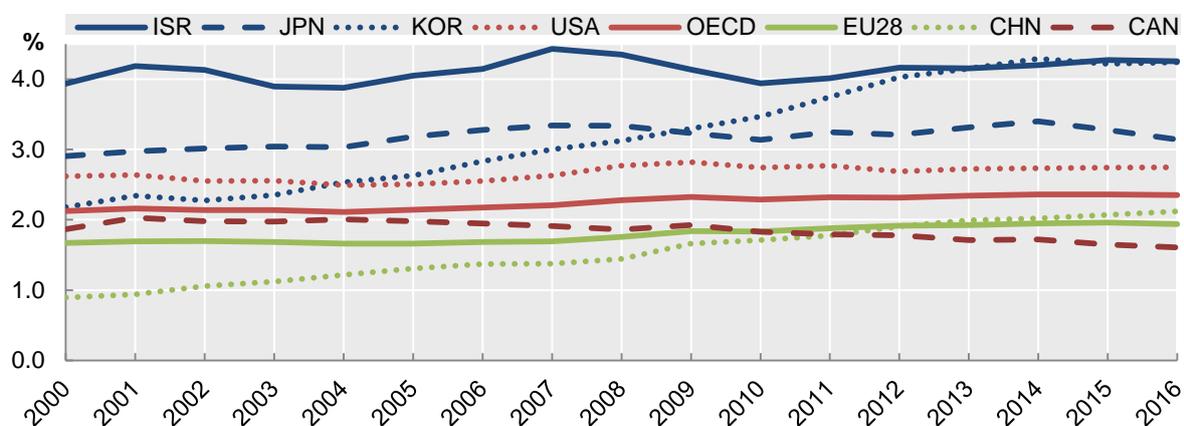
The latest available data on expenditure on Research and Development (R&D) for OECD countries and other major economies published in the [OECD Main Science and Technology Indicators](#) shows that in 2016 R&D intensity - expenditure on R&D as a percentage of Gross Domestic Product (GDP) - remained stable at 2.4% across OECD countries for the fourth year running. In 2016, Israel and Korea continued to have the highest R&D intensities, 4.25% and 4.24% respectively. In Japan, a decline which started in 2015 continued in 2016, with R&D intensity falling to 3.1%. Canada has experienced a sustained downward trend since 2009.

Across European Union (EU) countries, R&D intensity fell slightly, from 1.96% in 2015 to 1.94% in 2016 as slight increases in R&D intensity in Germany and the United Kingdom were offset by declines in the majority of EU countries including the Slovak Republic and Latvia. In some cases, declining or stagnant R&D intensity arises from R&D expenditure not keeping pace with GDP growth which began to pick up in 2016; of the 30 OECD countries for which 2016 data are available, only 13 experienced real terms falls in total R&D expenditure while 20 saw a decline in R&D intensity. Most notably, total R&D expenditure fell by 3.3% in Japan.

The United States, which spends more on R&D than any other country and accounts for around 40% of total OECD R&D expenditure, continued its stable run by maintaining R&D intensity at 2.7% in 2016. Meanwhile, China continued its steady increase in R&D intensity, reaching 2.12% in 2015 – only 0.23 of a percentage points below the OECD average. Having overtaken the EU in R&D intensity in 2013 and in raw R&D spending in 2015, China spent 15% more on R&D than EU countries spent collectively in 2016. The latest patent data show the number of patents filed by Chinese inventors increased by 28% in 2015, while filings under the Patent Cooperation Treaty by United States inventors declined for a second successive year.

### R&D intensity: Gross Domestic Expenditure on R&D as a percentage of GDP, 2000-2016

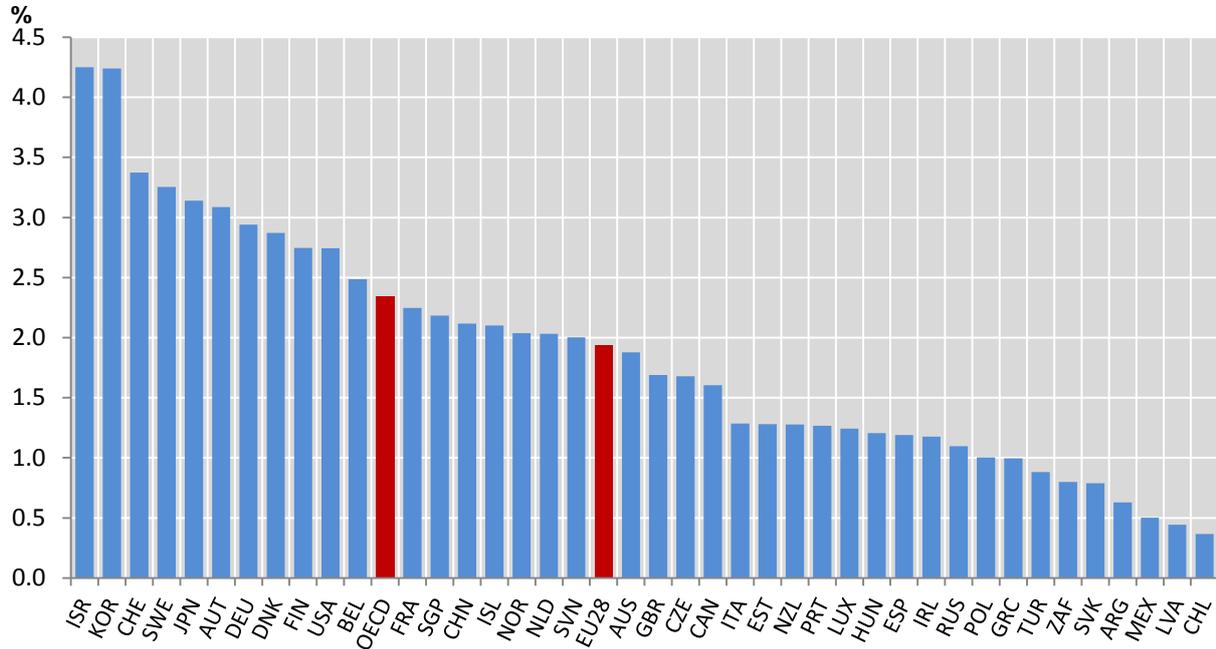
*Selected countries from OECD MSTI database*



Source: OECD Main Science and Technology Indicators Database, February 2018. <http://oe.cd/msti>

## R&D intensity, 2016

OECD countries and select non-member economies



Note: Argentina, Australia, New Zealand, Poland, Switzerland, Turkey, and South Africa: 2015 data. Singapore: 2014 data.

Source: OECD Main Science and Technology Indicators Database, February 2018. <http://oe.cd/msti>

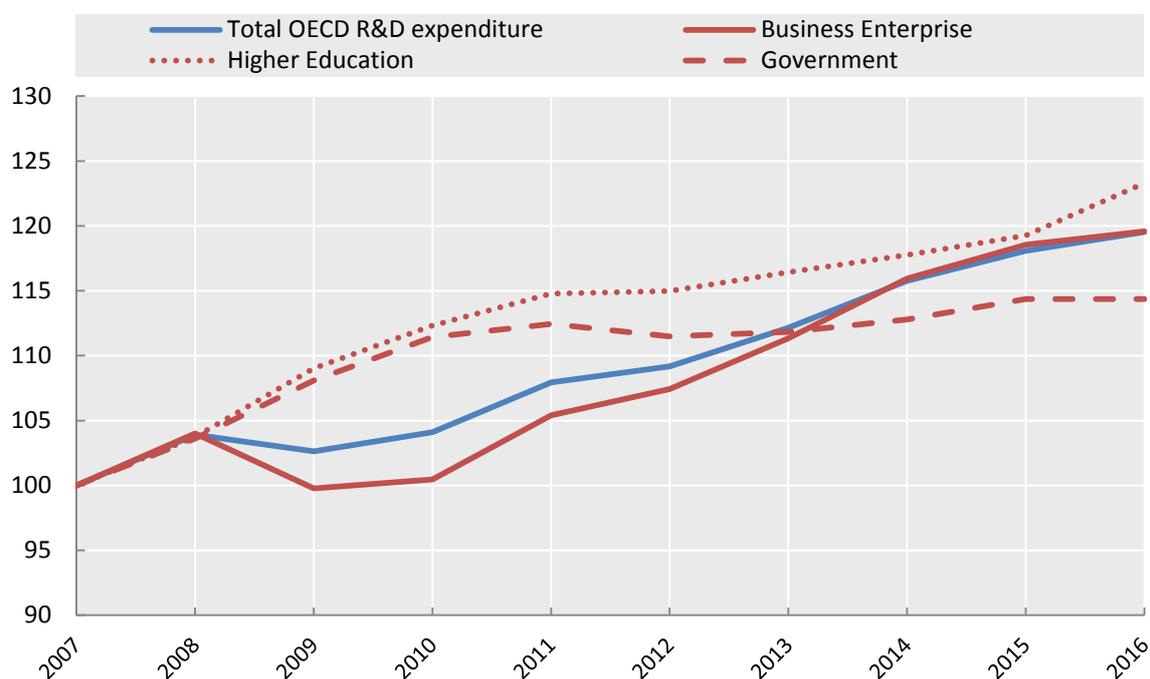
### Business R&D expenditure growth eases off in 2016

Across OECD countries, real expenditure on R&D grew 1.2% in 2016; overall this was in-line with increases in GDP so R&D intensity remained stable at 2.4%. Businesses, which conducted 69% of the R&D performed in the OECD in 2016, have powered OECD R&D intensity in recent years but real business R&D expenditure grew by only 0.9% in 2016 compared to 2.2% in 2015 and 4.1% in 2014.

Meanwhile, real R&D expenditure in the Higher Education sector grew by 3.4% in 2016 compared to 1.3% in 2015, an acceleration of the persistent upward trend seen ever since records began in 1981. Following growth of 1.4% in 2015, Government expenditure on performing R&D (which does not include money paid out to other sectors for R&D) plateaued in 2016. Higher Education institutions performed 18% of the R&D conducted in OECD countries in 2016 and Government 11%.

## R&D Expenditure in OECD countries, 2007-2016

Index 2007=100 (Constant USD PPPs)



Source: OECD estimates based on Main Science and Technology Indicators (MSTI) Database, [www.oecd.org/sti/msti.htm](http://www.oecd.org/sti/msti.htm), February 2018

### ***Government budgets for R&D fell in real terms in 2016, initial data for 2017 are mixed***

**The latest government budget data** for the OECD area, which present the amounts allocated by governments for R&D rather than actual expenditure on performing R&D, showed a strong increase of 4% in 2016. Once inflation is taken into account this is a real-terms increase of 2.5% (following a -0.2% fall in 2015). The United States was a key driver, with government R&D budget growth of 7% in 2016.

Initial data for 2017 are mixed, with most of the 16 countries for which data are available showing increases including Germany and Japan. Meanwhile, the United States joins 6 others with data showing government R&D budgets declining in 2017.

As shown in the OECD STI Scoreboard 2017 (<http://oe.cd/sti-scoreboard>), across OECD countries defence and space-related R&D budgets fell in real terms, from 32% in 2006 to 24% in 2016. Defence R&D bore the brunt of these reductions, most notably in France (-80%), and Sweden (-77%). Only Korea and Poland experienced rises in defence R&D budgets. Government R&D investment for the “General Advancement of Knowledge” (i.e. not earmarked for any specific application area) rose from 28% to 32% over the same period.

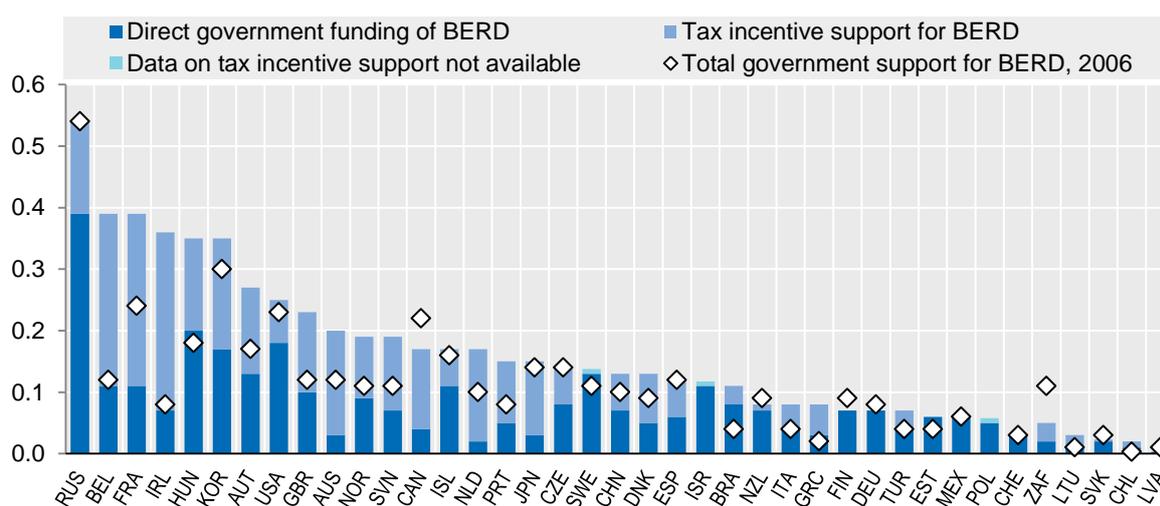
### Tax incentives for R&D increasingly important

The above figures do not include the cost of tax incentives for business R&D; where they exist, these would not typically be captured in government R&D budget figures (as they are foregone tax revenues rather than expenditures). R&D tax incentives have been increasing in many countries but not always by enough to offset budget cuts. Country profiles with the latest OECD data on the cost and design of R&D tax incentives are being launched alongside the MSTI release and provide an up-to-date and comprehensive overview of government efforts to incentivise business R&D across OECD and other major economies (<http://oe.cd/rdtax>).

The relative importance of tax incentives has generally increased in recent years. In 2017, 30 of the 35 OECD members gave preferential tax treatment to business R&D expenditures, up from 16 OECD countries in 2000. Over the 2006-15 period, total government support for business R&D expenditure as a percentage of GDP increased in 25 out of 37 countries for which data are available, with the Russian Federation, Belgium, and France providing the greatest support as a percentage of GDP in 2015.

#### Direct government funding of business R&D and tax incentives for R&D, 2015

As a percentage of GDP



Source: OECD, R&D Tax Incentive Indicators, <http://oe.cd/rdtax>, February 2018.

The relative importance of tax incentives in overall government support for R&D has increased among 22 out of 33 countries for which data are available over the period 2006-2015. Canada, Hungary, and Portugal, starting from a high share of tax support, rebalanced their support mix by increasing their reliance on direct funding. Mexico abolished its previous tax relief scheme in 2009 but reintroduced the instrument in 2017.

More detailed R&D data will be available in March 2018 through the OECD R&D statistics database. <http://oe.cd/rds>